

Handbook of Research on

Organizational Sustainability in Turbulent Economies



**Rafael Ignacio Perez-Uribe, Carlos Salcedo-Pérez,
and Andrés Carvajal-Contreras**

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Handbook of Research on Organizational Sustainability in Turbulent Economies

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Chapter 1

Coaching as a Method to Develop Soft Skills in Human Talent Management: For Organizational Sustainability.....	1

Pedro Palao-Pons, The International School of Coaching, Spain

Communication is essential in companies; however, many methodologies are imprecise and have low effectiveness. Coaching, as a communication system based on soft skills, offers resources and methodological tools to organizations, both their leaders and workers, to achieve better results in what they do. The objective of this chapter is to determine what coaching consists of, how this tool works, and to show some essential knowledge that may be of great interest to reinforce aspects of organizational leadership in team management. The chapter is complemented with highly effective and easy-to-practice resources, so the reader will have easy tools to implement in their business environment.

Chapter 2

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Juan Francisco Salazar Llanos, Universidad César Vallejo, Peru

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This chapter develops the theme of work happiness. First of all, the myths and frequent mistakes that are made when talking about this topic will be addressed. There are several investigations that have been developed in recent years about happiness at work, addressing it from different perspectives such as economic, philosophical, psychological, and also from management. Therefore, it is important to make a presentation of the main research and findings that have been found on work happiness. This will make it possible to explain the main theories and trends that help define this issue, to finally review which are the main applications in companies in recent years, and how this helps the sustainability of organizations.

Chapter 3

Authenticity, Humanistic Technology, and Artificial Intelligence: How to Use Them to Leverage Organizational Transformation in Order to Have Purposeful Corporations 35

Carlos Largacha-Martinez, Fundación Universitaria del Área Andina, Colombia

How do you make artificial intelligence, its design, production, development, and use more humane? Is this possible? Those are the challenging questions that this chapter poses. Instead of answering them, the chapter brings novel ideas and practices to the reader in order to elicit novel paths to make the debate. As is shown that authenticity is one of the key goals to achieve this, so there is a debate about how to ingrain authentic living and thinking in humans. From there, a revision of some challenges of AI are presented like the AI-traps that any development of AI-APIs would encounter. All this is applied and operationalized in a current project that was prototyped with students at the Master's of Human Talent of the Universidad Santo Tomas. The results are shown after using the 'Left-Column' Social Technique along with how the conversations uploaded by the MTH students were later analyzed using DEMOs by BigTech Companies. The APIs used are for sentiment analysis, using NLP. The results of these analyses are shown at the end, discussed, and a future framework proposed.

Chapter 4

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Neeta Baporikar, Namibia University of Science and Technology, Namibia & University of Pune, India

Dileep Baburao Baragde, G. S. Moze College, Savitribai Phule Pune University, India

The hallmark of the Indian growth story since the 1980s has been the information technology (IT) industry. This industry has relied heavily on global markets and built deep international ties by co-location with clients, enabled by international travel and temporary on-site migration, acting as a key mechanism in developing "cognitive proximity." However, the COVID-19 pandemic is expected to make international travel and migration costly and restrictive in the near future. While this paradigm shift creates significant barriers for IT firms to maintain cognitive proximity that could adversely influence global competitiveness, it also provides opportunities to innovate and pursue new goals. IT firms now need to review the cloud providers' performance and design fresh strategies to ensure and enhance the sustainability of the IT industry. Hence, adopting an exploratory approach with a systematic literature review, this chapter will explore and deliberate on the post-pandemic challenges and opportunities to enhance the sustainability of the information technology industry in the Indian context.

Chapter 5

Methodology Oriented to the Sustainable Development Goals in the United Nations Agenda 2030..... 72

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Damián-Emilio Gibaja-Romero, Universidad Popular Autónoma del Estado de Puebla, Mexico

Yesica Mayett- Moreno, Universidad Popular Autónoma del Estado de Puebla, Mexico

The objective of this document is to analyze all the factors involved in the aspects of sustainable development. As it is a very extensive and relevant topic at present, it seeks to explain in detail from its conception to the central aspect on which it is based the Sustainable Development Goals (SDGs) of the United Nations. Similarly, the approach on which the document is based is to mention some of the most

developed tools and indexes for measuring sustainability, which are based on the SDGs, and especially to emphasize the social, economic, and environmental benefits obtained by sustainable development globally.

Chapter 6

Organizational Sustainability: An Index From Macroeconomic Variables 94

Nicolás Rivera Garzón, Universidad Nacional de Colombia, Colombia

Miller Rivera Lozano, Universidad Santo Tomas, Colombia

The objective of the chapter is to develop an organizational sustainability index based on development indicators from 1980 to 2019. The sample is made up of the aggregation of low, low middle, upper middle, and high income countries constructed by the World Bank. High-income economies had the least sustainable organizations in 1980 with an index value of -13.8, while in 2019 its value was 25.7. On the other hand, the lower middle-income countries had an increase of 15.2, going from -9.2 in 1980 to 5.9 in 2019. Similarly, the upper middle-income economies went from -3.8 in 1980 to 6.6 in 2019, with a growth of 10.48. Low-income countries started with the highest levels of sustainability among the four categories with 1.6; in 2019 the value of the calculated index was 5.20, that is, a growth of only 3.5 units.

Chapter 7

Searching for Sustainability in the Generation of Knowledge: Reducing the Gap Between

Academia and Business 111

Gonzalo R. Llanos-Herrera, Universidad Finis Terrae, Chile

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The link between the practitioner's world and academia is not without its complications. If we assume that academics are responsible for producing knowledge while practitioners are responsible for its application, we could be excused for thinking that the natural procedure would be a joint effort, where these two worlds coincide. However, thanks to globalization—and scenarios of unheard-of speed and polarization—these human conditions, far from tending to converge, have in fact diverged due to technology's erasing of distances. Evidence suggests that these two groups function better apart, given the nature of their particular realities, and the so-called "Mode 2" was proposed in 1994, as a methodology capable of bringing both visions closer together; however, despite Mode 2's benefits, sizeable changes have yet to be observed. This work analyzes certain elements that could help to reverse this situation.

Chapter 8

Sustainable MSEs in Turbulent Environments Thanks to Innovation 130

María Teresa Ramírez-Garzón, Universidad de La Salle, Bogotá, Colombia

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The purpose of this chapter is to present the state of micro and small enterprises (MSEs) in Bogota, Colombia with respect to the contribution of innovation as support to reach sustainable organizations in turbulent environments. To achieve this objective, a questionnaire structured and validated in 2020 by the Latin American Studies Network in Management and Business (RELAYN, its abbreviation in Spanish) was applied to 400 directors of MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda, and Tunjuelito in Bogota. For the development of this research, a correlational analysis is made, evaluating the degree of association between some dependent variables such as increase in

sales, increase in profit and the risk of closure of the establishment, and an independent variable, which is innovation. Three hypotheses are proposed, which are approved in part, as can be seen in the results and conclusions of this research.

Chapter 9

EBITDA as a Key Indicator of Sustainability in Colombian Companies..... 155

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Luz Janeth Lozano-Correa, Universidad Santo Tomas, Colombia

Between 2017 and 2021, the RISE model (route of innovation and sustainability for enterprises) has been applied in 106 organizations of different sizes and economic sectors in the Colombian environment. From the results of application of the RISE, the following research question arises for the authors of this chapter: Which variables or descriptors better explain the financial performance of the EBITDA Margin and in which should a manager should concentrate his efforts for organizational sustainability, in terms of this indicator? The objective of this work is to present the analysis of the variables that best explain the financial performance of the EBITDA Margin to facilitate the organizational sustainability of Colombian companies. The data were processed with the statistical package Statgraphic Centurion XVI, using factorial analysis with multiple regression, and seven variables were obtained from the 36 that make up the model, which explain at 51.15% the performance of the EBITDA.

Chapter 10

Fostering Corporate Sustainability Through Formalization 178

Carlos Salcedo-Perez, Politécnico Grancolombiano, Colombia

Andres Carvajal Contreras, Universidad EAN, Colombia

Franco Chala-Lloclla, Universidad Privada del Norte, Peru

The objective of this chapter is to identify policy measures to be implemented to reduce the levels of informality in Colombia. Informality is one of the main problems of the economy of Colombia. This problem does not only bring about macroeconomic distortions, but foremost, it compromises the sustainability of firms since they have less access to technology, training programs, and loans. Furthermore, informal firms have less access to government subsidies, and their workers experience higher turnover ratios. The chapter concludes that the measures to reduce informality must be focused on the following areas: tax reduction, labor market flexibility, and launching educational programs for informal firms.

Chapter 11

Organization Theory as Applied to the Big Problems of the Marketing and Sustainability

Industry 196

Gonzalo R. Llanos-Herrera, Universidad Finis Terrae, Chile

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This work has been prepared as a reflection on the current business context and the demands of both the corporate and social environments. The subject of the analysis is the practitioner's viewpoint arising from the statement of the 'seven big problems of the marketing industry' as unveiled by the American Marketing Association (AMA), to which the authors add a fundamental theme for today's world: sustainability. Subsequently, a set of classical management theories are used as an analysis formula. After contrasting them, the main aspects are set forth for each theory that to an extent contribute to the

generation or aggravation of the problems. Finally, they attention to the importance of being aware of the problems and their origins but, more than that, of the commitment required by a strategy that allows for sustainable development over time.

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Importance of ICT for Perspective and Strategy in Education 213

Jubitza Franciskovic, ESAN University, Peru

Erin Fabiola Alvarado, ESAN University, Peru

ICT-enhanced educational tools and approaches offer a new range of options and opportunities to improve the efficiency of teaching and learning to boost individual student performance and thus, in many cases, avoid the challenge of exclusion and poverty related to skills deficit. The authors suggest that digital games, online applications, tablet use, MOOCs, and micro courses can boost student exposure to specific course material, thus assisting in the acquisition of knowledge, skills, and attitudes.

Chapter 13

Cultural and Creative Industries in a VUCA World: Learnings Between Business, Economics, and Arts..... 227

Claudia Jimena Peña Bennett, Independent Researcher, Colombia

Through business economics, it is possible to analyze the volatile, uncertain, complex, and ambiguous situations surrounding an organization to propose managerial solutions that combat risks and uncertainty. Without a doubt, the answers are already there for decision-making in this type of environment, whereby this chapter adds a proposal for managers to consider facing those situations by reviewing recommendations derived from a creative state of mind. By observing learnings from the artistic world, there's an option to enrich methodologies for enlisting probabilities, solving a problem, and detecting possible benefits within a misty path. Implementing arts interventions as part of a strategic core program process are enriched with utopians that solve issues with unexpected results.

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Negotiating Across Cultures: Insights for the 21st Century 247

Pedro B Agua, CINAV-Portuguese Naval Academy, Portugal

Armando S. Frias, ISEG, Universidade de Lisboa, Portugal

Anacleto Correia, CINAV-Portuguese Naval Academy, Portugal

The 21st century accentuated the globalization, regardless of some cases apparently returning to the previous regionalization paradigm. In both cases, human communication has been and will be key to overcome the major challenges ahead. Within the global context, communication is increasingly cross-cultural, which brings additional challenges related to misunderstandings and the potential to escalate conflicts, sometimes ending up at crises. Therefore, communication and negotiation across cultures has never been as relevant as now, and the purpose of this chapter is to provides a fundamental knowledge base to cross-cultural negotiation, taking into account the main culture models from the last 50 years. It will be based on several relevant culture models, taken from multiple lines of research from reference authors in the field of culture models, negotiation, leadership, and decision making.

Chapter 15

Smart Tools for Tracing Organizational Competitive Behavior on Fast Decision Making 266

Nicolas Afanador, Corporación Unificada Nacional de Educación Superior, Colombia &

Pontificia Universidad Católica del Perú, Peru

Ricardo Bonilla, Corporación Universitaria Minuto de Dios, Colombia

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Competitiveness is essential for an organization's success in both the public and private sectors. Using three well-known mathematical methodologies, this work has centered its analysis on factors that affect primarily organizational competitiveness viewed through three different scales (global, local, and businesses). Using these methods, researchers and decision-makers gain insight to perform a qualitative analysis over key metrics of each level looking for improvements in business competitive performance and elucidate the importance of intangible assets like strategy. The authors identified that although each tool can only let us know some aspects about system agents, after combining the three tools as a toolbox, it might be used in volatile and rapidly evolving settings when strategic approaches concentrate on accurate resource allocation that demands a lot of time.

Chapter 16

Pestel Analysis and the Porter's Five Forces: An Integrated Model of Strategic Sectors 292

Ronald Mauricio Martinez-Contreras, Politecnico Grancolombiano, Colombia

Nydia C. Hernandez-Mora, Politecnico Grancolombiano, Colombia

Yolanda R. Vargas-Leguizamon, Politecnico Grancolombiano, Colombia

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Strategic model analysis is required in a continuously changing environment where businesses must respond and fulfill the Sustainable Development Goals. These models must cover all the variables that can affect the environment for doing business within an industry. For this reason, it is proposed to create a sectoral analysis model that integrates the PEST and Porter's five forces analysis. The purpose of this qualitative research is to validate the relevance of the proposed model. The research is carried out based on the perception of a sample of students from the business administration program of the Politecnico Grancolombiano University in Colombia which used the application model proposed during the period 2020-2021. The authors found that with an average rating of 4.48 out of 5, the group of respondents positively values the usefulness of the model proposed.

Chapter 17

Why Are There Discrepancies in the Results of Entrepreneurial Orientation and Its Impact on a Firm's Performance? A Review of the Literature 315

Nelson A. Andrade-Valbuena, Universidad Católica de la Santísima Concepción, Chile

Gonzalo R. Llanos-Herrera, Universidad Finis Terrae, Chile

Entrepreneurial orientation (EO) and its relationship to a firm's performance is a topic of substantial interest among scholars in different contexts. To date, however, literature on the subject has reported conflicting results and inconclusive evidence in studies relating entrepreneurial orientation to a firm's performance. In this sense, the authors have reviewed the literature and found that diverse opinions regarding definitions, scales of measurement and modeling of the construct, and its dimensions have led to conflicts within empirical research. They have also reviewed studies that have highlighted curvilinear relationships between EO and performance. This summary of issues highlighted in previous reviews

serves as a guideline when addressing research on EO, contributing to the general discussion in strategic entrepreneurship literature about this important subject.

Chapter 18

Translating in Turbulent Times: Impact of the COVID-19 Pandemic Crisis on the Language Service Industry in Colombia and Spain – Perspectives to Become Sustainable..... 335

Sandra Bibiana Clavijo-Olmos, Universidad EAN, Colombia

Miguel Duro-Moreno, Woolf University, USA

The language service industry was deeply impacted by the COVID-19 pandemic. The turbulent times faced because of COVID-19 changed the way LSPs made decisions and delivered services to their customers. LSPs had to react by adapting themselves to the unexpected new market game. This study scrutinizes what the COVID-19 meant for the LSPs based in Colombia and Spain, and how they were tackled from those two different markets. Colombia, a developing country with an industry almost exclusively made up of independent freelance translators and interpreters, faced the crisis both distressingly and smartly. Spain, a developed country with a stronger language industry, coped with the COVID-19-induced economic calamity in a quite analogous fashion. In both cases, uncertainty led LSPs to make decisions, clarify their visions, and make a clear commitment to becoming sustainable in the global market. An in-depth analysis of how those two industries behaved might be useful to draw important conclusions on how a crisis can become an opportunity if properly managed.

Chapter 19

The Impact of Technology on Sustainable MSEs in Turbulent Environments..... 355

Carlos Mario Muñoz-Maya, Universidad de La Salle, Bogotá, Colombia

María Teresa Ramírez-Garzón, Universidad de La Salle, Bogotá, Colombia

Olga Lucía Díaz-Villamizar, Universidad Militar Nueva Granada, Colombia

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The purpose of this chapter is to present the relationship between sustainability of micro and small enterprises (MSEs) in turbulent environments and technology. To achieve this objective, a questionnaire structured and validated in 2020 by the Latin American Studies Network in Management and Business (RELAYN, its abbreviation in Spanish) was applied to 401 directors of MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda, and Tunjuelito in Bogotá. For the development of this research, a correlational analysis is made, evaluating the degree of association between the variables of perception of knowledge and use of technologies and the increase in sales, increase in profit, and reduction of risk of closure of the establishment. The results show an association between the components of technology with the increase in sales, increase in profit, and reduction of risk of closure of the establishment.

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Preface

Uncertainty is a reality always faced by people and organizations. Risk is inherent to the nature of businesses. The unexpected COVID-19 pandemics has put a remind on how unexpected situations can occur at any moment, causing great changes to the society and the economy. We are living in a context of an economic turbulent time, in which uncertainty is the norm and the direction that societies and economies will take in the future is yet unclear. Societies are not still, they always keep changing, and change is not something new in history, however, during the last ten years, societies have experienced changes at all levels and at a faster speed than ever before, which have reshaped societies all over the world. Online social media, Artificial Intelligence, Metaverse, 3D printing, automation, algorithms, streaming, and remote work are just some of the trends that have changed and keep changing business and economies; industries are dealing with an unprecedented number of new technologies, production ways and communication media that have render obsolete what was considered state-of-the-art just a few years ago.

These turbulent conditions pose a challenge to organizational sustainability. Managers in organizations must answer questions such as Does the company has what is necessary to survive under these conditions? Will this industry disappear? How is it possible to reshape this industry to be able to remain in business? Therefore, organizational sustainability and turbulent economies are now more linked that they ever were. In this context, providing knowledge and experience to organizations so they can be better prepared for challenges coming ahead gains relevance.

To contribute to this matter, this book includes 19 chapters that present theoretical and practical analysis to improve organizational sustainability.

The first chapter, “Coaching as a Method to Develop Soft Skills in Human Talent Management: For Organizational Sustainability,” was written by Mr. Pedro Palao-Pons CEO at the International School of Coaching. The objective of coaching is to help the coaches to reach his/her objectives, with the help of an experienced person, the coach. There are different types of coaching, all of them with the same objective. This chapter defines coaching, its methodology and how this can help organizational leadership, which can be useful to have better tools to cope in uncertain environments.

The second chapter, called “Work Happiness in the Sustainability of Organizations,” was written by Dr. Juan Francisco Salazar Llanos, and Dr. Jaela Peña Romero, both from Universidad Cesar Vallejo, Peru. This chapter revolves around happiness at organizations. Happiness and a good work environment are essential for the sustainability of organizations. A company that motivates employees and keeps a good working environment will have more committed and productive workers. This chapter explains the concept of happiness, based on previous findings and how they can have a positive impact in organizations to make them more sustainable.

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The third chapter, “Authenticity, Humanistic Technology, and Artificial Intelligence: How to Use Them to Leverage Organizational Transformation in Order to Have Purposeful Corporations,” was written by Dr. Carlos Largacha-Martinez, professor at the Fundacion Universitaria del Area Andina, Colombia. The chapter focuses on artificial intelligence, its challenges, and possibilities to help people and organizations. The chapter tries to answer questions regarding this new trend that is shaping and changing societies. It finally presents an experience and results obtained by students of the Master of Human Talent from the Universidad Santo Tomas, Colombia. The chapter finishes by providing future lines of research for the topic covered.

The fourth chapter, “Exploring Challenges and Opportunities for Sustainability of Indian Information Technology,” was written by Prof Neeta Baporikar from Namibia University of Science and Technology at Namibia and University of Pune, India, and Dileep Baburao Baragde, assistant professor at G.S. Moze College at Pune, India. India is a country that excels when it comes to information technology. Such industry has become distinct of the country and has been at the core of its economic growth for four decades. The Indian IT industry has close ties with countries all over the world, bringing pros and cons for its sustainable development. The chapter reveals the main challenges, trends, and opportunities that this industry can have for the post-pandemic era, which is expected to bring new strains and restrictions at international levels, showing possible ways to overcome such challenges.

The fifth chapter, “Methodology Oriented to the Sustainable Development Goals in the United Nations Agenda 2030,” was written by Mr. Enrique Isaac Garcia Flores, Dr. Crishelen Kurezyn Diaz, Dr. Damian-Emilio Gibaja-Romero, and Dr. Yesica Mayett-Moreno from Universidad Popular Autonoma del Estado de Puebla, Mexico. It covers the topic of Sustainable Development Goals. The 17 goals were set up in 2015, expecting to be fully achieved by 2030. The unexpected pandemics placed a challenge for their achievement, but it also showed the importance of reaching them, so the world can be in better position to face future similar challenges. This chapter presents the SDG, tools to measure them, and how achieving such goals is beneficial for sustainability at a global level.

The sixth chapter, “Organizational Sustainability: An Index From Macroeconomic Variables,” was written by Mr. Nicolas Rivera Garzon from Universidad Nacional de Colombia and Professor Miller Rivera Lozano from Universidad Santo Tomas, Colombia. This chapter presents a study and gets conclusions about organizational sustainability using macroeconomic data. By using development indicators for the years 1980-2019, the author proposed a sustainability index and show its results for different groups of countries measured by income, in which they determine, the level of sustainability of organization in such countries.

The seventh chapter, “Searching for Sustainability in the Generation of Knowledge: Reducing the Gap Between Academia and Business,” was written by Professor Gonzalo R. Llanos-Heredia from Univesidad Finis Terrae, Chile, and Professor Rony Castillo Alarcon from Universidad de Chile. This chapter deals with the differences existent between the academy and the needs of the industry, which can have implications for the development of countries. Closing this gap can have important and beneficial implications for the academy, the industries, and the society, thus helping organizations to be more competitive and sustainable. The chapter explain this situation, describing the causes and consequences. It also explains the Mode 2 and the challenges posed to it by the pandemics. The authors finish by proposing alternatives to reduce this gap.

The eight chapter, “Sustainable MSEs in Turbulent Environments Thanks to Innovation,” was written by Dr. Maria Teresa Ramirez Garzon, Dr. Carlos Mario Muñoz-Maya, both from Universidad de La Salle, Colombia, and Olga Lucia Diaz-Villamizar, an independent consultant and Dr. Nuria Beatriz

Peña-Ahumada from Relayn, Mexico. This chapter concentrates on innovation in micro and small enterprises from Bogota, Colombia. MSME's play an important role in the economy of all countries in terms of production and employment. The authors propose the hypothesis, get information by using a structured questionnaire and perform a correlational study analyzing innovation against other variables.

The ninth chapter, "Ebitda as a Key Indicator of Sustainability in Colombian Companies," was written by Dr. Rafael Ignacio Perez-Urbe and Dr. Luz Janeth Lozano-Correa, both from Universidad Santo Tomas, Colombia, and Dr. Carlos Salcedo-Perez from Politecnico Grancolombiano. This chapter addresses sustainability from a financial perspective using the EBITDA. The EBITDA is an indicator that measures the financial performance of the enterprise before considering interests, taxes, depreciation and amortization. This chapter includes the results of the application of the RISE model to Colombian enterprises between 2017 and 2021. Data obtained was analyzed by applying a factorial analysis to find out which variables explain the EBITDA performance in Colombian companies.

The tenth chapter, "Fostering Corporate Sustainability Through Formalization," was written by Dr. Carlos Salcedo-Pérez, professor at Politecnico Grancolombiano, Colombia, Prof. Andres Carvajal-Contreras, professor at Universidad EAN, Colombia and Mr. Franco Chala-Lloclla, senior year student of Economics at Universidad Privada del Norte, Peru. It covers shadow economies and how they can affect sustainability. Informal enterprises and their effects are considered an impediment to economic and social development. Therefore, reducing their size has become an important objective for countries with high percentages of informal enterprises and or workers. This chapter analyzes the issue, provides current data and proposes different measures to reduce the size of informal economy.

The eleventh chapter, "Organization Theory as Applied to the Big Problems of the Marketing and Sustainability Industry," was written by Gonzalo R. Llanos Herrera from Universidad Finis Terrae, Chile, and Professor Nelson A. Andrade-Valbuena from Universidad Catolica de la Santisima Concepcion, Chile, covers marketing and organizational theory and their relation to sustainability. In this chapter, the authors take into consideration the seven big problems of the marketing industry (which include targeting effectively high value sources of growth, dealing with an omni-channel world, and competition in dynamic and global markets, among others) and describe each one of them in detail. The authors also include a comparison of different strategic organizational scopes which are analyzed from different organizational theories' points of view.

The twelfth chapter, "Importance of ICT for Prospective and Strategy in Education," written by Jubitza Franciskovic and Miss Erin Fabiola Alvarado, professors at ESAN University, Peru, emphasizes on ICT tools and the opportunities they offer to education. Educational access and quality are essential for the social and economic development of societies. Education, as many other fields, is changing, and technological tools can provide helpful ways to cope with the challenges posed by such changes. The chapter explores the opportunities that new applications and tools can help both students and teachers to improve the educational process nowadays.

The thirteenth chapter, "Cultural and Creative Industries in a VUCA World: Learnings Between Business Economics and Arts," was written by Claudia Jimena Peña, an independent researcher and consultant from Colombia. The chapter starts by explaining the concept of VUCA and the liquid society, and then concentrates on VUCA environments in creative industries. The author provides recommendations for cultural and creative industries to deal with VUCA environments.

The fourteenth chapter, "Negotiating Across Cultures: Insights for the 21st Century," was written by Professor Pedro B Agua from CINAV-Portuguese Naval Academy, Portugal, Professor Armindo S Frias from CINAV, Escola Naval, Instituto Universitario Militar and Universidade de Lisboa, Portugal,

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and Dr. Anacleto Correia from Naval Academy, Portugal. This chapter deals with the importance and difference in the interpretation of communications in a global world. Globalization has increased the volume of international economic exchanges, and, the contact between different cultures, which have different points of view and different ways to understand communication. This chapter explain different negotiation types and negotiator profiles. It also includes an explanation of different culture models and presents examples of misunderstanding because of misinterpretations when people from different cultures negotiate, and finally it includes recommendations to improve intercultural negotiation.

The fifteenth chapter, “Smart Tools for Tracing Organizational Competitive Behavior on Fast Decision-Making,” was written by Professor Nicolas Afanador from Corporacion Unificada Nacional de Educacion Superior and Pontificia Universidad Catolica del Peru, Dr. Ricardo Bonilla from Corporacion Universitaria Minuto de Dios, Colombia and Professor H. Jackson Ocampo from Escuela Colombiana de Ingenieria Julio Garavito, Colombia. This chapter focuses on competitive advantage. Being more competitive provides advantages for business. A company that is more competitive than its competitors have higher possibilities to remain longer in business. This chapter includes theoretical reviews of temporary and sustainable competitive advantage. The authors used mathematical methodologies to analyze factors that affect business competitiveness in Colombia.

The sixteenth chapter, “Pestel Analysis and Porter’s Five Forces: An Integrated Model of Strategic Sectoral,” was written by Mr. Ronald Mauricio Martinez Contreras, Mrs. Nydia C. Hernandez Mora, and Mrs. Yolanda R. Vargas-Leguizamon from Politecnico Grancolombiano, Colombia and Dr. Sergio M. Borja Barrera, an independent researcher. The chapter starts by explaining the relation between competitiveness and sustainable development, the Pestel analysis and Porter’s Diamond; then, it explains a tool used to measure the state of the external environment based on them. The authors show the results of the perception of applicants regarding the relevance of the tool.

The seventeenth chapter, “Why Are There Discrepancies in the Results of Entrepreneurial Orientation and Its Impact on a Firm’s Performance? A Review of the Literature,” was written by Professor Nelson Andrade-Valbuena from Universidad Catolica de la Santisima Concepcion, Chile and Professor Gonzalo R. Llanos-Herrera from Universidad Finis Terrae, Chile. The authors collect information to find out the reasons for discrepancies that have had an impact on measurement of Entrepreneurial Orientation. Therefore, the chapter provides an explanation of the relation between Entrepreneurial Orientation and Performance. The authors also include a review of the measurement scales used to capture Entrepreneurial Orientation as well as conclusions and future lines of research to deepen the knowledge on this topic.

The eighteenth chapter, “Translating in Turbulent Times Impact of the COVID-19 Pandemic Crisis on the Language Service Industry in Colombia and Spain: Perspectives to Become Sustainable,” was written by Sandra Bibiana Clavijo-Olmos, professor at Universidad EAN, Colombia and Miguel Duro-Moreno, Associate Professor at Woolf University. The authors concentrate this chapter on the translation industry in Colombia and Spain. The chapter includes recent information regarding the impact of the COVID-19 pandemics on the translation industry in both countries, collected using primary data in Colombia and secondary data in Spain. The authors propose recommendations for translators, considering the changing environment this profession is experiencing.

The nineteenth chapter, “The Impact of Technology on Sustainable MSEs in Turbulent Environments,” was written by Dr. Carlos Mario Muñoz-Maya and Dr. Maria Teresa Ramirez-Garzon from Universidad de la Salle, Colombia, and Dr. Olga Lucia Diaz-Villamizar, and independent consultant from Colombia and Dr. Oscar Cuauhtemoc Aguilar-Rascon from Relayn, Mexico. This chapter deals with technology and its specific impact on sustainability on SMEs. The authors develop their research on companies

from Bogota, Colombia, collecting primary information using a tool validated by Relayn. The authors describe the perception of knowledge and use of technology and its impact on sales, profits and the risk of closure based on the results obtained in the research.

Thus, this book covers turbulent environments and sustainability including different points of view from authors from four continents, different professions, and activities. The main topics of this book are analyzed from topics including education, SDG, shadow economies, translation, cultural enterprises, financial indicators, strategy, human resources, organizational behavior, among others. Therefore, this book provides readers with a comprehensive view of two issues that will shape the future of business and societies, becoming an excellent publication for any person who wants to have a deeper knowledge regarding turbulent environments and sustainability.

Rafael Ignacio Perez-Uribe

Carlos Salcedo-Perez

Andres Carvajal-Contreras

Acknowledgment

The first thanks goes to the Creator of the Universe, for allowing us to be in this work of teaching and researching in Management. Of course a great recognition to all colleagues from different universities, educational centers and organizations of the planet and for having written their chapters. Special thanks to the evaluators of each chapter, who took the trouble to read each one of them and write their observations for their improvement. Surely this book will contribute to the academic and organizational world to develop different types of approaches, methodologies, strategies and management techniques to face the phenomenon of Organizational Sustainability in Turbulent Economies from different points of view and different contexts.

This book is dedicated to the memory of Nicolas Rafael Perez Ramirez, who died on January 20, 2022 in Naha (Okinawa).

Chapter 1

Coaching as a Method to Develop Soft Skills in Human Talent Management: For Organizational Sustainability

Pedro Palao-Pons

The International School of Coaching, Spain

ABSTRACT

Communication is essential in companies; however, many methodologies are imprecise and have low effectiveness. Coaching, as a communication system based on soft skills, offers resources and methodological tools to organizations, both their leaders and workers, to achieve better results in what they do. The objective of this chapter is to determine what coaching consists of, how this tool works, and to show some essential knowledge that may be of great interest to reinforce aspects of organizational leadership in team management. The chapter is complemented with highly effective and easy-to-practice resources, so the reader will have easy tools to implement in their business environment.

INTRODUCTION

Coaching is a non-scientific model or system of communication and behavior, with applications in people and companies. According to the IAC (International Association of Coaching) (2021) coaching is: An advanced form of communication that aims to help an individual, organization or team to produce a desired result through the co-creation of awareness and solutions to problems. In short, coaching is a completely integrated and personalized “technology of success”.

This definition expresses some essential principles of coaching as a discipline of success in companies (Saviet & Ahmann, 2021): Understanding help is needed, the Coach helps with their presence and their questions in the Coaching conversation to co-create new visions and results. Although the Coach is not and should not be the creator of deciding, it is his questions and reflections in feedback format

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which make it easier for his client to see other perspectives and even make different decisions than usual, achieving results as well different.

Coaching applied to organizations and talent management is an integrated and personalized methodology, as expressed by IAC (2021). Integrated because it is adaptable to organizational models.

Coaching has the ability to adapt to all kinds of requirements and natures of the human team with which the Coach works. On the other hand, it is personalized because no two Coachees or clients are the same. While the headline for what they need may be identical, for example improve leadership, defuse conflict, or achieve greater inspiration and motivation, each case is unique. The Coach must know how to apply his package of tools adjusting them to the needs of the current moment of the client. That is why Coaching, both in the field of business and in the humanistic or personal sector, is always personalized (Babcock, 2021).

What is a Coach?

Coach is the professional who takes care of taking the clients from the situation they are to where they want to go. To do this, he uses the methodologies expressed in this chapter, always using a conversation model. In addition to this, the Coach uses classic tools such as generation of attunement and alignment, deep listening, questions, confrontation, and other specific tools depending on the case to be addressed.

According to ICF (International Coaching Federation) (2021), the Coach helps to set better goals and to meet them. Help your interlocutor to do more than what would have done by himself. Provides focus for more quick results as well as tools, support, and structure to improve.

Indeed, the role of the Coach in the organization becomes key since he offers other points of view sometimes not contemplated by the Coachee, who is his client. On the other hand, by challenging your client to go further to try other versions of what they already know and to communicate and interact in a different way with their teams, clients, and suppliers, they achieve sometimes spectacular results (Carmel & Miller, 2015).

What is not a Coach?

A Coach is not a mentor, nor is it a counselor. He is a professional who cannot and should not tell his client how to act or where to go, since this would be matter of other disciplines. The Coach is neither a listener nor a confessor. They certainly listen, but they do it with one goal: to understand the situation the client is telling, so they can ask the right questions to help them improve. In many Coaching sessions in which there is high emotional level, such as stress worries, dispersion, etc., the Coach's work must focus on listening. In this kind of situation, the client needs to release their tensions. Despite this, the Coach must direct the conversation in order the client reaches conclusions about how that influences him and makes him feel. Then the Coach will challenge the client to change their situation to feel better (Coutu & Kauffman, 2009).

The essential key that distinguishes what would be a coaching process from another model or conversation system is that the Coach always seeks for the Coachee to reach a goal and a commitment after the session. The commitment may be small, but it must exist. If there is no commitment, it is hard to make progress. If there is no progress, there is no action. If there is no action, there is no Coaching, it's only a conversation and there are no results (Deiorio, Carney, Kahl, Bonura and Miller, 2016).

THEORETICAL FRAMEWORK

Coaching at TISOC

The International School of Coaching, TISOC, is the most relevant and prestigious international school of Coaching in Spanish language. It was founded by Thomas Leonard and Robert Culpener in 2002 and established as an educational organization with a presence since 2005 in all Spanish-speaking countries. TISOC has more than 6000 Certified Coaches worldwide in areas such as Life Coaching, Executive Coaching, Team Coaching, Specialized Coaching in Innovation, Educational Coaching and Personal Brand Coaching (TISOC, 2021 a).

As a result of all the years of research and development of TISOC programs, the methodologies, tools, and systems implemented by the school in companies and organizations around the world, have resulted in a series of high impact and highly reliable methodologies.

For TISOC, Coaching is a process of accompaniment and support in a facilitation relationship between a Coach and another person, organization, or team (also called a client or “Coachee”). The process integrates, in addition to its own method of conversation, linguistic, emotional, and bodily tools, the combination of which produces very effective communication (TISOC, 2021 b).

TISOC’s action protocols are based on two basic principles (TISOC, 2021c):

1. The purpose towards the action or objective. Every conversation and process must have a goal.
2. The action of Coaching is a set of acts that seek better results than those already had.

For the two previous points to be fulfilled, according to the Coaching methodology, the Client becomes aware of their current situation to move to a desired situation. To achieve this, he relies on the work of the Coach who helps him “transport” from one part to another through his tools and conversations.

Coaching: Process of Change and Action.

Coaching is a communication methodology, but if no compromises are reached that compromise the action after the conversation, Coaching has not taken place, but something else.

The human being many times rejects the change to which the coach invites. Change means having to establish new guidelines and routines in already known actions. Faced with a situation of change, the brain goes into a metaphorical panic. You are being asked to do something different, something that does not always usual and sometimes totally new. Confronted with this situation, the brain “protects itself” and translates that feeling of “discomfort” into things like negative, doubt, resistance, etc. (Cushion & Partington, 2016).

According to Gould, Pierce, Cowburn and Driska (2017) it is common to find pockets of resistance in managers, leaders and team members who express sentences such as “Why complicate things if what you are doing is already working?” or “We don’t have time to manage that process right now” or the no less common of “What guarantee do we have that by doing ‘that’ we will get the results we are hoping for?”

Many leaders and heads of organizations, but also their teams, are reluctant to change. They fear the new and the unknown. This fear often causes an attitude in which you do not react until you have no choice and then it is too late. Reacting late implies losing opportunities and giving up competitive

advantages. That's the reason establishing processes of continuous renewal and adaptation is necessary to guarantee the survival of the organization (Rogers, 2012).

What generates the rejection? According to DiGirolamo & Tkach (2019) many times, the lack of a clear goal. The absence of a coherent and transparent explanation of what the change will be for and how it will take place. That is why in Coaching it is always focus on the conversation and the process because they pursue change. It determines how it can be implemented and details what effects it can produce. However, all of this must be incorporated into the culture of the organization and into the performance parameters of leaders and managers, step by step and with very clear instructions such as those expressed below.

Change is Possible and Necessary

The change is based on the study of dozens of cases of significant changes: restructuring, reengineering, change of strategies, quality programs, cultural renewal... John P. Kotter (2017), Emeritus Professor of Leadership of the Konosuke Chair Matsuishita of Harvard Business School and author of the bestseller *Leading Change*, observed numerous factors that impede change in an organization. The most relevant traces are

1. allowing an excess of complacency;
2. not creating the driving coalition powerful enough;
3. underestimate the power of a vision;
4. lack of communication of what the vision is;
5. allow obstacles to block the new vision;
6. not lead to short-term wins; g) claim victory too soon;
7. forgetting to firmly root changes in corporate culture.

Coaching methodologies have an important impact on working on these aspects. For example, to avoid excessive complacency, members of organizations are challenged to carry out disruptive action plans that allow them to navigate oceans of innovation. Complacency means losing focus and creating low-profit routines (Grant and Cavanagh, 2007).

Regarding the creation of powerful enough driving coalitions, Coaching works on the alignment of teams, seeking, as will be expressed later, that its members obtain the triple return on investment that it is his dedication to the organization (Economic Return, Competency Return and Emotional Return), and the points mentioned above c) d) & e), empathic and assertive communication is promoted, with proactivity, from Coaching. Instead of team members working on the problem, they are encouraged to work on the solution. This allows you to create panoramic and creative visions. This implies that no member of the team is left out of the group or isolated, for having surprising or disruptive ideas. It is an inclusive philosophy, which seeks creative talent. On the other hand, these models make the vision joint and global. This condition allows the team to be very clear about where it is going and how it is going to reach its destination. He is not denied that there will be obstacles in the way, but they can be overcome with agreements, alignment, and talent management (Grant and Cavanagh, 2007).

Coaching promotes change processes through competence research, going beyond the limits and eliminating barriers created by restrained beliefs. On the other hand, since there are no good or bad results in action, but only expected results or others that must be improved, the growth and learning process is

continuous. The workers conclude with these methodologies that it is more favorable to think, design and communicate despite being able to make mistakes, than to remain absent or carry out non-creative processes and only following instructions (Gormley & Van Nieuwerburgh, 2014).

The Triple Return and Change

This is a tool associated with Team Coaching designed by the TISOC Research Team and launched in seminars and corporate trainings since 2016. Its objective is to make work teams aware of how they are and how they can achieve the desired change. It is structured as follows:

1. **Economic Return:** This is the tangible value that the worker perceives for what he is doing in the organization. In addition to their salary, aspects such as payment of allowances, insurance policies, parking spaces, nursery, and everything that the company offers in a tangible way. Taking all this as a reference, the worker must rate from -10 to 10 how much he feels well paid,
2. **Competence Return:** This is the value that the worker perceives regarding learning and training in the organization. This value does not only contemplate training or improvement courses and workshops, focused on workers, but also the facilities that the company gives them to develop their full potential and talent within the organization. This process is based on the leadership models of Blanchard (2007) whose objective is to increase the worker skills and levels of maturity and leadership in the organization. This system prioritizes the development of skills and the talent. Competency return is understood as the assessment of what all your learning can serve you during your stay in the company. A utility not only in your daily work, but also in your day to day or in the future (even when you are no longer in that company). The measurement model is the same as the previous one,
3. **Emotional Return:** Following in part the leadership model of Blanchard (2007), this is the value that analyzes the worker opportunities for growth in the organization and how that makes him feel. The organizational climate, the ease of giving feedback, the generation of spaces of trust and the opportunities are the elements the worker evaluates to find the so-called work happiness.

The previous method seeks to review the way in which the work has been understood so far, to question certain assumed truths and to conceive new approaches. From this point, new possibilities of living and experiencing work are explored with Coaching (Atienza, 2014).

The emotional return also considers the attitude load with which the employee goes to work and with which he arrives at home after the working day. In this sense, in this area of introspection, the team of workers is asked to analyze the motivation and desire that they mostly have when they arrive at work. And which is the emotional load when they leave it and how this affects them in their private life. The valuation system is carried out the same as the previous ones (Atienza, 2014).

Once the valuations have been established, the results are added. The tool of the three returns can give a maximum score of 30, both positive and negative, since the three results presented must be added to obtain the final return that the worker perceives. An example would be: -5 in economic salary because you feel underpaid for the task you do. +8 in competency salary because you consider that you have many and varied learning opportunities. And a +6 in emotional salary because although you feel comfortable in the company when there are problems, they affect you significantly. The final return result obtained would be a value of 9 out of a maximum of 30. From this result, the Coaching would work

to determine how to increase those values to obtain a value in the result of at least 15 to be a happiest worker (Atienza, 2014).

This type of tool is complemented with Team Coaching sessions and individual sessions in which the Coach or the Coach Leader (leader or manager of the organization who applies the Coaching methodology in their work conversations) investigates and proposes areas for improvement, through questions and listening, connection and feedback techniques. Some of these procedures are discussed later (Atienza, 2014).

The Keys to Coaching in the Organization for Sustainability

It is very useful, as a tool for raising awareness, for teams to assume and realize what is happening in a daily basis. It offers clarity on the current situation and an increase the personal responsibility (McCarthy and Milner, 2020).

On the other hand, coaching in organizations, both applied in an executive way, on a team or a leader, is clear, fast, generates confidence and encourages the growth of the worker's potential. Coaching is useful if you have expectations that the change will be positive. One must believe in the potential of the interlocutors. They should not be seen by where they are, but by visualizing where they can go. Believing that, in most cases, people may be able to generate their own solutions. For this, it is essential to build a relationship of trust with the environment (this is achieved through rapport that will be explained later) (Boak and Crabbe, 2019).

Executive Coaching and Team Coaching

The essential difference between Executive Coaching and Team Coaching is that the first is approached from the perspective of a one-on-one conversation and the second works with a local team. Executive Coaching addresses tools and aspects focused on improving worker performance, time management, goal orientation, motivation, interaction with others, communication, and management of their work environment. It is the Coaching that is applied to Leaders of organizations to lead them to their transformation as Coach Leader (Thompson & Cox, 2017).

Team Coaching, although it must contemplate these aspects in each one of the team members, focuses on the globality that the team needs. In the first place, it must be determined and assumed that the team forms a microuniverse composed of individuals who must give up a part of themselves to share another with their colleagues. In this specialty, we will work aspects such as: What is the goal to be achieved by the team? How is each member oriented towards it? What possible points of difference are there between the members to meet a goal? How can you align divergent or distant members of the target from others who are highly focused on it? How to improve the team climate? How to avoid and manage conflicts? How to promote and develop an effective communication and feedback model? (Hershfeldt, Pell, Sechrest, Pas & Bradshaw, 2012).

Coaching applies the same basic methodology for executives and for teams, always focusing on conversations towards clear, empowering, efficient, and realistic objectives. These are carried out using the parameters and tools that will be detailed later, such as rapport, the conversation model, active listening, validation, and paraphrasing. In addition, the existence of the triple return already mentioned is considered (Hershfeldt *et al.*, 2012).

How to Help the Leader in his Challenges?

Coaching is a highly effective tool for leaders. It has the ability to transform them into Coach Leaders, making small adjustments in their way of acting and communicating and helps them to think globally, to see beyond the focus on which their concerns are centered. It offers them tools and resources that allow them to recognize the generational diversity and cultures of their teams. It also helps them overcome challenges, such as business digital transformation, the change in the culture of the organization and the need to implement leadership towards teams that work remotely or relocated around the world (Ahlberg, Mallett & Tinning, 2008).

Through Coaching and the questions, they ask with their teams, leaders who are on their way to being Coach Leaders, manage to establish better alliances and circles of trust with their workers, learn to share leadership, improve manage time, develop people, and generate high performance teams. The result is that they achieve happier, more involved, and better communicate operational teams (Ahlberg *et al.*, 2008).

Coaching and Job Satisfaction

Most research studies on job satisfaction offers very similar results: dissatisfaction is a general breeding ground in organizations. According to the ORHIT (Human Resources Observatory) (2018), the five main problems are:

1. workers are frequently absent from their job;
2. they have low socialization;
3. they work poorly and make more mistakes;
4. lack of feedback skills; e) they are looking for another job.

Circumstances such as the above are also reflected in the statistical studies on the areas for improvement of 75% of the organizations in which the TISOC international school of Coaching has intervened (2021 b). The main needs have been

1. high degree of emotional detachment from the job to be performed;
2. low social relationships between coworkers and low socialization rate;
3. errors made due to lack of clear or scattered communication;
4. lack of feedback, due to not knowing how to give it well due to not receiving it as often as necessary for performance.

With parameters such as the above, Coaching interventions can make notable improvements in these aspects (Kalkavan & Katrinli, 2014):

1. Improvement in socialization: Implementing new communication models based on creating trust environments between the different hierarchical levels.
2. Greater emotional involvement in the task: With Coahcing tools for the development of talent, conversations focused on the passion and vocation of the employee and encouraging their participation through continuous feedback.

3. Culture of the question and feedback: Establishing normative patterns for management and employees to resort to the question, validation and paraphrasing to demonstrate active and deep listening. This increases trust levels and improves teams.

What Mechanisms can be Followed?

From the view of Leadership in the organization, training leaders to act as leaders Coaches, applying tools such as those presented below. Using better time management in their organizations improves the conversations and detection of needs of their teams, promoting the use of introspective questions and practicing all of this with the establishment of trusted environments that generate rapport and connection between the members of an organization (Marchesán, 2017; Barrón, 2010).

METHODOLOGY

Applying the Coaching Model in the Organization

The first key to Coaching Roles is to establish a good key of trusted communication between members. This is obtained by implementing the rapport technique, a term that comes from French and means “to wrap”. It is necessary to distinguish between wrapping and just to praise. Rapport is not content or say yes to everything. It is not just agreeing with the other person. It is creating a space of openness and trust in which two or more people have equal expectations. In other words, the Coach Leader must know what his worker expects of him and vice versa. It can only be achieved with openness, clarity, and confidence. Of course, also with the way of speaking and, most importantly: doing it in the appropriate place.

These are the keys to be able to maintain a good rapport.

Psychogeography of the Environment

The place from which there is communication is relevant. Depending on how the space is, the words and behavior will flow in one way or another. Psychogeography is a current that arises from the belief that it influences what one thinks and does. Psychogeography refers to the lighting, the colors of the environment, the arrangement of the furniture, etc. It also intervenes in how the brain organizes itself, seeking spaces that generate more comfort, protection, and relaxation.

In a business conversation, a corridor or room full of noise, for instance, can generate an environment of stress or tension where it will be more difficult to speak, clarify and tune in with the other than in a neutral room.

Psychogeography also affects the disposition in which the leader is situated with reference to the employee. Tables are metaphorical barriers. If the conversation is intended to flow, it is more effective if there are no barriers. In case of no other remedy, psychogeography ensures that the tables can become elements of cooperation when the interlocutors are seated at an angle of ninety degrees instead of facing each other. A second aspect of rapport will be body language. In this case, the Coach Leader must strive to maintain a close posture. Her gestures and postures must show interest, openness, and desire for communication. These similarities must be accompanied, punctually, emulating, the gestures, and

postural forms that the interlocutor has so that the mirror neurons tune in and the conversation flow effectively. A third aspect of rapport is the tone of voice and the pace of the conversation. The coach leader will achieve a better connection if the rhythm of his words is like that of the interlocutor. He must raise and lower the volume modulating to suit the other. It is not about stopping being who you are, but about adapting to the other person. This will mean that the recipient of the message will expand their comfort, confidence, and channels for receiving the message. A final aspect to consider is the context and the way in which the speech is elaborated. A poorly structured or out of context or repetitive speech will produce disconnection. The Coach Leader must apply the NIA method, in the conversation model described below to optimize their meeting times and their effectiveness.

Keys to the Conversation with Rapport

There are three essential keys for a conversation, in addition to generating rapport, to provoke effectiveness among the interlocutors: Listen, paraphrase and validation. These elements generate openness, trust, a sense of relevance and feeling heard by the other.

Listening in Coaching is to silence the internal noises caused by filters and limiting beliefs. It is paying the maximum attention to the other person, to their words, tones of voice, what they say and what they don't. It is to attend to his silences and to what moment he has finished his presentation so as not to interrupt him and cut off the emission of his message when he was still elaborating it in his brain.

One of the keys to deep listening is to pay more attention to the other person than to yourself. In this sense, the leader must try to remove from his mind the concerns, the agenda or any other element that may be a distraction from what he is doing.

Paraphrasing is a clear indication that you are listening carefully to what the other person is saying. By repeating or elaborating sentences like what the interlocutor has expressed, listening, attunement and understanding is evidenced because the same language is used. This generates a new reinforcement in the feeling of trust since the brain of the speaker perceives the interest of the other. It is not about paraphrasing continuously, but doing it sporadically just before, or example of asking.

An example would be: "you tell me about the drop in results of 8.5% and specifically that for three days things in the sales team have not been going well. What do you mean that they are not going well?" In that case, a paraphrase with an open question has been formulated. On the other hand, without the Coaching methodology, the question that the leader would ask would be: "What has happened? What are we going to do with the decrease in results?" That would be anticipating.

The third essential point when it comes to effective communication is validation. In a conversation a lot of data can appear and, although it can be segmented and narrowed with some tools, any of the interlocutors can be lost. In many organizations work teams do not validate. In many they do not do it because validating is interpreted as that whoever asks to do it, did not pay enough attention, or did not understand what was being said. As a result, many people prefer not to validate and ensure that they have fully understood the instruction rather than clarify it. Validating reflects interest in what the other said and reinforces rapport. But validating implies that you want to verify that what you heard is how it has been understood. This saves time in the execution of the processes. In addition, validating implies that the sender of the message sees the interest in the other party for what he has said.

Preparing the Conversation Model

There are several typologies in Coaching conversations. From TISOC the concept AOROC is developed, acronym in Spanish for “*Asunto, Objetivo, Realidad, Opciones y Compromiso*” (in English Subject, Objective, Reality, Options and Commitment).

The AOROC model allows to establish very clear patterns of what is the reason for the conversation. From there, the reality that occurs is evaluated and options are sought to achieve it. Finally, as already mentioned, Coaching is action, hence a Commitment is necessary. In this case, it is the agreement of the actions that will be done to establish a solution to what was raised in the conversation.

The conversation model and all conversations in an organization and between work teams should be supported by the NIA method, developed by TISOC. The word NIA reflects in Spanish, the acronym “*Necesario, Imprescindible y Accesorio*” (in English Necessary, Essential, and Accessory).

In every meeting, conversation, project, or action there is an objective, it is essential, and it must be achieved. But to get there, you need a context. The context is what in the NIA method means necessary: explaining the contextual details so that the essential can be achieved.

The NIA tool contemplates the aspects that are neither necessary nor essential to address to and can be a source of distraction. Everything that does not require a conversation, occupies the Accessory section. The accessory can be second or third topics that it is not convenient to touch in the conversation. They are vanishing points on the main objective and if they are approached, they can generate that the essential cannot be worked for lack of time.

The Coach Leader must be very clear about these three patterns to schedule their conversations in advance, knowing what it is that they must communicate, that is, what is the objective of their meeting or conversation. Second, what information is necessary to accompany the objective so that it is well captured and understood. Finally, he must mentally or physically write down what will be the topics that he will not talk about or that will not go into on that time.

Once these communicational strategy patterns have been established, the leader must adjust the broadcast according to how the interlocutor of it is. You may have direct people on her team who need the target headline first and then get the context. But it can also happen that the interlocutor is more thoughtful or less competent. In that case, it will be prudent to start by talking about the context (what is necessary) and then focus the objective.

From Coaching it is not recommended to start a conversation with the accessory, with collateral topics as an introductory measure.

Developing the Conversation Model

AOROC is sustained by the force of the questions of a conversation leading to an action plan. One of the most notable differences between a Coach Leader and one who is not or is the way of speaking. The boss gives instructions, the Leader who is not a Coach asks for information. Instead, the Coach Leader asks for the other person or her team to look for answers and find their own solutions. This way of acting encourages feedback, responsibility, motivation and connection with the project or the company.

When faced with a problem or area for improvement, the person is asked “what can be done? What do you think to do?” begins to have a sense of relevance. You may not have the answer, but it will have been considered.

Of course, the questions should always be focused on finding solutions and not on delving into problems, pointing towards tomorrow, the future and not yesterday.

When asking the questions, the Coach leader will preferably use open questions and not those whose answer will be yes or no. It is different to ask, can it be changed? Whose answer will only be yes, no or I do not know, to ask an open question of the type what can be done? That one offers a lot of answers and makes it easier for the conversation to move forward with more force.

Coaching is committed to microconversation for the company. Short talks of about twenty minutes with the aim of addressing an essential topic but without expanding or opening other sources that are not a priority. For the micro conversations, must be considered that defines topics and approaches. From this phase on, these steps will be established:

Determining the Subject of the Conversation

Most of the micro conversations, around 70%, lack an issue that needs to be exposed since it is predefined by things like: "There are problems in the area of..." "A decision must be made regarding ..." etc.

However, sometimes a conversation begins with a "I need us to talk about a personal issue" and in reality, it is that the employee has a bad communication relationship with a member of his team, therefore it is no longer personal but organizational.

The subject should always be concrete and specific, something like a headline. And if the matter needs to be addressed with several people or used as a meeting call holder, it should always be expressed positively and proactively. An example would be that instead of saying: Meeting: "Risks are increasing, measures must be taken", it would be better: Meeting "Measures to reduce risk in the next quarter". The issue is the same, the risks, but the perception that the team will have will be that they are working proactively instead of believing that they are going to be told about a negative situation that may be their fault.

Some questions to ask the collaborator or team members regarding the matter would be:

What do you want to talk about? How can I help you? What is the topic that you want to talk about?
Let's avoid conditioning questions, for example:

What is the problem? What do you need? Those reflect that the leader starts from the basis that the team member comes to speak for the existence of a problem or need when the other person has not said anything about it. The basic scheme to follow would be this:

What do you want or would like to talk about?

Can you tell me a little more about this topic?

What else is there about what you tell me that might interest us?

What is the opportunity you want to take advantage of?

Is there something you want to change in the expressed situation?

What specifically?

How can we optimize our time regarding this issue?

So, specifically, what is the subject of our conversation?

With all this information you can advance and go to the next level: the Objective.

The Goal of the Conversation

What is the goal of the conversation? Every conversation is directed to a goal. But for the leader to be effective using Coaching, he must help the other person with his own words and questions to verbalize the result he expects. He should be asked what needs to happen in the conversation for him to feel that he has been helpful. If you do not know, if you do not measure the situation, you are far away from the situation you want to reach, and the other person may be disappointed by the time invested. In a conversation, after learning about the subject, more than one objective may appear. It is acceptable, but one cannot dilute the other. It should be clarified which is the primary objective and which is the secondary one. The effectiveness of Coaching is based on being clear about the goal. Objective inquiry questions can be asked as are:

What is the first thing you want to achieve?
What do you need or want that for?
What else does it require?
Is your objective controllable?
It's up to you?
If shared, who else?
How will you feel about achieving your goal?
What will happen if you can't?
How can I help you achieve this?
Being 100% achieving the goal, how far away is it?
Do you know someone who has achieved a similar goal?
How they did it?
In this part it is essential to determine only the horizon you intend to go.

Understanding Reality

The above topic and objective questions will give a series of guidelines and ideas to the leader or team member about how the interlocutor experiences and what is happening. But you can broaden reality much more by asking questions like these:

How can you describe the current situation?
What is specifically happening now?
Can you elaborate further?
How does this issue manifest itself?
What is already working?
What is not?
Is there something else that we must consider from reality?

It is essential in this phase to focus on the present, avoiding questions that lead to the past or to conflict situations. This will avoid wasting time on problems and focusing on possible solutions.

Working the Options

Before starting to work the options towards the objective, questions like these can be asked:

With everything discussed so far, what can be done to achieve the goal?

What ideas do you have?

What do you think is the most effective thing to do?

How could that be done?

Who or who would take care?

Let's dig a little deeper. What has already been tried?

What has worked and what has not?

And after that, proceed to questions that bring us closer to alternative options like these:

What other possibilities are there to reach the goal?

Which of them could work better?

What can be done differently from how it has been done up to?

What else?

Let's imagine for a moment that you could start over. Would anything change? What would be the procedure to follow? What consequences could this change have?

Commitment to Action

This is the last phase of the conversation, and it is quite delicate. The interlocutor must commit to acting being convinced that what he will do can be effective and not think that he does it because it is what management wants. To close the commitment to action, let's do questions such as:

What is the option to implement?

What would be the most appropriate plan of action?

When, how, with whom and in what way would the action be carried out?

How can I help in this commitment?

What do you need from the organization to carry it out?

Can there be any barrier? Which one? How could it be overcome?

What do you take away from this conversation?

With this step, the conversation methodology is closed by establishing a new meeting with the other person to verify the progress of the processes.

CONCLUSION AND RECOMMENDATIONS

One of the great challenges faced by the Coach or the organization leaders is the installed belief that nothing or little can change or that change will serve little purpose. That is why it is essential that the

team manager knows how to detect and handle them. Writer Deepak Chopra defines what a belief is when he says: “it is something you cling to because you believe it to be true.” Understanding the existence of one or more limiting beliefs, detecting it, working on it and overcoming it, helps to achieve objectives more efficiently. One of the ways you add value to a team is by helping them expand on the ideas or assumptions they have and turn these limiting beliefs into empowering ones. Some of the most common limiting beliefs expressed in organizations are:

Nothing has a Solution

It is a generalist expression that focuses on what you do not have. The Coach or the Coach Leader in this case, can use questions like the following to clarify the situation:

What do you mean?
What do you mean by that statement?
What is that “nothing” you are talking about?
What do you think has a solution?
What determining elements tell you that you have no solution?
What solutions have been tried so far?
What result have they obtained?
What of all that has been done can be used to find another solution?

If it were up to you and only you, what would you do and how would you do it?

The Risk cannot be Reduced

This phrase occurs when the employee or the teams consider that the activities cannot be done in any other way than the current one. Also due to lack of motivation. Sometimes the employee or team says that by making a change they run the risk of failing or going wrong. In this case, beyond the technical risks, the Coach must ask to validate if the risk is real or is a perception based on limiting beliefs. To proceed, questions of this type are implemented:

Exactly what is the risk?
What effective indicators do we have?
For what and for whom is it a risk?
What effects are controlled, and which are not?
What if it wasn't a risk?
How does that risk quantify it from 0 to 10?
What has been tested so far?
What worked?
What did not?
How and in what way could the risk be reduced by one point?
Who should take care of that?
What to do next?
How can the risk be further reduced?

It is very Difficult or Impossible to do Better

The phrase reiterates a conservative position of inaction. Doing it better would surely mean establishing changes in procedures and looking for other more effective methodologies. This feeling of conformity may appear out of fear of change and innovation, but also because of the belief in lack of competence to do otherwise. Questions to help the team or organization are:

- How is it being done now?
- What would be the word that defines it?
- What would be the word that would define climbing a step?
- What would it be like to make it worse?
- What good would it do to do it differently?
- What disadvantages would it entail?
- What can you count on to change and improve?
- What would it take to improve?
- Who should participate in this improvement?
- What can happen if it is not improved in the short, medium and long term?
- What emotional and productive benefits do you get from doing it like this?

Emotions should not be Expressed in the Company

The phrase is usually related to others such as “Nobody here understands what happens”, “It is useless to say what one thinks because it is ignored”, “Saying how you feel is useless”. Expressions like the previous ones clearly indicate a separation, but also a possible problem of work environment. When the team member or worker assumes that her emotions have no value in the organization, he begins to disengage. If this feeling has occurred, it may be for several reasons, but the most common is that on the part of the organization and its leaders, there is no time to address these issues. Questions that should be implemented little by little on a day-to-day basis and that help foster a culture of emotionality are:

- How was your holiday or weekend?
- How was your day today?
- How are you doing right now?
- What do you think of your role?
- How does your job make you feel?
- How could you feel better doing the same?
- What could you do differently to feel better?
- How can the organization help you improve how you feel?
- What else would you like to say on this topic?
- If the solution was only up to you, what would you do?

Snoozing is not so Bad

It is usually the common phrase when time thieves have made the worker not optimize his times well, become conformist and decide that nothing happens if he does not deliver his results today or if he delays

the execution of a project. When this belief falls, low operability increases disinterest and disengagement with the goal. Some questions that can help to change the situation would be:

What happens when snoozing?

How does it make you feel?

What is the price to pay for you when snoozing?

How do you feel when tasks pile up?

What is that for?

Do you want that, or do you want to change the situation for the better?

What do you prefer, stress and tension or calm and security?

What is the first thing you could do to reduce your stress?

What is the second thing you can do that depends on you to better manage your time?

Are there any tasks or actions that I can delegate? Which ones?

What would that delegation be like?

When could you start making those changes?

FUTURE RESEARCH DIRECTIONS

Undoubtedly and as has been seen in this chapter, coaching has brought many advantages for organizational sustainability as a whole. It is suggested that cases be compiled on the implementation of coaching in the international arena and its relationship with business results in terms of meeting goals and why not say it compared to financial results related to increased income and control of costs and expenses.

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KEY TERMS AND DEFINITIONS

IAC: Our measure of coaching practice is the global standard for *Masteryful Coaching*. Part of what makes the IAC different from other organizations is the way we assess coaching mastery, and our belief that attending coach training or graduating from any specific program is not sufficient evidence that a coach can, in fact, coach.

ICF: The International Coaching Federation (ICF) is the leading global organization for coaches and coaching. ICF is dedicated to advancing the coaching profession by setting high standards, providing independent certification and building a worldwide network of trained coaching professionals.

TISOC: The International School of Coaching disseminates coaching as a methodology for personal and professional success for all those who are dedicated to international training, face-to-face and remotely, training and certifying Coaches all over the world.

Chapter 2

Work Happiness in the Sustainability of Organizations

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ABSTRACT

This chapter develops the theme of work happiness. First of all, the myths and frequent mistakes that are made when talking about this topic will be addressed. There are several investigations that have been developed in recent years about happiness at work, addressing it from different perspectives such as economic, philosophical, psychological, and also from management. Therefore, it is important to make a presentation of the main research and findings that have been found on work happiness. This will make it possible to explain the main theories and trends that help define this issue, to finally review which are the main applications in companies in recent years, and how this helps the sustainability of organizations.

INTRODUCTION

During the period of the Incas in our region, one of the saddest times of the year began with winter because it was the time when animals and children died because of the cold. This time was contrasted with the arrival of the harvest season to which they were prepared in advance from the month of August. Before starting the sowing, they dedicated themselves to cleaning their houses, burning what did not serve them, they sought to reconcile with each other, they sought that stability and harmony with their environment and with themselves, it was what they called “Kusikuy”, which in Quechua means joy, happiness (Wissler, 2009).

The pursuit of happiness has been one of the main tasks of humanity since the beginning (Stearns, 2012). The current world in which we are living, hit by a pandemic, has made that the material aspects were based on our reality, they take a second priority to issues such as health and emotional stability. Global institutions such as the United Nations require “a new economic paradigm based on happiness

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and well-being” (Ricard, 2012). Thus, reports have emerged that claim to measure Happiness such as the World Happiness Report and the Happy Planet Index.

In these rankings, Peru obtained the 65th position out of 156 countries, with a perception of average happiness, 5.7 (Helliwell, et al., 2019, p. 27; Jeffrey, et al., 2016, p. 4). At the macro level, Peruvians consider themselves happy, they are rated with a score of 16 on a scale from 0 to 20 (Arellano, 2019, p. 17).

Regarding their workplace, the figures are quite clear: on average, more than 50% are not happy in their workplace and 74% of Peruvians would change their job for one that makes them happier, thus affecting productivity and employment organizational performance (RPP, 2018; Gestión, 2017).

For the management of companies, one of the greatest challenges is to improve the productivity of MSEs in Peru, as in many countries in the Latin American region. The great lack of this type of organization is its sustainability, many of them start with great enthusiasm but then fail to maintain their growth over time. Therefore, one way to give microentrepreneurs tools for sustainability is to approach the improvement of their performance from different fronts. In short, it will be interesting to evaluate if happiness is related to that performance of the workers.

Various researchers have taken happiness as a subject of study, in Peru Alarcón’s research developed a scale that measures happiness in terms of how satisfied one is with his life and if he sees it in a positive and joyful way and with a feeling of accomplishment (Alarcón, 2006, p. 104).

For his part, the Peruvian psychologist Jorge Yamamoto and his team coincide with Alarcón in some of the dimensions that he manifests, such as personal fulfillment, which Yamamoto mentions calling it goals and perception of achievement; however, unlike Alarcón, it finds other dimensions such as cultural values and resources that allow achieving the goals of the person (Yamamoto and Feijoo, 2007, pp. 221-224; Yamamoto, Feijoo and Lazarte, 2008, p. 20).

The limitation of these investigations is their way of understanding happiness only from a perspective of satisfaction with life. In Peru, also with a focus on satisfaction, is the research of Arellano (2019, p. 84) who, through an exploratory study, finds Peruvian happiness as that which is manifested in economic well-being, well-being of society, having recognition and good relationships, housing progress, well-being with oneself, family support, and flow (understood as playful entertainment, it does not specify that it is related to work).

On happiness at work, we find the studies of Paschoal and Tamayo (2008, p. 11), who developed the EBET scale, “scale of well-being at work”, which measures happiness through positive affects, negative affects, and performance at work; this scale is later validated in several countries (Paschoal, 2010, p. 1055; Demo and Paschoal, 2016, p. 35).

On the other hand, there is research that focuses on measuring happiness at work as satisfaction. In India, the research by Bhattacharjee and Bhattacharjee (2010, p. 112) was found, who finds that the dimensions of economic well-being, well-being of the environment, well-being of the infrastructure and democratic well-being, are those that determine job happiness. Along these lines, Chaiprasit and Santidhirakul (2011, p. 189) in Thailand develops an investigation where he finds that labor relations, quality work life and leadership are factors capable of predicting happiness at work.

In Portugal, Dutchke (2013, p. 23) consolidates the different dimensions and groups them into two, those related to well-being factors in the function they perform and those related to organizational well-being. At the national level Yamamoto (2011, p. 3) develops the “Chamba Index” which considers functional well-being, thus coinciding with Dutchke, but Yamamoto adds the personal well-being that a person can achieve thanks to work.

Job happiness is of interest in the field of administration mainly because of the favorable effects it can produce in organizations, thus research has sought to establish relationships with job performance, some have found relationships that are not as clear as Argyle (1989, p. 55, or they have even determined that there is no relationship between well-being and performance like Bowling (2007, p. 168). However, most research has found positive and predictive relationships between performance and happiness (Leite, 2016, p. 57; Moccia, 2016, p. 150; Harter et al., 2003, p. 14).

At the national level (Peru) there are few investigations, and, with different results; among them, positive relationships between happiness and performance have been found, in the city of Trujillo found no relationship between these variables. The reason why this relationship might not be found may lie in the theoretical approach that underlies these investigations and the instruments used, as this determines how happiness is understood and measured, thus changing the results according to the approach used. Also interesting is the study carried out in the city of Arequipa on the relationship between the happiness variable and the job satisfaction variable, finding that the former is the one who influences the latter (Gamero, 2013, p. 98).

Sustainability in organizations is one of the great problems that managers face, since deciding is easy but that it can continue to give results over time is difficult. The principle of the same sustainability as that harmony between the person and the environment, it is difficult to develop it in Latin American countries and even more so in the current context with so much uncertainty, the environment conducive to ensuring the sustainability of the organization at a political, economic, social, technological and ethical. That is why it is worth talking about happiness at work that is sustainable and thus helps the sustainability of organizations. Is there then a form of meaning happiness as something sustainable? That will be the starting point of this investigation.

Once we have analyzed happiness from that point, we can see how it helps the performance of employees. Therefore, it is important to investigate what is the relationship between job happiness and employee performance? This question is the problem to be solved. For this, the following objectives are proposed: General objective: to determine the relationship between job happiness and worker performance in the city of Chimbote (Peru).

To achieve this, we will first achieve the following specific objectives: Specific objective 1: Define the dimensions of job happiness from the beginning of organizational sustainability. Specific objective 2: describe the job happiness that characterizes the worker in Chimbote. Specific objective 3: evaluate the performance of workers in the city of Chimbote. Specific objective 4: Determine what levels of relationship exist between each of the dimensions of job happiness: affectivity, job satisfaction, engagement, accomplishment, and prospective with the level of performance respectively.

THEORETICAL FRAMEWORK

From the academy, according to Fisher (2010, p. 34), the term used to refer to happiness is well-being. Well-being finds its theoretical roots in two philosophical perspectives. One of them is hedonism whose main characteristic is obtaining the pleasure of the human being. Hobbes, De Sade and Bentham were philosophers who with their utilitarian theories mentioned that people will live better according to the utility they can obtain from their environment.

This position taken to the level of behavior will then measure well-being in terms of how well we feel, so Bradburn developed in the 60s the theory of affects postulating that a person with mental well-being is one who has a positive balance between positive affects (joy, pleasure, euphoria) on the negative affects (fear, anger, sadness) that you have in your life, both dimensions are not correlated with each other, that is, someone who has positive affects does not mean that they do not have negative affects, it will be to have more positive rather than negative affects, which will allow measuring happiness (Bradburn, 1969, p. 10). The theory of affects has been deepened by other authors who have also developed their own affect measurement scales such as Warr with the “Positive Negative Affect Scale”, Watson with the “PANAS scale” or Diener with the “Intensity Scale and temporality of affect” (Simkin, et al., 2016, p. 4).

Along the same lines is the welfare theory of Kahneman, a Nobel Prize-winning psychologist in economics, who affirms that happiness occurs when the person obtains the greatest utility experienced thus spending more moments of pleasure than of displeasure (Ryan and Deci, 2001, p. 144). Kahneman (2007, pp. 22-23; 2000, p. 675) explains the duality of the person who experiences and that same person who remembers them, with that duality he explains how we can have very good experiences of some event but that are vitiated by a single negative element and it is that negative affect that remains in the I of the memory and cancels the positive of the experience, in general terms happiness is understood as the prevalence of pleasure over pain.

Another theory within the hedonic approach is that of “satisfaction with life”, which emerged in the 60s as a measurement of a part of the “quality of life” understanding this as the presence of elements that allow people to have a “Good life” and they also live it (Veenhoven, 1996, p. 13). When we speak of “satisfaction with life” we speak of global satisfaction, referring in a general way to the life one has; when we talk about this satisfaction with life, we must also understand it with respect to the parts that make up this satisfaction, for example we have certain domains such as personal relationships, finances, work, health, and in that sense well-being could be understood as the Result of the particular well-being of each of these parts which would mean that it goes from the bottom up, understanding this up as the general well-being, or understanding that this well-being or feeling good at a general level is the one that influences each of the parts or domains of life, which would mean that it goes from top to bottom (Erdogan, et al., 2012, p. 1041).

Ed Diener’s theory groups the previous theories to postulate three characteristics of well-being; the first is subjectivity, that is, it depends on each individual; secondly, he ratifies Bradburn stating that it is not enough that there are no negative affects, it is also necessary that positive affects are present; and finally that the measurement of well-being is global and not only of a domain of life such as health or family, although these can be used to measure global satisfaction. This theory is made up of an affective dimension and a cognitive dimension, the first one affirms that positive affects must be greater than negative affects, for its part, the cognitive dimension refers to the judgment of one’s life (satisfaction); Diener and his collaborators agree with Bradburn in their theory of affects, although they develop their own scale, satisfaction with life is evaluated around whether they want to change their life and their own satisfaction with their past, current and future life, and satisfaction with how others view our own lives (Diener, 1984, pp. 543-544; Diener, et al., 1999, p. 277).

The theories that we have mentioned now are those corresponding to the hedonic current, now we will talk about those corresponding to the eudaimonic current. This current has as its representative in philosophy Aristotle, who in his *Nicomachean Ethics* points out that pleasures do not necessarily assure us happiness, they can even take us away from it because pleasures are only temporary. For the Greek

philosopher, it will be the practice of virtues and being able to realize our potentialities that will lead us to happiness (Ryan and Deci, 2001, p. 146).

For this reason, this current is also known as teleological, happiness is the conclusion of the decisions in life that lead us to a goal to achieve. Hence, he opposes the transience of pleasure as the constitution of happiness. As we will see, there have not been many theories developed in this approach, since post-modernity has made the search for pleasure prevail over the meaning of life.

One of them is the theory of Personal Expressiveness of Waterman (1993, p. 679) who affirms that a person is really happy when carrying out his most important activities in his life, he presents the following: he feels alive when doing it, he expresses his authentic me, is strongly involved with the task (it is based on Csikszentmihalyi's Flow theory), it is what he really wants to do, he feels accomplished and is ready to do it. The big difference with the theories of the hedonic approach is in the self-actualization and in being who you really are.

The theory of "Psychological Well-being" proposes other elements to study well-being, considers six aspects, Ryff and Keyes (1995, p. 720) when developing it speak of the ability to accept oneself as one is, as well as being autonomous and dominating their environment cultivating healthy relationships, as well having a focus on growth and purpose for living (Ryff, 2014, p. 12). These elements also highlight the lines of realization of the person typical of the eudaimonical approach.

Ryan and Deci (2001, p. 147) for their part coincide with the elements of autonomy, affinity or relationships, and capacity in their "theory of self-determination", but the difference is that while Ryff considers them as well-being in themselves, they consider it as promoters of well-being, finding uses especially in motivation as self-realization.

However, the different ways of understanding happiness or well-being, be it from the hedonic perspective as subjective well-being or from the eudaimonist perspective as psychological well-being, there are some theories that have taken part of both approaches, stating that they do not have to be opposed but rather they can better explain the complexity of the variable, such as Compton's theory in the 90s, who claims to express happiness in terms of affections, but also as personal growth (Ryan and Deci, 2001, p. 148).

All the theories mentioned so far could be located within what is now known as Positive Psychology, however, this would be an anachronism, since, as such, there is a certain consensus in considering its beginning in 1999 when Martin Seligman proposes that psychology be focus on promoting the positive in people, their strengths and virtues instead of only focusing on mental illnesses (Lupano and Castro, 2010, p. 43), for this reason it could be said that these authors were doing positive psychology without even knowing it.

Seligman develops another theory that encompasses both this position of pleasure and the teleological. In the theory of Authentic Happiness, he proposes three ways of access to it: the pleasant life, with a strong hedonic focus; the engagement in what is done; and life with meaning, involving the development of goals beyond personal benefit; for Seligman these three dimensions are independent, and one can develop any of them or preferably all three to achieve happiness.

However, Seligman evolves and changes his position a bit when developing the Flourish Theory in 2011, suggesting that happiness translates into "positive emotions (positive emotions), engagement, positive relationships, meaning) and the achievement of goals (accomplishment)", based on theories of hedonistic and eudaimonist perspectives, he integrates them into these blocks, calling it PERMA for its acronym in English (Seligman & Adler, 2018, p. 2).

It can be observed that, when he talks about positive emotions, we are talking about Bradburn's theory of affect, the increase of emotions such as peace, gratitude, pleasure, hope or love increases the well-being of the individual. The engagement is based on the Flow theory, which indicates that when we do something that we are really passionate about, we become absorbed in it and we lose even the notion of time, but it is not simply pleasure for what is done but an activation that we makes the present live; positive relationships come from bottom-up life satisfaction theories that hold that having an active and positive social life is directly related to the well-being of the person given their condition of being social by nature, this dimension is new regarding to the earlier theory of Seligman himself; the meaning and purpose of life is to feel that what is done in life is important and significant; And the other new element in this theory is that of the achievement of goals, not understood by the positive emotion that it could generate or the meaning that it entails, but simply by the fact of obtaining something.

The variable happiness at work takes these theories to apply them in the world of work and measure the well-being of the worker. Thus, we also have more hedonic approaches such as Van Horn's theory that starts from what Ryff (2014) proposed on general well-being and proposes five dimensions to be measured at work: affective dimension, professional well-being, social well-being, cognitive fatigue and psychosomatic dimension, of these the most outstanding is the affective dimension.

Likewise, Daniels (2000, p. 49) considers affections as the expression of happiness at work. Moccia (2016, p. 143) presents a well-being proposal oriented to the context of work organizations and characterizes well-being from two poles: gratification and disgust. The measures of positive affect in these theories reflect how much the person feels excited, alert, and active while negative affect reflects how much the person feels upset and distressed.

There are also theories that focus more on satisfaction, such as Fisher's (2010, p. 386), which measures happiness in three aspects: The work itself, the work in its context and the organization. Yamamoto (2013, p. 19) considers that happiness at work is determined by the environment: "if work helps you feel good, if it allows you to live in a good place, if it gives status and if it allows you to have an adequate family balance; and because of the work itself: if it feels good at work and if it is a good place to work", the focus it gives is one of happiness understood as job satisfaction.

The Bhattacharjee brothers' theory proposes five aspects that frame happiness at work: economic well-being, environmental well-being, infrastructural well-being, social / academic well-being, and democratic well-being. When talking about economic well-being, it refers to salary, benefits, stability; environmental well-being is understood as the work environment that the employee has in himself, both with his superior and with his co-workers; the infrastructural well-being covering what refers to the physical facilities of the organization; social and academic well-being refers to the role of your profession in society and how it is perceived by it; and democratic well-being in relation to how much the worker participates in the decisions of the company, or the evaluation of his opinions, as well as the accessibility to the company (Bhattacharjee and Bhattacharjee, 2010, p. 116).

These theories focus happiness on having certain goals or the satisfaction of certain needs, understanding happiness as subjective well-being which includes affections and job satisfaction. For their part, Paschoal and Tamayo (2008, p. 16) start from a mixed approach and consider not only affections but also personal fulfillment in the development of personal attributes, exploitation of one's own potential, fulfillment, and expression of oneself, thus managing to integrate both the approach hedonist as eudaimonist. Seligman's theories have had some attempts of application in the workplace; however, they have not yet been sufficiently proven (Paschoal et al., 2010).

Sustainability is the fulfillment of a satisfaction in the present that is prolonged in time without compromising the satisfaction of the needs of its environment, not now or in the future (Gladwin, et al., 1995). Taking that to the organizational level, we speak of organizational sustainability when organizations manage to develop in central axes: economic, environmental and social. The human being is at the center of all this, that is why several investigations speak of happiness and its intrinsic relationship with sustainability (Fukuda, et al., 2016; Barrington-Leigh, 2016), which for us is understood in a particular way as an inherent characteristic of each other.

In fact, several academics define sustainability as a state of well-being and the actual claim that human beings can live in harmony with their environment (Dasgupta, 2004; Diaz, et al., 2006; Kahneman, 2007). This theoretical framework of sustainability will serve to later talk about happiness and its dimensions (Lacerda, et al., 2013).

Regarding the job performance variable, various theories that address the issue can be described, which can be grouped into three streams. The first current encompasses those theories that consider job performance orienting it mainly to the result that is expected to be obtained, in this group we find the scientific theory of Taylor (Locke, 1982) who measures performance according to the objectives met and resources that are used so that the objectives are met, that is, efficiency and effectiveness. Austin & Villanova (1992) for his part, speaks of performance in terms of precision as opposed to errors and production volume, but in essence it is also the line of efficiency.

The other current is the one that places more emphasis on the attitudinal, such as obedience, punctuality, industriousness, initiative, among others. Hunt and Campbell present theories that respond to this more humanistic approach by placing the person as responsible for their own performance, it is they themselves who manage their attitudes, also facilitating their measurement based on what the company expects the worker to fulfill (Arequipeño & Gaspar, 2017).

There is also a group of theories that integrates the previous two paying attention to both the results and the context, thus we have Murphy's behavioral theory who assesses the fulfillment of the task, but also the behavior of the worker in inactive times, interpersonal behaviors, and destructive behaviors (Ramirez, 2013, p. 58). Lance's theory is more generic and considers the technical proficiency of the worker and interpersonal proficiency, which together demonstrate job performance. Gorriti (2007, p. 370) also agrees with these models, even presenting behaviors outside the workplace as part of performance.

METHODOLOGY

This research was non-experimental with a transectional correlation design. The population corresponds to the economically active citizens (EAP) of the city of Chimbote, located in the north of Peru, which according to INEI corresponds to 137,208 inhabitants. Given the size of the population, the research was carried out with a sample of it, accepting a margin of error of 5%, the calculation of the sample size is presented below, finally leaving 383 workers. The sampling was of a simple random type for the quantitative phase (Hernandez, et al., 2014). On the other hand, for the interview phase and observation method, a convenience sampling with 20 subjects was used.

$$n = \frac{N * Z_{\alpha}^2 * p * q}{e^2 * (N - 1) + Z_{\alpha}^2 * p * q}$$

Error range (e): 5%

Population size (N): 137208

Confidence level (p): 95%

(q): 5%

(Z):1,96

(n) Sample: 383 workers

For the measurement of the work happiness variable, a scale developed by Salazar Llanos Juan Francisco will be used, since the existing instruments do not participate in the mixed and comprehensive approach on which this research is based. The instrument measures the study dimensions and was subjected to content validity to verify if the items are clear and if they are related to the variable and dimensions proposed. This validation consisted of the evaluation of five experts in the study variables. The Job Happiness Scale, obtained a result of Cronbach's Alpha (α) equal to 0.949. This result allows us to affirm that the instrument has a very strong reliability. Likewise, a 10-item semi-structured interview guide has been prepared in order to deepen the characterization of the Chimbotan worker's happiness.

In the same way, a questionnaire was developed to measure the job performance variable, which was approved by five experts with a Ph.D. degree, who have guaranteed its content validity. The reliability obtained is a Cronbach's alpha of 0.749, thus being able to accept this value, since a value of 0.7 is considered as a minimum to guarantee internal consistency (Celina and Campo-Arias, 2005, p. 572).

RESULTS

The first objective is defining the dimensions of job happiness from the beginning of organizational sustainability. For this we must understand that work happiness can be understood as a macro theory in which other theories of organizational behavior underlie and to which work happiness can guide in an integrative and synergistic function.

Following a mixed model of happiness, we will rely on both hedonic and eudaimonic components to study it. The eudaimonic dimensions of happiness at work are affections and satisfaction, while the eudaimonic components are engagement, self-realization and job prospects. What is understood by each of them will be briefly explained below, based on the theories explained in the previous point (theoretical framework).

Affections and satisfaction are the most visible part of happiness, and it is easy to think that it is enough. When we talk about affections, we understand that we have both negative and positive affections, for the person to be happy, they must have a preponderance of positive affections. Satisfaction is understood as a fulfillment of the expectations that we have, in the workplace we have many expectations regarding salary, status, relationships with colleagues, etc.. This sensation is the most palpable form of feeling of well-being, but it is also temporary, because once we are reached by nature, we will look for more.

Work Happiness in the Sustainability of Organizations

For this reason, based on eudemonic theories, we understand happiness as an iceberg in which affections and satisfaction are the tip of that iceberg, but inside the water there is much more. Those dimensions that are much deeper and more difficult to perceive are commitment, self-realization, and job prospects.

Engagement is understood as that feeling of connection so deep with the work, we do that we abstract ourselves from it and surrender because it is something we enjoy and want to continue doing. Work is not that it stops being hard, but it does not feel like a heavy load that we detest. For example, the musician has a job that needs discipline, it is not easy to improve technique, it needs hours of practice and effort, the fingers can bleed with some instruments, but those hours of work in rehearsals and tours are enjoyed and absorbed into them.

Self-realization is the most difficult dimension to achieve because it is almost like the end of a path, of a search. The work we do is the realization of a vocation if we want to call it in some way, not necessarily in the religious sense, but as a fulfillment of a mission that transcends us. Reaching that realization leads us not to satisfaction only from pleasure but to feeling good about what we do because we find a meaning beyond ourselves.

Finally, prospective at work is important because it makes us look to the future. This point is of vital importance to unite the concept of sustainability with that of happiness, and it is that there can be no true happiness without sustainability, if so, we would only be talking about pleasure, something fleeting, for the proposed theoretical model we are talking about happiness as something that not only transcends but is also projected. In that sense, the worker has a life project in the organization, he sees himself in it with a forward path, so he will give of his time of his effort to grow in it, and in that way the sustainability of the company is also. It will give because an environment of harmony will be created between the worker and his work environment.

Therefore, happiness to be such must be sustainable, this does not mean that there is no pain, since we have already seen that negative affects will be there but they should not be overcome by positive affects, must also be present job satisfaction, engagement, self-realization, and job prospects, which guide the investigation of this variable.

The second specific objective of this research is to describe the happiness that characterizes the worker in the city of Chimbote, after reviewing the results obtained, the following levels were found:

The results show that the labor happiness of the workers in the city of Chimbote is at a regular level in 100% of the cases.

Regarding their affects, they are at regular (94%) and low (6%) levels, which means that they have both positive and negative emotions, and even negative emotions would surpass positive ones as they are not present more frequently. This scenario is not ideal as it means that affects such as being irritable, depression or worry are present and, on the contrary, affects such as tranquility, joy or optimism are not caused by their respective jobs.

Job satisfaction is at a low level (100%), and engagement, workers feel connected with respect to their work and the tasks performed, since they are all at a regular level (100%). While in the results of self-realization, 92% are also at a regular level and only 8% are at a high level.

Finally, regarding the prospective dimension of the Labor Happiness variable, it was found that the majority (65%) have no interest in continuing in the next few years in the same job or have a life project that connects with their future in their respective centers. of work.

For the third objective, the following results were obtained with respect to the variable work performance

Table 1. Level of job happiness and dimensions

		Frequency	%
Work happiness	High	0	0%
	Regular	383	100%
	Low	0	0%
Affections	High	0	0%
	Regular	359	94%
	Low	24	6%
Job Satisf.	High	0	0%
	Regular	0	0%
	Low	383	100%
Engagement	High	0	0%
	Regular	383	100%
	Low	0	0%
Self-realisation	High	31	8%
	Regular	352	92%
	Low	0	0%
Prospective	High	0	0%
	Regular	135	35%
	Low	248	65%

Source: Database

Table 2. Job performance level and dimensions

		Frequency	%
Job performance	High	0	0%
	Regular	383	100%
	Low	0	0%
Functional performance	High	26	7%
	Regular	335	87%
	Low	22	6%
Contextual performance	High	4	1%
	Regular	376	98%
	Low	3	1%

Source: Database

The variable is at a regular level. All the workers studied present an average performance in the functions of their work as well as in those that help for the good climate of the organization. At the functional level, it was found that 87% are in regular performance. Contextual performance refers to the behavior

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of the worker, which, in the case of the worker, is located at a regular level (98%), only 1% is located at the high level and another 1% at the low level.

To analyze the relationship between the dimensions of happiness and performance, Pearson's correlation test was applied, finding the following correlations:

Table 3. Correlations between job happiness and performance

		Performance	Affects	Satisfaction	Engagement	Self-realisation	Prospective
Performance	Pearson's correlation	1	,192**	,281**	,280**	,426**	,319**
	Sig. (bilateral)		,000	,000	,000	,000	,000
	N	383	383	383	383	383	383

** The correlation is significant at the 0.01 level (bilateral).

Source: Database

The correlation between affects and job performance is positive and highly significant at a low Pearson level of 0.192. For its part, the relationship between job satisfaction and job performance is positive and highly significant at a low level of 0.281.

The correlation between engagement and job performance is positive and highly significant at a low Pearson level of 0.280. Between self-realization and job performance, it is positive and highly significant at a mean level of 0.426.

While the relationship between prospects and job performance is positive and highly significant at a low level of Pearson's 0.319.

CONCLUSION

Some conclusions in which we can reach is that after seeing these results it is found that the happiness of the worker in the city of Chimbote-Middle Peru, presents negative effects in general they are not satisfied with their work centers activities are moderately in the future consider continuing to work in their current workplace.

To speak of happiness is to speak of sustainability, only a worker who is in harmony with his present, his future in his environment can be said to be happy. And the presence of such workers is what makes organizations sustainable.

Regarding the measurement of work performance, it was found that the majority perform their assigned tasks well and present a regular behavior in their activities.

The relationship that exists between the affects of a worker very low job performance, in the same way job satisfaction has a very low relationship with the performance of workers (Cherlin & Reeder, 1975).

Engagement also has a relationship that is not determinative in terms of job performance, it includes but is not a total relationship. The prospective of the worker regarding his future in his workplace is related a little more than the previous dimensions to performance. Apart from that, self-realization is

the dimension of job happiness that most correlates with the performance of the workers the awareness of the importance of the work performed in the job if it can lead to improving the worker's performance (Arrué, 2015).

At a global level, the labor variable is correlated with performance, with a 50% probability of improving the worker's performance if their happiness levels are taken.

FUTURE RESEARCH

This research can be carried out in other cities of the same country, in Peru, as well as in other cities in Latin America. In fact, carrying out the replication of these investigations would allow to corroborate the results of the presented model of Labor Happiness, fluency in the performance and sustainability of companies.

It would also be of interest to approach this research with purely qualitative methods, especially considering the subjective and social factor that corresponds to Happiness.

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KEY TERMS AND DEFINITIONS

Eudaimonism: Philosophical position that considers happiness as the result of reaching a supreme end in life and the practice of virtues.

Happiness at Work: It is the worker's state of well-being with his present, past and future in his work environment (Seligman, 2018, p. 3; Paschoal and Tamayo, 2008, p. 15; Siquis and Padovam, 2008, p. 202; Wesarat, Yazam, & Halim, 2014, p. 79), the past is evidenced by the affections that the worker has felt in recent times, as well as by the satisfaction they feel with their workplace; the well-being of his present is evidenced in engagement and feeling fulfilled; while the future is expressed by the desire and tranquility to continue in that project.

Hedonism: Philosophical position that understands happiness as the result of obtaining pleasures for the individual.

Labor Projection: It should be understood as the projection of life that the person has within the organization (Chaiprasit and Santidhirakul, O., 2011, p. 15). A happy person in her work will have a shared vision with the organization and the security of being able to continue.

Negative Emotions: Are the set of emotions produced in the workplace that cause discomfort in the person.

Positive Emotions: Are the set of emotions produced in the workplace that are good for the individual.

Satisfaction: It is the acceptance and pleasure that a person has regarding what he is or possesses compared to what he expects to receive. It is composed of three levels: social, organizational and functional; functional level refers to job satisfaction (Dutschke, 2013, p. 25; Yamamoto S., 2013, p. 5). Given the subjectivity of this dimension, it is convenient to analyze it considering the different importance that each person can have in relation to the aspects that produce satisfaction, so for example, for some it may be very important that work allows them to have free time to spend with the family, and if work does not allow it, your dissatisfaction will be greater than that of another person for whom that aspect is not so important.

Self-Realization: It is the growth and development of one's own potential and the awareness of a purpose beyond oneself (Waterman, 1993). Work happiness finds one of its highest points when the person has reached their potential and feels fulfilled, but this must be a continuum and not just a finished goal.

Chapter 3

Authenticity, Humanistic Technology, and Artificial Intelligence: How to Use Them to Leverage Organizational Transformation in Order to Have Purposeful Corporations

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ABSTRACT

How do you make artificial intelligence, its design, production, development, and use more humane? Is this possible? Those are the challenging questions that this chapter poses. Instead of answering them, the chapter brings novel ideas and practices to the reader in order to elicit novel paths to make the debate. As is shown that authenticity is one of the key goals to achieve this, so there is a debate about how to ingrain authentic living and thinking in humans. From there, a revision of some challenges of AI are presented like the AI-traps that any development of AI-APIs would encounter. All this is applied and operationalized in a current project that was prototyped with students at the Master's of Human Talent of the Universidad Santo Tomas. The results are shown after using the 'Left-Column' Social Technique along with how the conversations uploaded by the MTH students were later analyzed using DEMOs by BigTech Companies. The APIs used are for sentiment analysis, using NLP. The results of these analyses are shown at the end, discussed, and a future framework proposed.

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INTRODUCTION

Which of the nine intelligences (Gardner, 2011) Newton used when the apple fell from the tree? What would have happened if Newton had used one different from the Logical-Mathematical—although he did it—when he started to think about gravity and his famous Laws? Would be society living in a different world.? Yes and no. Yes, it would be different. No, it wouldn't be fair to compare it, since it would be completely different. However, in the 21st Century we can find examples of how the world can be seen from a holistic use of intelligences. For example, grammar structure, or language structuring process, like the ones described by Bohm (2002, p. xiv)—using the rheomode, “a new mode of using the existing language”. Humanistic Management as the ones seen in radical, maverick-style businesses around the world, where, for example, ‘workers put their own salary’ (Hamel & Breen, 2010; von Kimakowitz, Pirson, Spitzeck, Dierksmeier and Amann, 2011; von Kimakowitz, Schirovsky, Largacha-Martínez and Dierksmeier, 2021). Education like the ‘Free Writers’ approach. Alternative approaches in neuroscience, like neuroplasticity (Doidge, 2007), epigenetics (Lipton, 2006), and quantum mechanics, and so forth.

Hence, what is the pattern here in these different domains or disciplines about how to understand being-in-the-world, knowledge, and learning? The patterns that arise from multiple intelligences, management, education, and medicine—other examples could be set here—is that trying to define what is humane and humanistic is a big challenge and has always been. This is not new. However, it is important to acknowledge that there is a symbiotic relationship between the context and the being that emerge from the interaction of that context. Hence, there is a co-creation not only between humans about the humanness they want to co-create, but there is also a co-creation between the goals that humans had when they created the social institutions—SI, the reality as how they are existing and operating today—the emerging structures within the social institutions, and the kind/type of human that it is emerging from within and from these interactions.

Humanizing technology—or a technology that push/drives beings into more humane ones—must take into account the three forces—SI's goals, SI's structures, emerging beings—plus the inner humans reality—their essence, in order to have a long-term analysis of any reality. Hence, business reality has to be thought or deconstructed in a new way. Peter Senge's thoughts about why we can never really solve our problems within organizations helps deconstruct traditional management. Senge (1994, p.11) argues that,

From a very early age, we are taught to break apart problems, to fragment the world. This apparently makes complex tasks and subjects more manageable, but we pay a hidden, enormous price. We can no longer see the consequences of our actions; we lose our intrinsic sense of connection to a larger whole. When we then try to “see the big picture”, we try to reassemble the fragments in our minds, to list and organize all the pieces. But, as physicist David Bohm says, the task is futile—similar to trying to reassemble the fragments of a broken mirror to see a true reflection. Thus, after a while we give up trying to see the whole altogether.

In a similar way, Wittgenstein puts it “Getting hold of the difficulty deep down is what is hard. Because it is grasped near the surface it simply remains the difficulty it was. It has to be pulled out by the roots; and that involves our beginning to think in a new way” (cited by Bourdieu & Wacquant, 1992, p.1). These ‘giving up’ and ‘superficial thinking’ are problems of our humanity, of our socialization, that explains also why we don't have a mindset for sustainability, much less to organizational sustainability. *Giving up* means a linear thinking. We need a holistic one, a non-Cartesian one. *Superficial thinking*,

not pulling out the roots, means identical thinking, emerging from comparing oneself with the norm. It is normal thinking. We need authentic thinking. We need a socialization that pulls out of our roots, our hearts and souls, our essence. We need existential, contemplative, deep thinking. We need a different kind of leadership in organizations and businesses. Socialization is, on average, not doing this. Hence, flourishing is a mediocre outcome, and this project wants to acknowledge this and provide some paths towards resilient organizations in the world. By doing this, organizations will guarantee they are suitably prepared for future crises, as this book wants to work on.

Quantum sociology and quantic humanism are approaches that can help us in these endeavour. These two are closely linked to Pierre Bourdieu's approach where he argues that the task of the social sciences is "To uncover the most profoundly buried structures of the various social worlds which constitute the social universe, as well as the 'mechanisms' which tend to ensure their reproduction of their transformation" (cited in Bourdieu & Wacquant (1992, p. 7). Buried structures resonates with pulling out the roots. Various social worlds are the different social silos and institutions that need to be merged, specially at the workplace. Analyzing the mechanisms, the self-reproductive social structures is similar to one of the three forces aforementioned.

The question for this chapter is: How technology doesn't get into this trap, how can AI be thought so it won't get trapped? And we have to be aware not only to avoid the trap, but also the so-called intrinsic dual essence of reality. As Bourdieu & Wacquant (1992, p. 10) puts it "Objectivism and subjectivism, mechanicalism and finalism, structural necessity and individual agency are false antinomies. Each term of these paired opposites reinforces the other; all collude in obfuscating the anthropological truth of human practice". In order to transcend these seemingly antagonistic paradigms, these couples or multi-dualities, Bourdieu argue that they have to be understood and experienced as moments that reconcile (Bourdieu & Wacquant, 1992, p. 11). Reconciling for this project means a holistic and quantic humanly supportive expected emerging reality.

This chapter wants to shed some light into how to humanize the use and interaction with technology at the workplace. So, the question ought to be posed with a different approach: How does this project is designed so workers can use it as a tool that will/would/could help change and transform their selves into more humane ones? This is one of the key purposes of this project. However, we have to realize that Western socialization does not value, as needed, self-exploration. This was clearly stated by Maturana & Varela when they argued that the "situation of knowing how we know is traditionally elusive for our Western culture. We are keyed to action and not to reflection". Action, logic, materialism, and a jungle-type capitalism can be traced back to the idea of measurement and comparison, in order to leave the Middle-Ages back and God-framework of explaining why things happen in certain way. This explains why Capitalism is not a sustainable one. By changing workplaces into authentic and humane organizations, we will be changing jungle-capitalism toward sustainable-capitalism.

Clearly this project cannot re-socialize humans, but the experience of human transformation made by current purpose-driven companies gives hope that this project goes beyond 'just' transforming companies (von Kimakowitz *et al.*, 2011; von Kimakowitz *et al.*, 2020). The milieu, the context, the 'environment' that purpose-driven and humanistically-managed companies create, re-socialize their workers and transform them into more humane beings (Hamel & Breen, 2010; von Kimakowitz *et al.*, 2011; von Kimakowitz *et al.*, 2020). This process of re-socialization is not easy, as Brazilian Semco show us (Semler, 1995), but it is possible—Ricardo Semler called 'deprogramming adults. And happens. That gives hope to this project.

To have human transformation, we have to think in the different spaces, fields, horizons that are part of this challenge. As Maturana & Varela (1998, pps. 27-25) puts it “language is our starting point”, and they later argue that “there is no discontinuity between what is social and what is human and their biological roots”, what they end up calling a “unbroken coincidence”. All these come together: language, socialization, the self, and our biological structures, and all have to take into account if “our being, our doing, and our knowing” is the platform of this project (Maturana & Varela, 1998, p. 25). A biological example—structural coupling—serves as a reality/proxy of what this project dream of happening in the workplace and in society-at-large. If the environment is humid for a myxomycete it becomes a motile, but if the environment is dry, it becomes an amoeba (Maturana & Varela, 1998, p. 77). Hence, what should be the structural coupling at the workplace using/internalizing technology in a humane manner? A purpose-driven humanistically-managed it is highly likely to be the environment needed, besides other being, doing, and knowing—like the family, the school, the government. If the environment is *traditionally managed*, workers become frustrated and try to solve all their problems at Twitter, but if the environment is *humane*, it becomes a more flourished being.

These ideas are setting the stage for the topic of actualization of potentialities. How technology actualizes us? What emerges after society started using touchscreens? What emerged when society use WhatsApp? What is being actualized: motile or amoeba; frustrated-demotivated-disengaged worker or flourished being? What environment is more present in workplaces: humid or dry; authoritarian—command & control or purposeful-authentic?

FRAMEWORK

Authenticity

This section needs to explain some elements and foundations of authenticity, so then can be connected to technology and artificial intelligence. Authentic beings have better connection with coworkers. Connection to what, is answered by Taylor and Lonergan as a transformation, as achieving self-transcendence, as redemption that “rests on inner conviction” (Braman, 2008, p. 99). It is through building a community of love “making real and great personal sacrifices” (Braman, 2008, p. 99), that though grace we can feel in a state of living an authentic life. So it cannot be defined, from the latin wording ‘give-an-end-to’ (de-fin-a), but it can be explored, inquired, probed, imagined, visioned. That is why Braman (2008, p. 99), argues that “authenticity for Lonergan and Taylor, then, is a way of living one’s life in a new dimension. It is not automatic”. Braman (2008, p. 5) acknowledges, though, that “the idea of authenticity is discounted by the post-structuralists, deconstructionists and philosophical postmodernists — Foucault, Derrida, Lyotard, Rorty —... [as a] myth of totalizing, harmonious, unitary self”, being Adorno one of the biggest critics. For Braman (2008, p 5), these critics want to replace that image/idea for one of a “fragmented, plural, centerless and irreconcilably split subjectivity”, which is in synergy from what is expected through this project. Thus, we accept the challenges that creates using the word uniqueness, wholeheartedness, genuine, and authenticity within this project. As Braman (2008, p. 27) comments “Taylor ... finds that in spite of the seeming narcissism and excessive self-centeredness that is often associated with authenticity, a proper understanding of this term does not by necessity lead to an aberrant form of egoism”. The challenge for Lonergan is that “The existential gap is the gap between what we are overtly, and what exists covertly in what we are” (Braman, 2008, p. 53). This split between the public

self and private self—Lonergan’s persona vs. ego—is dealt with at the foundational design of the SMEs’ AI-tool on the cloud for the project described in this chapter. Finally, “Transcendence and wholeness” are a vital drama for an authentic human existence, challenging Adorno’s critique of authenticity as an elitist and religious discourse (Braman, 2008, p. 49). The AI-project described in this chapter is not for the ‘chosen few’, is for those companies, founders, leaders, and workers that decide to make it happen.

Authentic human existence gives freedom, real freedom to people. How can we best use technology to create this space of freedom in organizations? Freedom, then, has several challenges. Here we are mentioning two. Non-authentic beings, One-Dimensional beings, don’t know their essence, so they can’t be truly free, since they are living dominated, submissive lives. And the other challenge is the inability to choose. Non-authentic beings are not really choosing. To choose something, you need two main elements. In an ideal free society, several options to choose should be available, like gender, religion, job, material things, and so forth. And the second element is that the person should have the knowledge and skills to understand the differences between the options available. One-Dimensional [Wo]Mans, non-authentic beings have blurred vision when understanding, and worst when education and 0-7 years socialization are so poor, reality is narrowed to the point of survival. That’s it. Marcuse (1991, p. 7) adds to this that “Under the rule of a repressive whole, liberty can be made into a powerful instrument of domination. The range of choice open to the individual is not the decisive factor in determining the degree of human freedom, but what can be chosen and what is chosen by the individual”. Consumerism, materialism, or the “spontaneous reproduction of superimposed needs by the individual does not establish autonomy” (Marcuse, 1991, p. 8). Non-authentic beings are not aware, or don’t want to be aware, that his needs are luxuries in the broad sense, so they are imposed by the system. As several thinkers have spoken out “richest is not the one who has the most but the one who needs the least”.

Again, Marcuse (1991, p. 10) argues that “The result is, not adjustment but mimesis: an immediate identification of the individual with his society and, through it, with the society as a whole”. Jung (1976, p. 103) instead of mimesis called it “imitation” since for him “Society is organized ... by the propensity to imitation, implying equally suggestibility, suggestion, and mental contagion”. Creative people, mavericks, are hardly suggested ones, others hardly superimposed needs on them, and rarely are submissive. All the societal ills. CEOs/Founders of purpose-driven and humanistically-managed companies are highly authentic (Hamel & Breen, 2010; von Kimakowitz *et al.*, 2011; von Kimakowitz *et al.*, 2020).

According to Jung (1976, p. 105), “Far too much of our common humanity has to be sacrificed in the interests of an ideal image into which one tries to mold oneself”. The person becomes non-authentic showing allegiance towards the “compromise between individual and society as to what a man should appear to be” (Jung, 1976, p. 106). This is very *dehumanizing*. People are not aware, or don’t want to be aware that they are being denigrated. That their dignity is being commercialized. Accordingly, Marcuse (1991, p. 9) argue that “people recognize themselves in their commodities; they find their soul in their automobile, hi-fi set, split-level home, kitchen equipment”. People found their identity in their touch-screens of smart phones. The AI-lead project described in this chapter cannot fall into this trap. As a chilling reality, Marcuse (1991, p. 9) put the finger on the scar by stating that “we are again confronted with one of the most vexing aspects of advanced industrial civilization: the rational character of its irrationality”. Thirty years later Ritzer (2002, p. 25) put it in a similar way when he argued that “people who try to be creative on the job are likely to get fired, because they are, from the point of view of the system, more likely to mess things up. That leads to one of the irrationalities of all this rationality: the system—a nonliving thing ... —has priority over living beings, over individual workers or consumers”. This project is highly aware of this reality. Ritzer (2002, p. 22) blatantly stated that “if the world

were less McDonaldized, people would be better able to live up to their human potential”. Efficiency, calculability, predictability, and control over people through nonhuman technology are the bedrocks of *McManagement* where “process of ‘de-skilling’ is continually taking place, whereby human skills are being taken away from workers and built into nonhuman technologies”. What Veblen labeled as trained incapacity. That cannot happen, never, with and within this AI-lead project.

D’Souza & Renner argue in their ‘Not Knowing’ (2014, p. 18) book “situations that are ambiguous or uncertain can make us feel incompetent, embarrassed and ashamed”. They interviewed several artists, academics, intellectuals, and practitioners to know their stories of success through not knowing, letting go, closing the eyes to see, and to be delighted in the unknown. All becomes the art of turning uncertainty into opportunity. All the interviewees “shared with great honesty and vulnerability” their stories (D’Souza & Renner, 2014, p. 19). Here authenticity is tied to *letting go*, to accepting *uncertainty*, and to the idea that facts are not the bricks of reality. Interestingly, they saw a pattern of vulnerability in their interviewees. Normally vulnerability is linked to weakness. However, recent research show that is the opposite (see Brown, 2005; Argyris, 2010; Collier, 2018). Hence, vulnerability becomes a highly relevant foundation of living an authentic life. It could be called ‘positive vulnerability’, close to Mihaly’s flow, or Maslow’s self-actualization.

Authenticity, freedom, uncertainty, and vulnerability were presented to legitimate the introduction of this chapter in order to have more resilient organizations. The challenge, as stated, is how to link these elements and potentiate them by technology, powered by AI-Artificial Intelligence. How can we use artificial intelligence to leverage purpose, authenticity, and a more purposeful workforce without falling into what has been called the ‘AI-traps’ (Marcus and Davis, 2019)? Why are these traps important? Because to better design the AI-project those traps must be filtered under the reality. In what other ‘traps’ technology can fall? Or is already there? This is a key question for this project, since the more ‘traps’ we know in advance the less likely that this AI-scaled project will fall in the future. This is what comes next in this chapter.

Avoiding AI-Traps

Where to look for those traps? A good place to start is Marcus & Davis (2019) “Rebooting AI. Building Artificial Intelligence, we can trust” book. They love AI, but they are deeply troubled with the path that mainstream developers already took. And it is not some malfunction of AI algorithms—AI is on the making, it is the narrow view of human complex reality, where algorithms “can’t be trusted with anything that has not been precisely anticipated by their programmers” (Marcus & Davis, 2019, p. 35). Examples of malfunctioning includes Facebook’s M, IBM’s Watson at the MD Anderson Cancer Center, Google’s Duplex, Microsoft’s Tay, Amazon’s recruitment system, Google ‘bombs’ & ‘Gorillas’, gender, race, and ethic biases, among many others (Marcus & Davis, 2019). Real life, broad intelligence, understanding, open-ended reality, uncertainty, outliers, BIG-data vis-a-vis knowledge, requires “rethinking the whole paradigm” of artificial intelligence, machine learning, and deep learning, since mainstream developers are using “Band-Aids when we need a brain transplant” (Marcus & Davis, 2019, p. 40 and p. 79). Within this reality—although we are not citing other sources—is it ethical and strategic to start a project that in the future will be escalated due to AI? That is a hard question. The more we avoid known traps, and design it using accumulated knowledge about humanness, the less likely we will have to regret starting this project, and the more we could help organizations become more resilient in times of crisis, as we are living today. We need to transcend what Marcus & Davis call ‘narrowAI’ and focus on a ‘flourish-

ingAI', one of the goals of this chapter. Let's review some traps to be prepared and knowledgeable, as much as possible.

There is an enormous gap between ambition and reality—the 'AI Chasm'—which have its roots in three traps/gaps: gullibility, illusory progress, and robustness (Marcus & Davis, 2019). The gullibility trap is when we attribute human-like characteristics to a technology since "the behavior of machines is often superficially similar to the behavior of humans" (Marcus & Davis, 2019, p. 40). This has also a hidden danger, not only the over attribution error, but the downgrading beingness of humans and society as a whole. There are two sides of this downgrading. If a human can interact with a machine and feel emotions, like empathy, and feel 'more human', that is a positive thing, like with a pet. However, when the life of humans in so-called developed societies is, on average, so simple and small, that any type of interaction with a machine makes him feel better, then we need to reboot socialization (Winograd & Flores, 1986; Dreyfus & Dreyfus, 1986; Turkle, 2010).

Proposals to reduce the gullibility trap:

1. Technology has to have a lot of human-computation, meaning a lot of human input and interaction to create the sincere feeling that they are contributing to the creation of the machine.
2. What emerges from using the machine must be something highly regarded by humans, in this case, humanistically managed enterprises where workers feel flourished, when the corporate culture is very uplifting.

The second trap, the illusory gap is "mistaking progress in AI on easy problems for progress on hard problems" (Marcus & Davis, 2019, p. 43). The overpromising of AI has been always part of its history. It tells us more about humans than of AI itself. The same happened with the DOTCOM bubble in 2002, Fukuyama's 'End of History' tale, Smith's invisible hand, and many others. When something becomes fashionable, people listen and follows, almost uncritically. Within the illusory gap is the danger of being uncritical, in a way, unauthentic or being normalized. One real danger is disappearance of jobs, which has been happening before delivering narrow AI, so it is real. For businessmen, AI means low costs, period. The only solution, long-term, is to avoid menial, dehumanizing jobs, at all. But that is another story. However, a big danger is the fire-fighting delusion. The illusion that by having human-like AI-machines, then all the firefighting in the workplace will disappear, since managers have hectic realities, they say, because of the nuances of humans (Mintzberg, 2011). It is small-vision socialization, traditional management, and simple worldview lives that traditional workplaces end up having little fires everywhere—like the TV drama. We need humanistic management practices escalated by AI.

Proposals to reduce the illusory trap:

1. Never overpromising. Always stating that we are really, far from AGI, so this is just a tool. Nothing else.
2. When a company voluntarily allows their social interactions to be anonymized and upload it in the cloud for strengthening the dataset, they will be accepting that this AI-tool is on the making, not perfect, and not trying to denigrate human development/flourishing in any form.
3. Highlighting that traditional management makes the emergence of demotivation and mediocre behavior more likely (Hamel & Breen, 2002). Hence, companies that uses the service that will provide this project must be aware of the need of be focus on transcending traditional management.

The third trap, robustness is ironically but intelligently put by Marcus & Davis (2019, p. 47) when stating that “Nobody will buy a home robot that carries their grandfather safely into bed four times out of five”. Society is blindly accepting the success in some areas of AI—like beating Kasparov or using drones to plant trees and reduce global warming—as a proxy for ethical and safe AI that has to deal with human dignity. What is the minimum expected by a society in terms of malfunctioning of a technology? Here it is not about corruption or non-inclusive mindsets—ugly and unnamed realities, which are hazards to human development, it is about when a drug can be safely put at the market, or an airplane, a car. When to draw the line for the minimal ethical standards in an escalated-AI service for businesses and workers? In research, for example, one can run a project if the outcomes could benefit a lot of humans, so the cost/benefit analysis is highly positive— “tolerating short-term risks in order to achieve long-term gains” (Marcus & Davies, 2019, p. 65). However, a lot of horrendous research and applied projects emerged from this cost/benefit transaction.

Proposals to reduce the robustness trap:

1. Invite companies, workers, and volunteers to review the dangers of parts of the system being designed, before being public, to review and help us define it is ethical or not to put it public;
2. Develop a mechanism to outweigh the benefits of parts of the service and the service as a whole;
3. Equate human dignity for living an authentic life—which is being developed below;
4. Define a mechanism to deeply know the portfolio of AI-apps in the market in terms of the hazards established in this project, so the best one can be selected.

Marcus & Davis (2019, pps. 91-103) highlight three main problems in deep learning: is greedy, opaque, and brittle. Greedy, huge amounts of data since “With smaller amounts of data, deep learning often performs poorly”. Opaque, outcomes that don’t make intuitive sense since “There is an unsolved mystery about why neural networks work as well as they do, and a lack of clarity about the exact circumstances in which they don’t”. Brittle, deep learning is extremely dependent on the first context it was conceived/programmed, since “errors 7 to 17 percent of the time”, like black people misinterpreted by a deep learning algorithm as gorillas Marcus & Davis (2019, pps. 91-103). They finalize with a clear message: “if those mistakes matter and we can’t understand why the system is making them, we have a problem”.

What is it more important is that “deep learning just ain’t that deep” (Marcus & Davis, 2019, p. 101). Just by learning the word ‘deep’, laypeople could end up thinking, coupled by the media showing great advances in AI, that AI will be able to replace human thinking, since ““Deep,” in that context, doesn’t mean that the system has learned anything particularly conceptually rich about the data that it has seen” (Marcus & Davis, 2019, p. 101). Marcus and Davis (2019, p. 102) feel comfortable since

University of Montreal professor Yoshua Bengio, one of the pioneers of deep learning, recently acknowledged that “deep [neural networks] tend to learn surface statistical regularities in the dataset rather than higher-level abstract concepts.” In an interview near the end of 2018, Geoff Hinton and Demis Hassabis, founder of DeepMind, similarly suggested that general artificial intelligence was nowhere close to being a reality.

The question they raised, and it must be discussed within this project is “So why has deep learning been so oversold, given all these problems?” (p. 104). Also “speech recognition and object recognition

are not intelligence; they are just slices of intelligence. For real intelligence you also need reasoning, language, and analogy, none of which is nearly so managed by current technology” (p. 105). “By this we don’t mean that deep learning systems can’t do things that appear intelligent, but we do mean that deep learning on its own lacks the flexibility and adaptive nature of real intelligence” (p. 108).

Having presented some of the AI-traps that any AI-project could fall in, the next section deals with another of the challenges of developing or using AI-tools in organizations, that is, the challenge of how to create algorithms to capture well the human reality so the value alignment is fulfilled. Value alignment deals with how to create AI-algorithms where their codes explain what is good and what is not-good. How to align the values of the organizations that are going to use this R&D AI-tool? Should we deduce or induce about human reality to achieve a good value alignment? Should be code bottom-up, or from below? That is a great challenge, and in this chapter some light is shed to this conundrum. That is the goal of the next section.

Approaches to AMAs - Artificial Moral Agents: Top-Down vis-a-vis Bottom-Up

Although in the short term this project it is not going to develop AI, it must have a stance toward the kind of algorithm and code-creation that was used in creating AI, what is sometimes referred as the ‘architecture’ of the software produced. It will raise questions that if within this project to humanize the use of AI at the workplace, we end up using an AI-tool that was developed using dehumanizing approaches and coding. As stated, the word ‘humanistic’ is tied to the emergence of non-biasing virtuous authenticity which is an unfinished, never-ending, and infinite process. Hence, there is impossible, in principle, to label something as humanistic or non-humanistic in a binarian way.

Regarding the AMA—Autonomous or Artificial Moral Agents, this project uses the approach developed by Wallace and Allen (2009). As a starting point, a very challenging one, it is important to highlight Wallace & Allen (2009, p. 177) argument where they conclude that “there is little evidence that moral decision making in humans follows any formal procedure”. Hence, the goal is not perfect algorithms—mechanistically speaking—but “how to take into account as much ethically relevant information as possible in the time available to select an action” (Wallace & Allen, 2009, p. 179). The result or proposal given by Wallace & Collin is the LIDA-Model, Stan Franklin’s Learning Intelligent Distribution Agent (LIDA). We are not stating here that LIDA is the model to follow. What interest us here is the six areas that Wallace & Allen espouse to analyze the architecture and operability of an AMA— Autonomous or Artificial Moral Agent. By analyzing those six elements, we can create for this project a ‘humanizing filtering’, so to speak. Before detailing the six elements, let’s review the analysis done by Wallace and Collin regarding how to teach robots right from wrong, or the value-alignment conundrum.

Anticipation, prediction, autonomy, and sensitivity are formal rules for the programmer of AMAs. Additionally, “a designer of AMAs could not simply choose inaction as a substitute for good action” (Wallace & Allen, 2009, p. 16). And within that action/inaction ethical challenge “systems that are blind to the relevant values that should guide decisions in uncertain conditions are a recipe for disaster” (Wallace & Allen, 2009, p. 22). And the filed gets even messier when we ask ourselves: But whose values? And to get things even more complicated—really? —AI-tools’ development is mainly done in white-male dominated spaces within the so-called developed Nations—or should we have called Big-Tech Companies as a proxy for Nations (Zuboff, 2019; O’Neil, 2016; Noble, 2018; Kat *et al.*, 2019). Value-alignment, in short, it is a mammoth task. By the way, the wording complicates the debate even before starting it, since the word align comes from 17th Century French “à ligne” ‘into line’. Apple’s Dictionary defines

align as “place or arrange (things) in a straight line” or “put (things) into correct or appropriate relative positions”. This is not what this project aims. The well-being of society will never emerge from putting all of us in the correct/appropriate straight line of social endeavours (Murphy, 2000). Thus, the ‘recipe for disaster’ is getting bigger. This project does not have an “answer” to this, but it do have a proposal, a strategy, a thought approach, that, in principle, will be less likely to be a human disaster. We deeply believe that the synergy between the wisdom of the crowd, machine learning, and quantic humanism, this could be developed. And we are clearly aware, as argued by Dreyfus & Dreyfus, that “wishful thinking has probably always complicated our relations with technology” (1986, p. xv).

From a holistic approach, levels don’t exist. Since everything is interconnected, in a quantum world everything is uncertain, and full description of an attribute is physically impossible. Words like evolution, maturation, development, stages are non-holistic, non-quantic in essence. Human beings are quantic. That is another challenge to AMAs. Besides ‘which values’, we also have to ask ‘which human’—within a holistic approach. A good proxy for that uncertain question is ‘functional illiteracy’. The result in developing countries is worrisome, so imagine in the ‘under-developed’ ones. And this is just one proxy, since we could have used: solitude, divorce rates, and bullying at schools, as some proxies of ‘human development’. But all will fall into the trap that flourishing goes into a straight line—alignment. We know that resilience, flow, and flourishing—to name just a few—are related more about context, opportunities, leadership, and social environment, what Thomas Szasz summarized as the ‘Myth of Mental Illness’—interchange mental with the other words.

It is very easy to create an AMA—Autonomous or Artificial Moral Agent—from a homo-erectus. Try with a *homo-sensibus*!

Within the homo-erectus, we have a lot of congregations of tech-people that believe AMAs are possible. And if that homo-erectus only uses one intelligence, the logical-rational one, the task becomes possible, like playing chess (Bostrom, 2014, pps.15-16) list of expert & super-human level at Game-Playing AI. But from *homo-sensibus* “computers as reasoning machines can’t match human intuition and expertise” since “human intelligence can never be replaced with machine intelligence simply because we are not ourselves ‘thinking machines’ in the sense in which that term is commonly understood” (Dreyfus & Dreyfus, 1986, pps. Xvii- xx; Turkle, 1984), and what makes us humans is our intuitive intelligence and holistic understanding (Dreyfus & Dreyfus, 1986, p. 109; Senge *et al.*, 2004). So which intelligence is being toolized within AI? Donald Knuth argues that AI has been successful in everything that requires thinking but what about what humans do ‘without thinking’ (Bostrom, 2014, p. 17). How are we going, for example, to mechanicalize spatial intelligence where the MIT-Multiple Intelligence Theory’s designer Gardner argues (2011, p. 183) that “it seems preferably to speak of spatial intelligence without linking it inextricably to any particular sensory modality” within the scientifically reality that spatial intelligence “emerges as an amalgam of abilities”. The capacity of common sense, intuition, finding patterns, and immaterial communication emerges from the “metaphoric ability to discern similarities across diverse domains [that] derives in many instances from a manifestation of spatial intelligence” (Gardner, 2011, p. 186). Think about the holographic paradigm (see Wilber, 1982) and Bohm’s implicate order, since “the human mind seems to have the remarkable ability to recognize whole scenes without decomposing them into features (Dreyfus & Dreyfus, 1986, p. 61). The following text by Bohm (2002, pps. 66-67; McTaggart, 2001) challenges even more the ‘which values’ + ‘which human’ + ‘which intelligence’ with:

Indeed, it is necessarily implied, in any statement, that the speaker can talk from intelligent perception, which is in turn capable of a truth that is not merely the result of a mechanism based on meaning or skills acquired in the past. So, we see that no one can avoid implying, by his mode of communication, that he accepts at least the possibility for that free, unconditioned perception that we have called intelligence. ... If intelligence is to be an unconditioned act of perception, its ground cannot be in structures such as cells, molecules, atoms, elementary particles, etc. ... So, we see that the ground of intelligence must be in the undetermined and unknown flux, that is also the ground of all definable forms of matter. Intelligence is this not deducible or explainable based on any branch of knowledge (e.g., physics or biology). ... One might then suggest that in intelligent perception, the brain and nervous system respond directly to an order in the universal and unknown flux that cannot be reduced to anything that could be defined in terms of knowable structures.

If it can't be reduced, then the framing problem arise again. For a moment, let's suppose that we are close to represent human reality. But there is another element to add to the 'Which values+human+intelligences' conundrum and that is language. The semiotic challenge: 'which meaning'? Representing our intelligent perception "is not just a problem of size and complexity, but a problem of what language to use to store the facts. Unless they can be stored in a totally explicit and context-free form, the computer cannot use them because the problem of commonsense understanding will reappear" (Dreyfus & Dreyfus, 1986, p. 79). As stated by Maturana & Varela (1998, p. 27) "Everything said is said by someone". A context-free AI is not a humanistic one. One solution is to have a huge dataset where almost all interactions are represented, and with deep learning we can create a functional AI. That is the belief. So far it has not been possible (Marcus and Davis, 2019), but the question is that it seems impossible, in principle. As stated by Bourdieu & Wacquant (1992, pps. 65-66) "One would need to invent a whole new language to try to convey at once the sensible and the intelligible, the percept and the concept ... that allows one to offer at once the scientific vision and the immediate intuition that his vision explains but also typically excludes".

Returning to Wallach and Allen, we must add more complexity to what stated before: *Anticipation, prediction, autonomy, and sensitivity* are formal rules for the programmer of AMAs. Within those formal rules—knowing the structural challenge of a holistic system—we must add the non-biasing questions of: which *values, human, intelligence, and language* are going to be formalized? And remember that "a tension exists between the fascination with technology and the anxiety it provokes" (Wallach & Allen, 2009, p. 37). Furthermore, as stated, technology is not value-free, and later developments is showing us increasing worrying value-driven technology by powerful nations and corporations (Crawford *et al.*, 2019), they are not "just tools" (Turkle, 2011, p. x). Then, what are we *becoming* due to technology, as Turkle (2011) puts it in her book titled in a very intelligent and speaking way 'Alone Together'. Her "concerns have grown" because of "the costs of life with simulation" since she found after more than 15 years of research that people "are insecure in our relationships and anxious about intimacy, we [they] look to technology for ways to be in relationships and protect ourselves from them at the same time" (Turkle, 2011, p. xii). Technology can be a bunker where we go when things go not as planned in our life. It ought to be the other way around. As stated by Turkle (2011, p. 1) "technology is seductive who what it offers meets our human vulnerabilities ... We'd rather text than talk". We are a developed but under-civilized society, and since the reality is that "people disappoint; robots will not" then some robotics activists think that is a solution—like David Levy, winner of the Loebner Prize (Turkle, 201, p. 10; Wallach & Allen, 2009, p. 49). What a tragedy! This project goal is to avoid Turkle's question

if “virtual intimacy degrades our experience” within the workplace environment and interiorization of soft skills, which are intimate in nature.

Value-driven technology has other dangers. One is that an AGI will be super-human, and then AGI-tools can help us overcome our imperfections as a human species. Even though we have shown repeatedly in the history of humanity that it is hard to have well-being in all the population on the earth, we still fighting for that. We have this ideal, which is good to never lose faith. However, reaching an ‘ideal’ is impossible. The challenge is flourishing, not becoming perfect. But ‘engineering activism’ claim that it will be possible. The message is that since we are not perfect, we can create or discover an external force ‘capable of freeing humanity from drudgery to pursue more humanistic activities’ (Wallach & Allen, 2009:38—paraphrasing Maggie Boden in her 1983 article). Either God could help us or an ideal that will be only achievable through technology, like the transhumanism values. Both forces are very important, divine, or technological, but the ontology of both ought to be a humble and responsible one. If not, when people start giving almighty powers to the external forces, then there is the danger that “it can become more difficult to question that [AMAs] advise” and approaching a “slippery slope toward the abandonment of moral responsibility by human decision makers” (Wallach & Allen, 2009:40). We should explore the idea of a Quantum God and a Flourishing-AI. We need to avoid any type of anthropomorphism that elevates AI-tools as disempowering and deceiving human forces.

Chess isn’t ethics, of course. (Wallach & Allen, 2009)

Intimacy, moral responsibility, and ethics are part of this project. Although we are not creating a robot, we don’t know how this project will unfold in the long-term. So, we need to give thought to ontological, epistemological, and practical questions. As Wallach & Allen (2009, p. 61) presents that “whenever the pursuit of one set of goals involves the possibility of harm to others, an ethical issue arises”. From a humanistic management perspective, the respect of the dignity of life is the antonym of harming someone. What is dignity? Dignity is totally intertwined to diversity. And true diversity is connected with authenticity. Hence, when dealing with not-harming others—the ethical side, we end up dealing with dignifying others, respecting their diversity, and highlighting their uniqueness. How to deal with that within a people-powered science, wisdom of the crowds? Dialogue is the only answer. The approach is not to set a universal human right, since for sure something could be missing. For example, think in the future where one million volunteers have supported this project. How can we be sure that we have not harm 1 out of those 999.999 people?

If we as humanity have unanswered questions, do we have to have all defined when dealing with AMAs? It sounds scary to say no to this question, since as Wallach & Allen (2019, p. 71) puts it “people expect and tolerate human moral failures. However, they might not tolerate such failures in their machines”. But since we need meta-axioms to fully understand the axioms within a close system, as Gödel demonstrated mathematically—see Emergence Theories (Johnson, 2001); and workplace social interaction emergences (Senge, 2010; Senge *et al.*, 2004); Brooks’ emergent properties (Wallach & Allen, 2019, p. 64), then we know that when Singularity will/would be real, robots will be able to create meta-axioms, and uncertainty will emerge too. The same happens with diversity. Dialogue is our only choice. We need to figure out the same meaning of ‘dialogue’ in terms of developing ethical algorithms. Is it ethical—or expected—that a computer system “represent emotions without having emotions” (Wallach & Allen, 2019, p. 69). Very important also is that ethics “is usually taken to concern what people should do, not what they do do” (Wallach & Allen, 2019, p. 71), which Alejandro Sanz de Santamaría puts it as it is

more important to be ethical than to know about ethics. We have had a lot of treatises about ethics, but society doesn't show that act ethically. It knows a lot about ethics but doesn't practice it. Society doesn't walk the talk about ethics, so shouldn't we improve this first, instead of thinking of a super humane machine ethics robot? But technological development won't be stopped because of this, so it is urgent that we think about this. As stated by Wallach & Allen (2019, p. 76)

Any claim that ethics can be reduced to a science would at best be naive. Nevertheless, we believe that the task of enhancing the moral capabilities of autonomous software agents will force scientists and engineers to break down moral decision making into its component parts, recognize what kinds of decisions can and cannot be codified and managed by essentially mechanical systems, and learn how to design cognitive and affective systems capable of managing ambiguity and conflicting perspectives.

Although this is a good path, it starts from a linear approach, typical of the traditional scientific method. However, as has been stated here, holistic approaches create emergent properties not findable in the first analysis of 'the parts' of the system. Morality, ethics, and intimacy emerge from a holistic, non-linear, quantum view and understanding of the contextual reality. Here lies one of the greatest challenges of AMAs and of humanizing AI.

When this project will analyze and scrutinize the alternatives of free on-the-shelf AI-tools, we would need to value their approaches in how they develop those tools in terms of mores, ethics, and intimacy. They used top-down approaches or bottom-up. We believe that bottom-up approaches are much better in dealing with diversity, which is a pillar in this project. However, top-down approaches, like Human Rights, and the new human rights (Noble, 2018) approaches serve as a guiding force, as a lighthouse.

With everything presented about technology and AI so far, the chapter's next section is about describing FlourishingAI, a project that is in a research and development stage. FlourishingAI has been designed bottom-up mainly, and with a structure that will avoid the AI-Traps mentioned. As presented, FlourishingAI is designed to help organizations be more resilient and to have more innovation in management. The project is its second stage, which will be presented in the next section of this chapter. Within that stage, some prototyping was done with students of the MBA in Human Resources at one University in Colombia and in some SMEs companies in Colombia.

Flourishing AI: The Project that was Prototyped into the Human Talent MBA

There is a great potential for innovation in SMEs in Bogotá- Colombia. However, this potential remains just that, potential, with very little actualization. Several aspects influence this. As mentioned in the technical document, low appropriation of technology, problems with cash flow and an inauspicious organizational culture are three of the elements that hinder the scaling up of SMEs in Bogotá. This project aims to provide concrete help in these three causes, so that there is a higher rate of business innovation and competitiveness.

Based on this studied reality is that FlourishingAI is created in 2017, a service for companies to strengthen their organizational culture, thanks to an improvement in managerial skills, specifically soft skills (i.e., emotional intelligence, listening skills, teamwork, inspiration, commitment, motivation). All this thanks to technology. FlourishingAI was designed with three clear strategic guidelines:

1. That it should be a low-cost service, to break the disarticulation between technology and SMEs (who respond that they do not have the cash flow to invest in technology).
 - a. Service deployed virtually, thanks to technology; b) On-site consulting service, that is, during the application of the 'Situational Analysis', which drastically reduces the number of consultant-hours per company. It is only during the interaction with the consultant that this cost is generated, since the tool allows the consultant to write her recommendations in parallel during the micro-diagnoses (this has already been technically proven in the prototypes made, c) Empowering it with artificial intelligence, specifically with semantic analysis of sentences using NLP-natural language processing. By being able to use NLP to qualitatively analyze short conversations of Colombian workers, it is possible to turn a bot into a virtual assistant for individual and collective reflection, a fundamental element of this service. Similarly, analyzing large texts of successful global business cases using ML-machine learning (i.e., Watson-IBM Discovery), helps us to obtain organizational typologies, which will be used to enhance business diagnostics. All this at a very low cost. And the potential of using AI is very large.
2. That it is a service that in a short time can return a high value to companies, measured as: business micro-diagnoses, immediate action plans, experiential training to acquire key competencies for management and leadership.
 - a. FlourishingAI achieves this because after evaluating many publics, private and even its own tools, it decided to use the 'Left Column', created by Chris Argyris and Donald Schön, considered global management gurus. Argyris, as stated in the technical document, applied the Left Column to more than 10,000 executives in the Western world for more than 30 years, fully validating its use. Dr. Largacha, Director of this project, made innovations to the Argyris social methodology and has been validating it for three years in Colombian companies (approximately 50). The results are very positive. They moved from the 'Left Column' to 'Situation Analysis', which is the methodology used by this service. Applying a micro-diagnosis using Largacha's methodology takes between 30 and 120 minutes. Experience shows that the first time it takes longer, but as the necessary technological and organizational knowledge is appropriated, the time decreases. Achieving an organizational micro-diagnosis in less than 2 hours and that the return in value for SMEs in Bogota is so great is a strategic pillar of this service (something we have already tested in our organizational laboratory, as we will see below).
3. That it is a service that manages to reduce the defensive routines of the companies' managers. This is, according to the research of several consultants such as Argyris, Senge, Collins, and the expert in SMEs in Colombia, Dr. Rafael Perez-Urbe (as mentioned in the technical document), one of the main reasons for the lack of change, adaptability, and innovation in companies. When managers cling to a paradigm, they do not want to change and do not see the opportunities. Examples such as Blackberry and Kodak abound, and the reality in Colombian SMEs is no exception (see MMOM – Model of modernization for organizational management-) (López, Ocampo & Pérez –Urbe, 2013). That is why many organizational consultancies fail, because they do not manage to dismantle outdated mental models. This service, by choosing the social methodology of 'Situational Analysis' achieves, in a very short time and at low cost, that the beliefs of managers and workers 'come to the surface', and from there leverage the change (see at the end of this document attached letters from three Colombian SMEs that during the first half of 2021 received the services of FlourishingAI).

METHODOLOGY

The P.I. of FlourishingAI has been interested in the use of the ‘Left Column’ for several years, mainly because, according to Peter Senge, unlocking mental models is the most powerful way to achieve world-class management. Senge presents in his book ‘The Fifth Discipline in Practice’ the social methodology of the ‘Left Column’. Therefore in 2014 the P.I. in a consultancy he conducted on Leadership & HSE (Safety) to 50 senior executives of the multinational ‘Energéticos’ in Colombia, used the ‘Left Column’ in a 2-hour session. The results were positive, at which point he begins to investigate more about its potential.

From 2018 to date, as part of FlourishingAI, the P.I. begins to conduct the first pilots of the ‘Left Column’ in “Bogotanos” workers, within the Organizational Learning and Knowledge Management module that he dictates in the Master Programs of Human Talent in Universidad Santo Tomás in Bogota. The research he conducted in his organizational laboratory sought to confirm two of the three hypotheses (strategic guidelines) proposed: low time and high benefit/cost of the social methodology. After 2 years, in an experimental and exploratory way, he achieved positive results. Of the 30 workers who participated (2018-2019), 100% consider that the ‘Left Column’ generates positive diagnoses of the situation analyzed, and of this convenience sample, 85% consider that it should be used periodically in companies.

At this time the think-and-action tank Quantic Humanism and Areandina joined forces to advance the applied research project, sending in 2019 to MinCiencias-Fulbright a proposal entitled ‘Organizational Flourishing and Artificial Intelligence’. In February 2020 they are informed that the P.I. has been selected as a Fellow for a post-doctoral stay in the United States, thanks to the support of the Fulbright Commission and the Colombian Ministry of Science. Thanks to the support of Dr. John W. Murphy of the University of Miami, the project is sent. Then they get the support of Florida International University, University of Kentucky, and University of Illinois at Chicago. The support was to continue with the applied research in progress, with the following objectives:

1. Apply the innovations designed in the organizational laboratory to move from the ‘Left Column’ to the ‘Situational Analysis’.
2. To obtain three Colombian companies willing to carry out Situational Analysis in groups of workers. Here the aim was to apply the methodology to groups of workers, since up to now the prototypes had been applied to Colombian workers from different companies.
3. To get free DEMOS on the web from companies that sold AI-NLP services, natural language processing--to analyze the micro-conversations of the 3 companies, as well as to apply ‘sentiment analysis’ to those sentences. After a weighted assessment of what they offered, four companies were chosen. Links to the Demos are attached:
 - a. Azure (Microsoft): <https://aidemos.microsoft.com/text-analytics>
 - b. Watson (IBM) <https://www.ibm.com/demos/live/natural-language-understanding/self-service/home>
 - c. Comprehend (AWS-Amazon): <https://ai-service-demos.go-aws.com/comprehend>
 - d. Google Cloud (Google): <https://cloud.google.com/natural-language?hl=es>
 - e. During the postdoctoral stay, further research on web services was conducted, finding two companies. Meetings were held with both to learn more about their services. One of them (expert.ai, formerly called cogito) offers only large text analysis, so it was not useful for this project. The two studied were:

- i. <https://komprehend.io> (the selected one, formerly ParallelDots, from India).
 - ii. <https://www.expert.ai>
4. Design of the UI-User Interface, to have in June 2021 the initial outline of the functionalities of the web-app platform to be developed in the future (the reason for our participation in this Call). In the annex you can see the design, endorsed by Computer Science experts Christine Lisetti (FIU) and Geoff Sutclif (UM).
5. To obtain a network of North American entrepreneurs who could validate the service, from a strategic perspective. The five entrepreneurs gave an endorsement of FLourishingAI's qualitative social methodology at a meeting held in April 2021 in San Francisco. They are Maya Zukeremmann (Goddess of Operations); John Palmer (Aerospace); Jonathan Tavss (Business Reengineering); Manuel Manga (Evolutionary Leadership) and Peter K. Yap (Venture Capital).
6. Design the elements of the curriculum to train the future organizational consultants that would be part of the third phase of this project. This is a fundamental element, since the humanistic-social focus of this project cannot be lost, then the most advanced philosophical currents (i.e., Gadamer, Maruleu-Ponty; Dussel; Fals-Borda) were reviewed in terms of human dialogue, to be applied to the project, and to ensure that the consultants have the knowledge to not deviate from what was researched.

RESULTS AND DISCUSSION

All the objectives were met, exceeding the expectations we had for the project. The results of all this applied research are very satisfactory. Since 2018 we can summarize the technical, technological, and operational advances in the following figures and graphs.

As of June 2021, 74 employees from Colombian companies and 1 from a North American company have participated in our 'Situational Analysis'. The graph shows the dates on which these measurements of our organizational laboratory were carried out.

On the other hand, during the first semester of 2021, the validation of the selected technologies was carried out, using the human-machine comparison methodology, to know the correlation between the human evaluations with those of the algorithms. A total of 460 semantic analyses (APIs) were run using NLP from the five vendors, for a total of 78 sentences analyzed. As the database is in Spanish, some were run in Spanish and then translated into English (using the free service of DeepL). The following graph shows the timing of these technological analyses:

Next is the summary of the results of all the sentence bumps analyzed using artificial intelligence (algorithms), compared to the human analysis performed by the FLourishingAI's project P.I. As you can see, for a first time, the results are more than satisfactory.

It should be clarified that Azure's results are a bit misleading, since they do not specifically state that their AI services handle multiple languages. When analyzing the English-only subsamples, the results for Azure are within the average results obtained: 45-60%. In some sub-samples 8% and in others 92% results were achieved for some of the five selected sub-samples. As we only had the analysis of one human, we must continue prototyping and testing, which is part of the activities for the next 2 years. It is interesting to note that the sentiment analysis performed shows 14 more negative than positive human

analyses (24 vs. 38). This is fully in line with theory and practice, since people think ‘negative’ sentences 48% of the time, while they say negative sentences 30% of the time.

Figure 1. Analysis of Phrases (DEMOS)

Source: Own elaboration

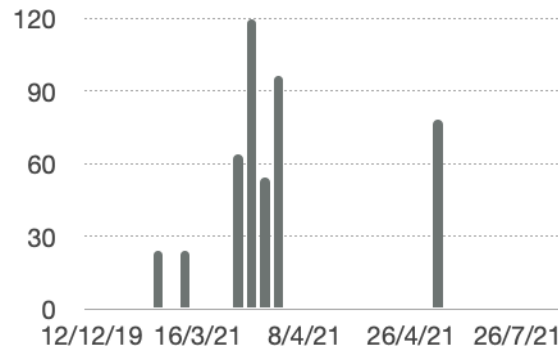


Table 1. Grand total

Total Phrases	DEMO'S ANALYSIS				P.I.'s ANALYSIS		
	AZU	WAT	AWS	GOO	+	n/m	-
78	25	37	43	49	24	14	38
	32%	47%	55%	63%			

Source: Own Elaboration

It is from this reality that our organizational laboratory is optimistic of future developments and applications in the SMEs of Bogota, since ‘bringing to the surface’ these realities helps in many fronts of the companies, as can be seen in the letters of the 3 companies intervened this first semester. If required, we can show the log of our organizational laboratory or present anonymously the results of the 78 runs of the NLP APIs.

Finally, during the 8 Situation Analyses conducted to the three selected companies this semester, 12 diagnostic sessions and improvement plans were carried out. The results exceeded our expectations. It can be said experimentally that another of the hypotheses (strategic guidelines) is being fulfilled, in that in a short time it was possible to study, diagnose and give recommendations for improvement to our ‘clients’ (the three companies participated voluntarily, and their workers digitally signed the informed consent). Only our principal investigator has access to the database.

In the previous sections of this document, you can see the advantages of this project. To highlight them even more, it can be said that it has advantages:

- **Economic:** SMEs in Bogota, for some for the first time, will have access, thanks to its low cost, to senior consultants. The low cost at which it was designed and validated means that expert knowledge can reach the SMEs of Bogota.

- Technological: SMEs in Bogota will be able to appropriate cutting-edge technologies, such as artificial intelligence, thanks to the humanistic design to bring these technologies in a friendly way, and thus break the ‘veil’ of impossibility that surrounds many SMEs. The future of this project is promising in this aspect because the growth of this future spin-off would mean to impact many SMEs not only in Bogota, but in Colombia. Being able to develop Colombian APIs with open-source software is something necessary for the Bogota innovation ecosystem.
- Cultural: this is not only a Colombian challenge, but a global one. The Corporate Culture of the companies is a conditioning factor that only 1 person out of 10 is really committed to their work, with all the negative effects that this drags in the 9 not committed, on issues such as health and welfare. It is important to note that FlourishingAI seeks to transform the organizational culture of SMEs in Bogota into one that is focused on a higher purpose and where workers can flourish. This, as indicated by many studies cited in the technical document, has a positive spillover effect on the family and society in terms of mental health and social well-being. For this, the service is required to be economical, since the companies will have to make several ‘Situational Analyses’ and use other tools and methodologies of the Platform so that, after several months, they can achieve the transformation that we want so much with this technology-based service.
- Cultural: that the learning of new technological competencies in the workers of the SMEs of Bogota will increase. This is what we want. As an example: one of the workers of one of the companies in this semester’s sample, was riding the Transmilenio using the tool in the cloud, while we developed the 2-hour meeting. She was able to do it without any problems, with a 15-minute training. When we have the web-app platform it will be much easier still. The skills and knowledge will increase with this service once many SMEs in Bogota use it. Here is the challenge.
- Social: defensive routines are not a ‘virus’ that affects only companies. The realities we see on Twitter every day are depressing and sad. Human frustration spills over into social networks. While we can’t say that this service will fix it, the quotes from the white paper show us that the ripple effects of companies practicing humanistic management are enormous. As documented by Ricardo Semler from his company Semco in Brazil (quote in the white paper), after a few years of practicing this type of management, the wife of an operator arrived, very worried, asking what they were doing to her husband “he doesn’t hit me anymore, and he already wants to be with my children on the weekend”. Inspiring. This is our higher purpose at FlourishingAI, that cases like these are repeated, thanks to augmented intelligence.

CONCLUSION

In this document there has been a presentation that clearly shows the importance of this project, and the development so far of the project. First, it was presented the need to make a robust study of how authenticity and purpose can be achieved using technology, specifically, artificial intelligence.

Then, a clarification of how FlourishingAI was going to avoid the non-human AI traps. The list was an important one, but with the strategies presented, the reader can reflect on the relevance of them, and approach them in a future project. In addition, a value proposition was presented related with AMAs and how to analyze it, either bottom-up, or top-down. This is a very important aspect to be considered.

FlourishingAI was design. As presented, in the last two years several prototypes have been analyzed using the ‘Situational Analysis’ methodology. The results were presented, not only related with workers of Colombian companies, but also with five demos of some of the best AI-companies, offering sentiment analysis.

We can conclude that this is an important project for companies, and that it must be supported by the government so more companies would be able to structure more robust corporate cultures and organizational climates in their workspaces. Also, they will be able to improve their leadership styles.

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Chapter 4

Exploring Challenges and Opportunities for the Sustainability of Indian Information Technology

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ABSTRACT

The hallmark of the Indian growth story since the 1980s has been the information technology (IT) industry. This industry has relied heavily on global markets and built deep international ties by co-location with clients, enabled by international travel and temporary on-site migration, acting as a key mechanism in developing “cognitive proximity.” However, the COVID-19 pandemic is expected to make international travel and migration costly and restrictive in the near future. While this paradigm shift creates significant barriers for IT firms to maintain cognitive proximity that could adversely influence global competitiveness, it also provides opportunities to innovate and pursue new goals. IT firms now need to review the cloud providers’ performance and design fresh strategies to ensure and enhance the sustainability of the IT industry. Hence, adopting an exploratory approach with a systematic literature review, this chapter will explore and deliberate on the post-pandemic challenges and opportunities to enhance the sustainability of the information technology industry in the Indian context.

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INTRODUCTION

The coronavirus crisis has created a profound shift in how people interact and economies function. Policy mandates and fears of becoming infected or infecting others have impelled populations to shelter at home, socially distance and otherwise reduce direct, in-person interactions with others. By enabling people to conduct many regular activities remotely, including working, learning, shopping and receiving medical services, technology has allowed the continuation of some semblance of a normal lifestyle in this new environment (Baporikar, 2021). Within this context, the IT sector has provided the tools and resources required to support these remote activities, as well as to address the pandemic more directly through efforts such as supporting contact tracing and providing high-performance computing resources for COVID-19-related research. Digital economy is estimated to reach Rs. 69, 89,000 crores (US\$ 1 trillion) by 2025. The domestic revenue of the IT industry was estimated at US\$ 44 billion and export revenue was estimated at US\$ 147 billion in FY20. Total number of employees grew to 1.02 million cumulatively for four Indian IT majors (including TCS, Infosys, Wipro, and HCL Tech) as on December 31, 2019. Indian IT industry employed 205,000 new hires, up from the 185,000 jobs added in FY19 and had 884,000 digitally skilled talents in 2019 (*Media Reports, PIB, DPIIT, 2020-21*).

COVID-19 has generated unprecedented exigency response from organizations and governments. Emergency response readiness has been stretched to limits. Indian technology industry has mobilized exemplary resources to ensure continued business for critical client services world-wide. Yet, the event is unfathomable in scale and impact with the IT-BPM industry's revenue was estimated at around US\$ 191 billion in FY20, growing at 7.7% y-o-y basis. It is estimated to reach US\$ 350 billion by 2025. Moreover, revenue from the digital segment is expected to form 38% of the total industry revenue by 2025. The one thing that stands out among all the challenges and learnings from this health crisis is that technology can empower human race, grappling with vulnerabilities in various ways. Owing to the rising curve of pandemic, several countries across globe resorted to lockdowns. These were aimed at confining billions of citizens to their homes, resulting to work from home the new normal, and seizing businesses to ensure safety. Consequently, the global economy is expected to shrink by over 3% in 2020 – the steepest slowdown since the Great Depression of the 1930s, according to International Monetary Fund (IMF). While a recent report (pre-Covid) from Nasscom revealed that the IT sector in India will grow 7.7% this fiscal, another report (during Covid) from Gartner revealed that India's nearly \$200 billion IT & ITeS services industry will witness a fall of 8% in 2020.

Globally, the IT industry shifted towards high gear to accommodate the transition and was forced to rethink strategies. While the scar will take time to heal, IT industry is more poised to take the lead and ensure that going back to business is more secure. As the recovery takes shape, there will be important shifts in the make of India's economy and functioning to usher in a better and sustainable future (NASSCOM-Quarterly Industry Review - March 2021). Hence adopting an exploratory approach with systematic literature review this paper delves into the post-Covid challenges and opportunities for information technology industry in Indian context. In particular the focus is on impact of the pandemic on the technology industry, and its response to this shock, by addressing three elements: accelerated digital transformation, increased importance of technology in the economy and society, and prevalence of inequalities in access to and the use of technology.

LITERATURE REVIEW

IT sector in India has assumed critical part in laying India on the all-inclusive guide. The IT sector assumed a noteworthy part in changing India's picture from an ease back moving economy to a place where there is inventive business visionaries (Bargade & Baporikar, 2015a). IT sector is worldwide player in giving world class innovation, arrangements and business administration's (Baporikar, 2012). India is transformed to a knowledge based economy from a rural and agriculture-based economy with the help of IT sector. It has become possible to access information at gigabit speeds because of Information technology. It has had colossal effect on the lives of a large number of individuals who are poor and living in rustic region. IT industry is one of the best sources for the people who have good communication and skill to value ads. IT sector has ascended to wind up plainly the greatest business generator with number of work openings (Baporikar, 2016a). Web has rolled out progressive improvements with potential outcomes of e-government measures like web based business, e-instruction, e-farming, and so forth. Today, regardless of whether it's documenting Income Tax returns or applying for travel papers on the web or aviation routes e-ticketing, it simply needs few ticks of the mouse. India's IT potential is on an enduring stroll towards worldwide intensity, enhancing protection capacities and getting together vitality and natural difficulties among others. IT-ITES part in India has a key concentrate on expanding innovation reception and growing new conveyance stages (Baporikar, 2014a). This sector combines together to contribute to service industries like IT trade, Education, Financial services, Media, Modern businesses are not possible without help of IT which has significant impact on the operations of enterprises and it is claimed to be essential forth survival and growth of economies in general. The opportunities in the IT administrations and ITES part can be grouped among the accompanying general classes: IT administrations, R&D Services and Software Products, Customer Interaction Services like BPO, KPO, Transaction preparing (Data section/change, Rule set handling, Problem illuminating), Content Development, Knowledge Services (Non-IT) and Engineering Design. Numerous opportunities for vital utilization of data innovation exist today (Baporikar, 2014b). More advances are always developing as lower cost advances giving noteworthy new abilities and they are progressively being seized upon at focused weights develop. It can be utilized to help undertaking frameworks and e-business applications too. Business experts should know about the accessibility of new advancements and ready to assess the money saving advantage and handiness of each (Baporikar & Baragde, 2021, 2017).

The COVID-19 pandemic has severely disrupted economic activity, with the global gross domestic product (GDP) expected to shrink by over 3% in 2020, according to the International Monetary Fund (IMF, 2020). If the estimate is realized, it will be the steepest slowdown since the Great Depression of the 1930s and much worse than the 2008–09 global financial crisis. Restrictions on international travel, strict social distancing norms and ceasing of industrial activity can have a fatal impact on sectors like travel, tourism, oil, metals and restaurants, among others. Firms in several other sectors will have to rejig their business processes and practices to survive and thrive in the post-COVID-19 (IMF, 2020). Defining the future of work enterprises will focus on engaging people with the right amalgamation of expertise and experience to achieve their goals, while enabling new ways of working and enhancing virtual work support systems (Baporikar, 2020b; 2020c). Not only this, virtual hiring of IT talents will become the new norm and working from home will become a part of work culture. Moreover, enterprises will become more resilient owing to the fully distributed nature of the WFH model – it is inherently less risky and well suited for business continuity and agility, and employees will have more flexibility over their schedules (Saxena, 2020). In coming future for efficient communication and collaboration, invest-

ments will shift from real estate to newer technologies that will make remote working more functional, productive, and encrypted.

Cloud and data will sit at the heart of digital transformation COVID-19 crisis is spurring digital transformation it is now top of mind business priorities for every CIO. Corporates will continue to embrace digital transformation, where cloud adoption and data will see an up going graph. Every organization has managed to respond and sustain during the pandemic thanks to the economies of hybrid infrastructure and data. According to a recent IDC survey, 64% of Indian organizations are expected to increase demand for cloud computing while 56% for cloud software, to support the new normal (IDC, June 2020). Going forward, corporates will take a more pragmatic approach in order to continue their business efficiently and effectively. Ensuring security post COVID-19 era, the new reality is going to be geographically dispersed with multiple devices at workplace. Hence, focus on data security would be essential for enterprises to invest in technologies and ensure data and information is not compromised. According to Data Security Council of India (DSCI), Indian cyber security services industry will grow up to \$7.6 billion in 2022. In coming days and months, cyber security will go mainstream, where organizations and individuals will protect what matters most that is critical data to refrain from financial setbacks. Hence there will be a dire need to identify critical success factors in IT strategic planning (Baporikar, 2013) and adopt a holistic framework to ensure that companies have effective information systems strategy (Baporikar, 2015).

Digital education and training/up skilling will come to the forefront with social distancing being prevalent now; many corporates have considered Work-From-Home or remote working policies for employees. This will further boost the chance for employees to up skill and reskill themselves. While online learning is already a norm now, post COVID-19 era will continue to see a surge in up skilling and corporate trainings. According to a recent LinkedIn survey, 63% of Indian professionals consider up skilling as a top priority in these unprecedented times schedules (Saxena, 2020). Employees will get a better chance of developing and experimenting with various methods to prompt new online strategies (Baporikar, 2019). Going forward, companies will have to innovate and craft talent strategies that will develop employees' critical digital and cognitive capabilities, social and emotional skills, and adaptability and resilience (Baporikar 2018; 2017). Companies will invest more on learning budgets and commit to deskilling and re-skilling with lifelong learning approach to prepare and strengthen for future disruptions (Baporikar, 2016dc). From the rise of e-commerce to the increased use of video chat and connection via online platforms to the automation of different types of work, and appropriate business process management techniques a global digital transformation has been underway for many years (Baporikar, 2016c). With the onset of the pandemic in early 2020, however, requirements to socially distance and shelter at home have served as catalysts to accelerate this process. Table 1 below gives the market size of IT industry in India

Table 1. Market size of IT industry in India (US\$ billion)

Year/Descriptions	Exports	Domestic	Total
2016-17	108	35	143
2017-18	117	7	154
2018-19	126	41	167
2019-20	136	41	177
2020(Estimated)	147	44	191

Source: NASSCOM, Gartner, News Article

IT and BPM industry revenue was estimated at around US\$ 191 billion in FY20 at 7.7% growth year-of-year. In FY20, the sector added 205,000 jobs, up from 185,000 jobs added in FY19. The domestic revenue[^] of the IT industry is estimated at US\$ 44 billion and export revenue is estimated at US\$ 147 billion in FY20. The market size of India's IT & BPM sector is expected to grow to US\$ 350 billion by 2025 and BPM is expected to account for US\$ 50-55 billion out of the total revenue. Spending on information technology in India is expected to reach US\$ 144 billion in 2023. Outsourcing of large technology contracts by clients is expected to accelerate the growth of the industry in FY20. The cloud market in India is expected to grow three-fold to US\$ 7.1 billion by 2022 with the help of growing adoption of Big Data, analytics, artificial intelligence and Internet of Things (IoT) according to Cloud Next Wave of Growth in India report. India's digital economy is estimated to reach US\$ 1 trillion by 2025. Artificial Intelligence (AI) is expected to boost India's annual growth rate by 1.3% by 2035. A substantial increase in AI by Indian firms can result in a 2.5% increase in India's Gross Domestic Product (GDP) in the immediate term (NITI Aayog Annual Report 2020–21). Indian IT's core competencies and strengths have attracted significant investment from major countries (Baragde & Baporikar, 2015b). The computer software and hardware sector in India attracted cumulative foreign direct investment (FDI) inflow worth US\$ 45.97 billion between April 2000 and June 2020. Leading Indian IT firms like Infosys, Wipro, TCS and Tech Mahindra are diversifying their offerings and showcasing leading ideas in blockchain and artificial intelligence to clients using innovation hubs and research and development centers to create differentiated offerings (Baragde & Baporikar, 2017).

DISCUSSION

The COVID-19 outbreak has led to revised growth forecasts for the global economy. Every aspect of our lives has been affected by the outbreak. Its impact on economic activity is extremely broad: from dramatically diminished consumer discretionary spending to a freeze on business activities including capital budgets, hiring, and a reduction in everything but essential operational expenses. Even so, it is clear that under the current conditions some businesses may become more critical to our lives and could face an increase in demand, such as in the case of the information and communication technology (ICT) industry (Baporikar, 2021; 2020a). During the global pandemic, digital technologies have become a critical enabler of connectivity facilitating the continuity of our regular lives and connecting people more than ever before. As cities and countries have been asking the population to stay at home, more people has turned to their computers and smartphones as a lifeline and tools to substitute their in-person activities online. Some of the habits may continue in the "new normal" or at least until a long-term solution to the current challenges, such as a vaccine, is found. Hence, the need to access a reliable digital infrastructure has become increasingly important, and certain aspects of ICTs are critical in a period of isolation, such as increased ICT opportunities from telework, telemedicine, food delivery and logistics, online and contactless payments, remote learning and entertainment. In line with this, the International Telecommunication Union (ITU) gathered leading ICT economic experts to exchange views on the latest research and analysis on the economic impact of COVID-19 on digital infrastructure; and the contribution of the said infrastructure to building social and economic resilience in the context of the pandemic.

The impact on the digital economy expected, the economic recession has and will continue to exert an impact on the performance of industries comprising the digital economy. For the purposes of this analysis, we define the digital economy as composed of the firms providing digital goods and services,

either for final or intermediate consumption (Ahmad, Nadim, and Ribarsky, 2017). The questions raised in the roundtable focused on issues of future financial performance and the consequent effect on capital spending, shedding some light on the differences between advanced and developing economies. Table 2 gives technology sub-sectors vs. broad market year-to-date (YTD) returns.

Table 2. Technology sub-sectors vs. broad market – YTD Returns as on 30th June, 2020

Technology Sub-sectors	Broad Market – YTD Returns
Software	24.1%
Technology Hardware, Storage, & Peripherals	17.5%
Semiconductors & Semiconductors Equipment	7.1%
IT Services	1.3%
S&P 500	4.8%
Communications Equipment	4.5%
Electronics Equipment, Instruments, & Components	11.7%

Source: S&P Dow Jones Indices

Software industries are looking at investing in cloud, workflow, and management applications, with a surge in offices shifting to remote working. IT industries offering remote connectivity technologies are already witnessing an increase in demand. Hardware industries could see major demand from enterprises that require a large number of laptops and mobility devices to support employees working from home. IT services companies are experiencing pricing pressure and revenue losses due to lockdowns globally. Due to COVID-19 induced high uncertainty, several firms, including IBM, Infosys and Wipro have not provided future guidance on revenues. Electronic equipment industry was severely affected due to supply chain disruptions caused by factory closures in China. IT industries are taking efforts to diversify supply channels to newer locations to reduce dependence and add resilience. In May 2020, TSMC, a Taiwanese chip maker that manufactures Apple's A-series chips, announced plans to build a \$12 billion fabrication plant in Arizona.

The COVID-19 crisis has created a profound shift in how people interact and economies function. Policy mandates and fears of becoming infected or infecting others have impelled populations to shelter at home, socially distance, and otherwise reduce direct, in-person interactions with others. By enabling people to conduct many regular activities remotely, including working, learning, shopping, and receiving medical services, technology has allowed the continuation of some semblance of a normal lifestyle in this new environment (Baporikar, 2021). Within this context, the IT sector has provided the tools and resources required to support these remote activities, as well as to address the pandemic more directly through efforts such as supporting contact tracing and providing high-performance computing resources for COVID-19-related research. This paper discusses in more detail this impact of the pandemic on the technology industry, and its response to this shock, by addressing three elements: accelerated digital transformation, increased importance of technology in the economy and society, and prevalence of inequalities in access to and the use of technology.

Government Initiatives

Some of the major initiatives taken by the Government to promote IT and ITeS sector in India are as follows:

- In February 2019, Government released the National Policy on Software Products 2019 to develop India as a software product nation. The Government has identified Information Technology as one of 12 champion service sectors for which an action plan is being developed.
- On May 2019, the Ministry of Electronics and Information Technology (MeitY) launched the MeitY Startup Hub (MSH) portal.
- As part of Union Budget 2018-19, NITI Aayog was to set up a national level programme to enable efforts in AI and leverage AI technology for developing the country.
- In the Interim Budget 2019-20, the Government announced plans to launch a national programme on AI and setting up of a National AI portal. National Policy on Software Products-2019 was passed by the Union Cabinet to develop India as a software product nation.
- Further, the Government has set up a Rs. 5,000 crore (US\$ 745.82 million) fund for realizing the potential of these champion service sectors.

POST COVID-19 CHALLENGES

COVID-19 is the virus that is being affected throughout the worldwide. The phrase COVID-19 is well known to the human beings at each corner and corner of the world. The wild COVID-19 identified first in china in December 2019 after which it's miles tormented by more than one country in the short span. Due to COVID-19, a lot of negative effect on human beings and additionally, various industries and business sectors additionally affected severely. IT industry is one of the sectors which is affected because of the menacing COVID-19. Indian IT industry serves the majority carrier to the numerous clients globally. It is critical to recognize and ensure how the carrier can be seamlessly provided to the clients with much less impact. The globe has never been greater interconnected, as this health crisis is affecting all. The ICT enterprise is already dropping a whole lot of profits possibilities, and it's nonetheless unsure while the situation will incorporate. Amidst the unsure situation, many technological regions could be the important thing consciousness and maintain emerging as clear winners. With companies selling running remotely, there's already an exponential upward push in video calls/smartphone calls, as an increasing number of people are organizing conferences via apps or collaboration platforms. Digital media and Over the Top (OTT) content gamers are reaping rewards even as Virtual Private Networks (VPNs), cyber protection, and records safety are other technology so that it will see a surge as most workforces are running remotely. Cloud offerings will grow, boosted by using better utilization of content, gaming downloads, video conferencing, and the effect of faraway get right of entry to corporate networks. There can also be an expanded awareness on technology like synthetic intelligence, huge statistics, augmented reality, and digital truth, amongst others going forward. Equipment maker, Huawei, for example, recently posted a surge in its technological offerings comprising AI, video conferencing, and wireless network insurance across the Asia Pacific, given the on-ground conversation demanding situations to make certain clean connectivity.

Most of the discussion seems to be focused on the severe demand problems which firms will face in the short to medium term and what governments can do to ease the pain. However, it is inevitable that significant structural changes and new business models will emerge over the long term as the economy and society adjust to the paradigm shift. It is critical for countries and firms to understand these structural changes in order to compete effectively once the current crisis eases. For sectors contributing to the digital economy, the accepted narrative seems to be that there will be distress in the short term but firms will flourish over the long term with the acceleration of digital initiatives and adoption of cloud and automation services. While this is true, firms in the digital economy will also face several challenges as they adjust to a structurally altered “new normal.” This presents one such challenge in the context of the Indian information technology (IT) industry which could have an impact on the long-term health of the sector and the Indian economy. The Indian IT industry has been the hallmark of the Indian growth story since the late 1980s. An industry with less than \$1 billion in revenues in 1990 generated revenue of \$180 billion in 2019, with nearly 75% of it coming through exports. Initially facing a small and underdeveloped domestic market, IT firms concentrated primarily on export markets and international clients. Interestingly, while digital tools and technologies facilitated production and sales of software across geographies, physical interaction among players was still significant. The industry has built deep global ties with co-location, enabled by international travel and temporary on-site migration, acting as a key element to develop “cognitive proximity,” a factor which has played a critical role in its competitiveness. It analyses the case of the Indian IT industry to illustrate the important role which cognitive proximity has played in its growth, and how the COVID-19 pandemic creates long-term challenges for the industry to maintain its global competitiveness (Chinchwadkar & Kathuria, 2020).

Other areas that would see an uptick include e-learning, on-line education, and e-governance. As buyers begin to self-isolate and keep away from crowded regions, the clean winner is the e-trade zone, with digital payment taking up lots faster than the bodily fee alternatives. The media industry (each conventional broadcasters and more modern streaming platforms) are gambling a important function for the duration of the pandemic in imparting correct and accountable fitness facts to the public with search engines and social media structures. In terms of the morale of these remotes, get right of entry to the wealth of satisfactory content available is vital. The current situations can also accelerate the adoption of 5G to satisfy the demands of bandwidth, performance, and network cutting. There can be extra attention at the sufficiency of networks to hold the notably expanded site visitors as operating from home maintains to ramp up. Social distancing and self-isolation imply that telecommunication has come to be an increased vital provider. It could be worthwhile to look how the Communications Service Providers (CSPs) each Mobile Network Operators (MNOs) and cable operators meet the assignment in their new critical position in the changed world.

With video conference offerings (Skype, Zoom, and others) visitors is going via the roof right now, the dial-in alternative is an alternative if video conferencing systems are overloaded. Also, with the want for social distancing, human beings are speaking greater, on the way to power extra voice traffic, whether or not it’s on legacy circuit-switched systems or the 4G community with Voice over Long-Term Evolution (VoLTE) calls. The stress on voice services, although, might be helped to some extent by using the convergence of WhatsApp, Messenger, Skype, Hangouts, and Face Time calling in the iOS and Android ecosystems. Nevertheless, some CSPs are predicting significantly higher voice traffic growth in opposition to the regular yr-on-yr boom of only five%. With the capacity congestion of constant broadband provider, there’s a risk that gadgets will fall lower back on mobile networks, and this may motive a big surge of cellular data site visitors. Likewise, in areas wherein MNOs additionally provide home

broadband connectivity, one would expect a full-size increase in statistics visitors, and in a few elements of the arena wherein unlimited facts isn't pervasive, a boom in subscriber costs. The cable operators, then again, can be extra impacted than MNOs because of the multiplied hobby at domestic – running from home and an extra demand for streaming services. Netflix and Google have already announced that they could be lowering video streaming nice in Europe for a month from high definition (HD) to conventional definition (SD) to prevent network overload and disintegrate. With extensive adjustments in user behavior, escalating use of telemedicine answers for far flung diagnosis, and the corresponding records traffic shifts, it'll be increasingly more vital for CSPs, whether or not it's a mobile or cable operator, to maintain vigilant and intently monitor their network (Oberoi & Singh, 2020).

According to a recent report by NASSCOM which surveyed 160 respondents in April 2020 across IT/ITES segment including BOM, Software products and ER&D firms:

- 75% of the respondents expect clients' business de-growth in FY20-21, with 40% of these respondents expecting a De-growth of 5% or more
- A similar trend was highlighted by IDC in their April 2020 study which expects a significant fall in IT spending across sectors, barring Healthcare, Education, Communications and Utilities, in 2020.

Figure 1. COVID Impact on Verticals IT Spending



As a result, deals are being restructured to manage immediate priorities with a focus on relooking at terms related to fixed-costs, payment-term flexibility, and resource reallocation consequently, 70% of the survey respondents expect FY20-21 revenues to be negatively impacted amidst a slowdown in global demand. Key short-term impacts which have been highlighted:

- Cost Structure of contracts being revisited
- Discretionary projects being halted or re-scoped
- Innovation PoCs with unclear ROIs being de-prioritized

POST COVID-19 OPPORTUNITIES

There are numerous approaches to characterize business openings; in its least difficult terms, a business opportunity is a bundled business speculation that enables the purchaser to start a business. A business opportunity includes deal or rent of any item, benefit, gear, and so on that will empower the buyer licensee to start a business. Choosing to end up plainly a business person positively gives numerous a freeing feeling. It can be staggeringly troublesome, for instance, to pick the correct business opportunity. There are different kinds of business openings. The market is extensive and quickly transforming from a blend of heritage customer server to web bundle based administrations (Baporikar & Baragde, 2021). Market openings are rising crosswise over I.T. administrations, programming items, I.T. empowered administrations and E-organizations, and making various new opportunities for Indian organizations. The use of productivity enhancement applications becomes necessary. The methods firms study schooling will exchange. Most of it will circulate on-line and work from home packages turns into vital for them.

India tasks currently revolve around healthcare and voice programs of AI -the call for both of so one can be high inside the publish Covid-19 generation. Most agencies which are AI targeted are counting on internal resources to educate new recruits. Some firms are spending close to 10% of salaries on schooling because the challenge is new and maximum expertise available is self-taught. For Hewlett Packard Enterprise (HPE), which has big government customers, is involved in 35 clever city tasks and runs 60% of the USA's core banking applications, the point of interest on AI is higher than ever before. It is the next degree of integration. In a few Indian cities, have already got structures to make sensors and traffic sign cameras offer enter information to programs which can control pollutants management. Algorithms can manage whilst rubbish wishes to be picked up. And for all the work set to show up on clever towns, expect the initiatives to go on as planned besides for the delay caused by the lockdown and operational issues because of that. HPE dedicated \$500 million in July 2019 as a funding into the India market and is continuing to progress with its plans. The company is making huge efforts to construct AI and ML skills currently employing over 3500 people of their R&D team in the USA. Going ahead the company believes that huge firms will adopt more as-a-Service models leveraging both disbursed, on-premise models as well as public cloud, to allow business continuity even as ensuring flexibility in ability provision and financial price. One of the most important demanding situations that lie in advance is that of bandwidth and the telecom enterprise ought to resolve that with the software of information analytics, AI and ML (Rana, 2020).

COVID-19 has impacted a large number of countries and is turning out to be even worse than the critical economic, strategic, and political clashes happening around the world. The outbreak has and still is impacting all industries, including the Information & Communication Technology (ICT) sector. Tech giants have hit the pause button on marketing operations, canceled essential events and conferences, most notably, the Mobile World Congress, and announced financial results below market expectations. The US tech giant, Microsoft, lowered its revenue estimates in the quarter ended March due to the impact of the epidemic with lower sales of Windows software and surface devices. Apple also had last month said its revenue for the quarter to be below forecast. Although demand seems to be in line with expectations, the supply chain is returning to normal operations at a slower pace than anticipated. According to international law firm Baker McKenzie, the crisis has fostered corporate introspection and the need for businesses to re-evaluate near-term and long-term supply chains, resource deployment, and liquidity in the face of what it looks like "a looming global recession. According to International Data Corporation (IDC), growth in global IT spending is expected to reduce by 3-4% by the end of 2020, considering

the ‘pessimistic scenario,’ due to the COVID-19 pandemic. While the major impact is expected to be on hardware business, including devices, the software, and services businesses are also expected to slow down as the spread of Coronavirus goes beyond the boundaries of Asia. However, the adoption of collaborative applications and cloud service sees a positive impact followed by technologies such as security, big data, AI, IoT, where the impact seems relatively small. Even though businesses are grappling with current losses, in the long run, the ICT industry might be one of the few still standing and, in many aspects, stronger than before. But it will not be plain sailing for all businesses in the market. The strain on infrastructure networks, contractions in consumer spending, disruptions to supply chain, reduced availability of components, and the all-around financial impact of the Coronavirus are taking its toll in the short-term. While the fundamentals of business will remain the same, businesses across the board will have to adjust to a new normal. Even as the lockdown eases, employees are going to be reluctant to travel. Work from home applications, cloud solutions, e-commerce, network security and AI applications are bound to increase in popularity and nimble IT firms can capitalize on this growth.

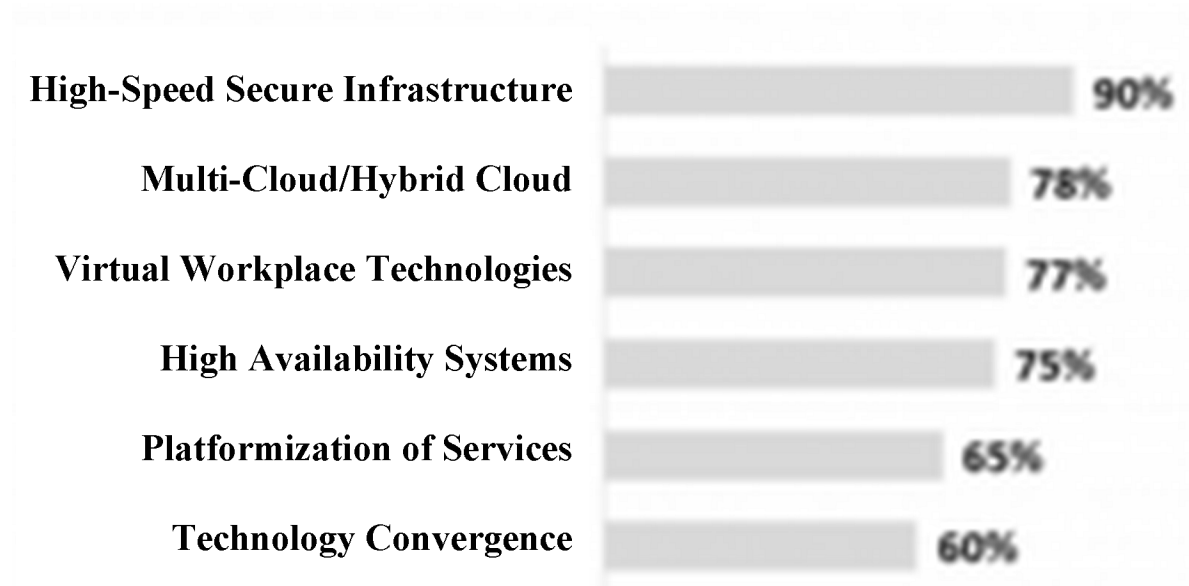
HPE committed \$500 million in July 2019 as an investment into the India market and is continuing to progress with its plans. The firm is making huge efforts to build AI and ML capabilities currently employing over 3500 individuals in their R&D team in the country. Going forward the firm believes that large firms will adopt more as-a-Service models leveraging both distributed, on-premise models as well as public cloud, to enable business continuity while ensuring flexibility in capacity provision. Most companies which are AI focused are relying on internal resources to train new recruits. Some firms are spending close to 10% of salaries on training since the subject is new and most talent available is self-taught. For Hewlett Packard Enterprise (HPE), which has large government clients, is involved in 35 smart city projects and runs 60% of the country’s core banking applications, the focus on AI is higher than ever before. “What we’re seeing is the next level of integration. In some Indian cities, already there are systems to make sensors and traffic signal cameras provide input data to applications that can control pollution management. Algorithms can manage when garbage needs to be picked up. And for all the work set to happen on smart cities, we expect the projects to go on as planned except for the delay caused by the lockdown and operational issues due to that. IT industries will have to provide solution for an extended crisis. The use of productivity enhancement applications will become necessary. The ways firms look at training will change. Most of it will move online and work from home applications will become essential.

Tech Mahindra is doing its bit, focusing on leveraging next generation digital technologies like 5G, Artificial Intelligence, and Blockchain. Over 40 percent of the company’s revenue already comes from digital technology and services which include a combination of digital strategy, automation and technology-driven business models. Its investments in supply chain track and trace, digital matching engines, IoT and robotics are coming into play now. The firm is seeing these create a huge demand for the company’s communications infrastructure. There is a renewed focus on 5G & AI and these are going to become even more relevant in the global market. In this context, there is a skill gap in the industry that will have to be addressed. Government, industry and the academia will need to collaborate even further. Addressing the digital skill gap, incorporating successful global practices, adding investments in research and development, collaborating to create a robust cyber and data security policy framework - are some areas that will herald a new chapter in improving corporate and government connect and also enhance governance and value creation in future (Baporikar, 2016b). However, this transition will need infrastructure support to happen smoothly. Better bandwidth, better connectivity and firms accelerating digital initiatives. When the lockdown was announced, not all companies were prepared to operate

from work from home. While those systems may be in place now, companies remain concerned about network security and employee productivity. Work cannot be centralized anymore. Companies will need to use enterprise class and secure applications that can be accessed from anywhere. For something like video conferencing which is an everyday requirement, a very safe option is needed. New opportunities are emerging as clients start to revisit their digital transformation journey with high-speed secure infrastructure and multi/hybrid cloud leading as the emerging tech spends areas. Data, Artificial Intelligence, IoT and Cyber Security remain the key tech themes.

Figure 2. Emerging Tech Spend Areas

Source: CEO Pulse Review: Covid-19 Impact on Indian Tech Sector



IMPLICATIONS AND PRACTICAL SIGNIFICANCE

COVID-19 did have an effect at the software development distribution in the niches. Obviously, there are niches that were put inside the spotlight due to the pandemic, including healthcare, education era, e-trade, fintech, cybersecurity, and others. We found increase in demand in those niches and consequently their fast development in software development. Since it looks like that the pandemic is stretching beyond 2021, the niches areas for software development and innovations are emerging. These niche areas of significance where software development is thriving are briefly discussed below.

- *Cloud Technologies:* Cloud technologies are but any other niche that rose considerably for the duration of the pandemic. In truth, fifty nine% of corporations expect to exceed their cloud usage plans. First of all, as many businesses are crashing below the regulations, they are trying to store as a good deal as viable and reduce their charges. Cloud computing is a super opportunity to accomplish that. Secondly, it's miles easier to paintings with clouds from the home office wherein

you can't speak the modifications in a room or advantage get right of entry to to company laptops. Therefore, it looks as if the cloud is right here to stay and continue to develop in 2021.

- *Human Augmentation, AR, and Mixed Reality:* Since AR and combined reality are actively used for far flung schooling, healthcare, gaming, and human augmentation decorate human talents via combining medication and generation, it is apparent that these technologies could be growing given all of the instances of the beyond year. The approximate pace of the worldwide blended reality market increase is 73.2% in line with 12 months within the following few years. As constantly, bigger investments and extra new tasks acting within the niche method greater speedy tech development and faster implementation of improvements.
- *IoT – A Trend of 2021 and Further:* The Internet of Things might not be visible because the modern element anymore however a part of our reality. The fast increase of IoT has turn out to be so natural. Consequently, in 2021 it will likely be nonetheless thriving, or even extra existence-converting tasks are to be expected. Considering that humanity continues to be in all likelihood to stay at domestic after 2020, tech companies will come up with new approaches to make no longer leaving the house extra satisfying. Software developers will be in a great deal want of the projects' attention.
- *AI Follows IoT:* IoT is based totally on AI. Therefore, the area of interest may be as rapidly growing because the previous one. Yet, it can face even a larger raise. AI is widely utilized in workplaces to prevent gatherings, discover asymptomatic COVID-19 inflamed, and automate methods that require big human teams. AI additionally allows outlets to understand how customers adapt to stay-at-home guidelines and might are expecting and, by using doing so, prevent different pandemics.
- *Rise of Native Applications:* Nowadays companies that perform in high aggressive niches ought to offer the excellent experience for their customers with the intention to live commercially possible. That is why native programs design especially for every platform becomes a trend. They assist to achieve the excessive usability and capability of the app. That being stated, the iOS and Android developers might be in call for in 2021 too.
- *PWAs as a Solution:* Native apps are excellent but this flawlessness in their prices pretty lots. Companies who cannot have the funds for a native app will switch to PWAs that provide almost as proper an experience for a reasonable price. PWAs (Progressive Web Apps) are net apps that's a fundamental difference from local apps on iOS and Android. But they permit reaching almost the same traits as native apps in phrases of speed, consumer experience, safety, and so on.
- *Software Development Outsourcing Trend:* It is bureaucratic now: faraway working is not any worse than one in the workplace. While businesses have more knowledge of a way to paintings remotely and control teams as nicely, they're much less proof against hire offshore builders and freelancers. Usually, this allows them to choose from a larger talent pool and even store cash by hiring from offshore regions.
- *Low-Code and No-Code Development:* It is plain that during the crisis year businesses are seeking to decrease their prices as an awful lot as feasible and reduce group of workers members to achieve this. Therefore, they'll not have money for a whole development team and will gladly use the possibility to broaden a wanted app without understanding of coding. Therefore low-code or no-code answers that make it possible to create web sites or mobile apps for non-tech human beings are getting so famous. The approximate annual boom in the course of the subsequent 4 years is expected to be more than 28%. Paradoxically, the increase of no-code solutions will growth the want for software engineers that expand these projects, mainly as those gear are anticipated to be greater complex.

SOLUTIONS AND RECOMMENDATIONS

IT industry trends of 2021 predict further development of such technology like AR, IoT, AI, and others. In an attempt to reduce costs, companies will have to adopt for no-coding platforms, clouds, and PWAs. COVID-winners are dictating the trends of native apps development and distribution of software development among niches. The pandemic is likely to control software development trends in future. But this also provides an opportunity to grow for much-needed niches such as AI and human augmentation. JavaScript is one of the maximum required languages in software development. Around 53% of hiring managers accept as true with it to be one of the most crucial languages. HRs are also searching out fluent speakers of Python (forty nine, 5%) and Java (44,1%). A thrilling tendency is to be observed: hiring managers won't require any particular language however alternatively look for a becoming character. It isn't always as visible globally (14, three %) but one in 5 managers in the Americas is probable to be language agnostic. The scenario with the pinnacle frameworks is more dynamic, in comparison to languages. Angular JS, React, and spring continues to be pinnacle-three. However, ExpressJS, ASP have lost their positions whilst Django went up. Indeed, with the rise of AI (we are able to address this later) and a consequent upward thrust of Python, Django is turning into more and more widely used. One greater critical indicator that is likely to shape the future software improvement is what languages builders need to examine. This offers us an idea of what technologies are desired in projects, or can offer higher wages. According to the HackerRank record, the principle languages developers need to learn are Go, Python, and Kotlin, and frameworks like React, AngularJS, and Django.

CONCLUSION

India is the topmost offshoring vacation spots for IT industries world over. Having validated its abilities in turning in both on-shore and rancid-shore offerings to global customers, emerging technologies now provide an entire new gamut of possibilities for pinnacle IT companies in India. The industry is expected to develop to US\$ 350 billion by using 2025 and BPM is anticipated to account for US\$ 50 55 billion of the whole revenue (Media Report, PIB 2020-21). The COVID-19 pandemic propelled the shift towards digital sports at some point of the financial system, and the generation area has been stepping up to satisfy the better demand for the desired goods and offerings. As such, the pandemic served to boost up a virtual transformation that becomes already underway. The coronavirus pandemic has modified the approaches humans interact and economies feature by impelling populations to lessen their direct, in-individual interactions with others, a shift that has been facilitated through the IT quarter.

Indeed, it is visible now how the pandemic has accelerated virtual transformation, increased the significance of technology inside the economy and society, and highlighted the need to cope with inequalities in access to and the usage of generation. The durability of the changes wrought with the aid of the pandemic stays uncertain at this point. However, given that the virtual transformation process turned into already underway, as a minimum a number of the impacts are probably to stay. Most importantly, the pandemic has brought to light the need to ensure that get admission to the tools and resources wished on this new more digital age are made to be had to the widest set of human beings viable.

In spite of the uncertainty surrounding the COVID-19 pandemic, one issue is apparent: international journey will be confined and costlier inside the submit-COVID-19 global, at the least for the following couple of months. In the absence of a standard vaccination against the coronavirus, tighter constraints

on human mobility will continue to be in vicinity possibly for a long term. Apart from tour, COVID-19 associated disruptions are in all likelihood to have an extended-time period effect on international migration. Companies and countries which might be currently friendly to migrant labour may not be so in future. The suspension of H1-B and L-1 visas by the USA till December 2020 is one such example. This paradigm shift would adversely have an effect on the key mechanism utilized by the IT industry to hold cognitive proximity: co-region using worldwide journey and on-website online migration. IT companies may want to cut again on travel and migration because of increasing charges, more hassles and full-size sales loss due to the pandemic. In 2017, the IT industry contributed nearly eight% to India's GDP except offering direct employment to almost four million human beings and indirect employment to nearly 10 million human beings. The survival and achievement of the Indian IT enterprise in current era depends, partially on whether it is able to keep cognitive proximity and linkages with global customers by means of adapting its commercial enterprise practices and strategies.

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Chapter 5

Methodology Oriented to the Sustainable Development Goals in the United Nations Agenda 2030

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ABSTRACT

The objective of this document is to analyze all the factors involved in the aspects of sustainable development. As it is a very extensive and relevant topic at present, it seeks to explain in detail from its conception to the central aspect on which it is based the Sustainable Development Goals (SDGs) of the United Nations. Similarly, the approach on which the document is based is to mention some of the most developed tools and indexes for measuring sustainability, which are based on the SDGs, and especially to emphasize the social, economic, and environmental benefits obtained by sustainable development globally.

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INTRODUCTION

Throughout history, the word sustainability has had many meanings and connotations, including in the dictionary it is defined as a capacity to remain constant within a certain level. Therefore, it is directly related to economic and human development and environmental preservation (Brand, 2015; Kates, 2015).

For the above, Sánchez Galera (2017) mentions that sustainability is born as an inclusive and flexible concept, in such a way that it is currently the driving force for the creation of international laws for all levels within international organizations, which the body with the greatest presence is the United Nations Organization (ONU, 2019).

Also, according to Brand (2015) Sustainable development has been modified over the years by the United Nations, which has been given a focus primarily on global problems, and secondarily on objectives and strategies that together seek the welfare of humanity.

Similarly, López (2015) mentions that an aspect of great importance is the equity that exists between sustainability and social welfare, because the literature lacks an extensive sense, which prevents awareness and solidarity between the intergenerational overlap of the population, causing that there is no genuine interest in creating a better world, with greater resources and quality of life in the life span of one generation to the next.

Due to current trends, governments and organizations have recognized the importance of creating value through sustainable development, responding especially to social and environmental demands due largely to the media pressure exerted by a society concerned about the future. In the same way the approach of organizations seeks to take advantage of the social and environmental aspects, but focusing on the economic aspect looking for profitability (Rosenberg, 2020).

Also, as a consequence of the current economic conditions, which in most countries are trending towards economic recession, mostly due to the effects of the COVID-19 pandemic, there are scenarios of increased economic stress, short and long term debts, as well as psychological and social effects inherent to the crisis. This is why several nations have sought to create policies and agreements focused on sustainability, which aim to mitigate the economic crisis, and focus on improving the social and environmental aspects that are in decline (Sundaram, 2020).

Consequently, priorities have changed due to the global crisis, and what was previously seen as a recommendation to improve aspects of sustainability is now seen as a necessity. All this due to the level of uncertainty and lack of knowledge about what awaits us in the short and medium term, which is why actions focused on sustainable development are the only thing that can lead to an improvement in global welfare in the long term (Curbelo Pérez & Ziglio, 2020).

Therefore, the UN establishes that despite the efforts that are being made in the implementation and development of the parameters established by the 2030 Agenda, mainly in the most vulnerable regions, and through the economic, political, and social support of member countries as well as NGOs, progress is insufficient. This means that there is a great possibility of non-compliance with the goals established for the 2030 Agenda, which would cause a setback and stagnation for sustainable development, which is why forums, alliances, and programs are established, which with a sense of urgency seek that every day more organizations and members join in order to achieve the goals set. (Naciones Unidas, 2018).

As well as the above referred to nations, there is a great challenge on sustainable development by organizations, because the world is constantly changing and evolving. This creates a priority need on the optimal management of resources, which are largely natural and social, which generates a demand for companies focused on sustainability (International, 2019).

In turn, due to the boom in sustainable development, many organizations interested in financing and developing the fulfillment of the 2030 Agenda have been created, such as the International Monetary Fund, the World Bank, public funds, foreign direct investment and other civil associations (Denny, Castro, & Maxiao Yan, 2017). However, the current tools focused on measuring sustainability are not sufficient for the achievement of the proposed goals in addition to the fact that they are uncoordinated and without comparable metrics. Due to the above, the present research becomes relevant as it plans to address the existing gaps in the measurement tools and create a new one oriented to the improvement of the SDGs in an innovative way

Similarly, regarding the measurement of sustainability, it can be considered that it is de-standardized, because there are agencies that measure it, but not in an objective manner as far as the SDGs are required (Afful-Dadzie, Afful-Dadzie, & Turkson, 2016). Therefore, there is an area of opportunity in existing measurement systems, which limits the assessment of sustainability in organizations (Couckuyt, Van Looy, & De Backer, 2018).

Therefore, it is of great importance to be able to establish tools for analysis, collection and measurement of data focused on sustainability, which allow to meet the requirements of the 2030 Agenda in an objective manner, with a scope towards all companies, with a prompt response and a good acceptance (Pérez Pineda & Alañón Pardo, 2017).

On the other hand, sustainable companies are corporations whose mission is to build favorable ecosystems in the economy to provide solutions to social and environmental problems, taking sustainability as a basis (Buerkle, Chang, & Storto, 2018). However, they currently lack tools that allow them to homologate the parameters of measurement and standardization of sustainability, and focus them with those measured by the SDGs.

Finally, the UN mentions that it is evident the lack of a deep, fast and ambitious response, which prevents a commitment and achievement of the SDGs, which is why a fair and standardized regulation must be guaranteed, so as to ensure that no one is left behind in the achievements of the 2030 Agenda (ONU, 2019). The World Economic Forum (WEF) also mentions that a key factor for competitiveness among nations is to be able to have innovative initiatives, which allow generating a sustainable economy, which encompasses social, economic and environmental aspects (Schwab & WEF, 2019).

BACKGROUND TO SUSTAINABLE DEVELOPMENT

During the 1960s and 1970s, the uncontrolled growth of consumerism led to an ecological imbalance, which began to alarm the future availability of the planet's resources. This, followed by an awakening of ecological awareness generated by social activists such as "Friends of the Earth" and "Greenpeace", generated such a strong change that it laid the foundations for sustainable development in our times. This originated a series of events of great importance, as was the Earth Day in 1972 (Blewitt, 2015). Two years later an association known as "The Club of Rome" headed by Jay Forrester made a study based on systems analysis, where he made a reference to the functioning of the world and related it to six subsystems, which were 1) population, 2) capital investment, 3) geographic space, 4) natural resources, 5) pollution and 6) food production. This with the argument that the greater the number of inhabitants, the lesser the capacity to meet the demand, which caused progressive agricultural techniques, and resulted in a lower capacity of the planet to absorb waste, as well as the natural regeneration of resources (Ferrandis Martínez, 2016). This was an important issue in the first international conference on environmental is-

sues of the United Nations in Stockholm, Sweden, because the first 26 objectives on the environment and development were established there, together with an action plan (Blewitt, 2015).

Due to the above, the concept of sustainability began to be developed, which had not been given significant relevance in the scientific field until 2000, when it was promoted by academics and scientists around the world, and endorsed by the International Council for Science and the Third World Academy of Sciences in Japan, Sweden, Nigeria, Thailand, Germany, Canada, Chile and Mexico, due to its direct relationship with the natural, social sciences and the technology associated with its operation (Kates, 2015).

On the other hand, in 2002, the Earth Summit in Johannesburg reviewed a decade of progress in which it was observed that there was a great disparity between economic wealth and natural resources among most nations, and this was in danger of growing if joint actions were not taken. This created the basis for the Rio+20 conference, which was established in 2012 and was a follow-up of what was established in 2002, focusing on being efficient in the environment, using new technologies to reduce emissions, new economic models to reduce the large gap between nations, as well as improving the quality of life of people, especially in underdeveloped countries (Blewitt, 2015).

Because of the above, the Millennium Development Goals (MDGs) were developed in 2000, which set goals through the UN, and the entire international community, which in the first place seeks to develop an environment of global cooperation for development (Wysokinska, 2017).

Subsequently, and as an evolution of the MDGs, in 2015 the UN Sustainable Development Goals (SDGs) were established, which became the benchmark of the so-called Agenda 2030, these goals seek economic, political, social and environmental development in a cooperative aspect in large dimensions at a global level (Gómez-Gil, 2017).

KEY FACTORS IN SUSTAINABILITY

Due to current trends, governments and organizations have recognized the importance of creating value through sustainable development, responding especially to social and environmental demands due largely to the media pressure exerted by a society concerned about the future. In the same way the approach of organizations seeks to take advantage of the social and environmental aspects, but focusing on the economic aspect seeking profitability (Rosenberg, 2020).

One of the main challenges facing organizations, nations and individuals is to modify their policies and production and consumption capacity, and to decouple the relationship between economic growth and environmental degradation, orienting them towards new innovative and sustainable-based business models (Bortagaray, 2016b).

Similarly, the lack of capacity and willingness to orient theoretical research focused on sustainability, towards topics that are truly applicable in the real world, causes the science of sustainable development not to be adopted as it should be (Jonas & Littig, 2015).

On the other hand, due to current trends oriented to resource conservation, governments and organizations have recognized the importance of creating value through sustainable development, responding especially to social and environmental demands due largely to the media pressure exerted by a society concerned about the future. In the same way the approach of organizations seeks to take advantage of the social and environmental aspects, but focusing on the economic aspect seeking profitability (Rosenberg, 2020).

Similarly, due to the current economic conditions, which in most countries tend to an economic recession, mostly due to the effects of the COVID-19 pandemic, scenarios of increased economic stress, short and long term debts, as well as psychological and social effects inherent to the crisis are observed. This is why several nations have sought to create policies and agreements focused on sustainability, which aim to mitigate the economic crisis, and focus on improving the social and environmental aspects that are in decline (Sundaram, 2020).

Consequently, priorities have changed due to the global crisis, and what was previously seen as a recommendation to improve aspects of sustainability is now seen as a necessity. All this due to the level of uncertainty and lack of knowledge about what awaits us in the short and medium term, which is why actions focused on sustainable development are the only thing that can lead to an improvement in global welfare in the long term (Curbelo Pérez & Ziglio, 2020).

DIMENSIONS ENCOMPASSED BY SUSTAINABILITY

Sustainability has been studied from different aspects, and has several theories, however, the most supported theory, and supported by the United Nations is the one that involves three dimensions, which are: social, economic and environmental. This takes on a broad meaning when it is related between the interaction of the species that inhabit the earth, taking into account social aspects such as ethics and equality, especially in the distribution of resources, which translates into an adequate standard of living (Ferrandis Martínez, 2016).

Likewise, López et al (2018) mention that according to the UN report, it places social justice in a close relationship with environmental protection, which makes it the backbone of sustainable development. Subsequently, the economic aspect was included, which has a great weight in the SDGs.

Also in the so-called Earth Charter, these principles were defined, because key elements were identified as the human being is the center of all the concerns of everything related to sustainable development, especially for the use of natural resources, which is why it must respond in a responsible and sustainable way so that future generations can inherit both an environment and an economy whose quality and magnitude were at least equal to those received by previous generations (Ferrandis Martínez, 2016).

On the other hand, these three dimensions have now been adopted by many companies, mainly due to social pressure which translates into the demand for companies concerned about the well-being of the planet, and this has caused companies to focus more actively on aspects such as economic and environmental crises, scarcity of natural resources, as well as social inequalities (Joyce & Paquin, 2016). This has led to a broad growth in new business models focused on sustainable development led by companies and driven by society.

Therefore, if the dimensions of sustainable development are aligned and projected towards the quality of life sought by the population, it can be translated into the level of individual income, individual and working conditions, and the quality of the environment, both individual and social. This derives in that there is a directly proportional relationship between economic development and the development of the environment, or in other words, the natural means and resources on which society is based (Ferrandis Martínez, 2016).

In conclusion, in order to correctly apply the concept of sustainable development, no aspect of the three dimensions established by sustainability should be isolated, taking into account that these dimensions have a great weight in companies seeking to be sustainable, which have in common as their business

model to incorporate goals, and principles, value creation and capture activities, all with a sustainable approach (Geissdoerfer, Vladimirova, & Evans, 2018).

GLOBAL CONTEXT OF SUSTAINABLE DEVELOPMENT

Currently, sustainable development is one of the basic objectives of the United Nations, because through the document known as “Transforming our World: Agenda 2030 for Sustainable Development”, countries have committed to adopting a sustainable development posture which focuses on 17 objectives which have been named “Sustainable Development Goals” (SDGs). These goals were established to eradicate poverty, protect the planet, and ensure prosperity for all humanity (Sánchez Galera, 2017).

Similarly, thanks to the awareness of sustainable development, as well as the long-term repercussions of not carrying it out, not only the UN and its members have adopted this concept, but also numerous non-governmental organizations (NGOs), as well as a large number of companies and civil organizations, which have made efforts to establish metrics to evaluate the effectiveness and make systematic industrial changes that will positively impact sustainability at a global level. Therefore, sustainable development has had a good impact on scientific research, making its study possible and laying the foundations for its further development (Badii, Guillen, & Abreu, 2017).

Due to the above, one of the aspects that establish greater discussion, especially since it was established by the UN is the concept of sustainable development, since there are points for and against, due to the ability to determine the scope of the definition against its operability, due to the resistance to break the existing paradigm between the proven profitability in business models based on a market economy, against a trend of business models established with a sustainable basis (López, 2015).

In conclusion, it is a good argument to mention that in order to have a successful sustainable development, and get closer to the goals of Agenda 2030, the creation and development of companies where their business models are focused on sustainability should be supported and encouraged, due to the fact that their value propositions are focused on creating more efficient strategies for the development of environmental and social benefit, without neglecting the economic aspect which is what makes them sustainable, and above all they create a link between technological and social innovation in a systemic and permanent way (Inigo, Albareda, & Ritala, 2017).

CHALLENGES TO THE ADOPTION OF SUSTAINABILITY

Although the concept of sustainability has been adopted in a positive way, it is far from being developed. Because establishing a more imaginative and technology-based economy, while seeking to reduce the exploitation of natural resources, control polluting emissions, and focus on justice and equality among individuals and nations, represents a global challenge (Ferrandis Martínez, 2016).

Bullén et al (2017) mention that one of the main challenges in the adoption of sustainability is that society as a whole should participate in the solution of social and environmental problems, primarily through the creation and development of new business models, as well as improvements that allow the correct use of natural resources and the degradation of ecosystems.

Therefore, one of the main challenges facing organizations, nations and individuals is to modify their production and consumption policies and capacity, and to decouple the relationship between economic

growth and environmental degradation, orienting them towards new innovative and sustainable business models (Bortagaray, 2016a).

Lopez (2015) also mentions that an aspect of great importance is the equity that exists between sustainability and social welfare, because the literature lacks an extensive sense, which prevents awareness and solidarity between the intergenerational overlap of the population, causing a lack of genuine interest in the creation of a better world, with greater resources and quality of life in the life span of one generation to the next.

Similarly, for the concept of sustainable development to be adopted by all nations in a positive way, there is a wide gap, because it challenges the development of neo-classical economics which remains entrenched in many developing countries, in addition to the fact that the implementation consists of complex operationalization (López et al., 2018).

Instead, the lack of capacity and willingness to orient theoretical research focused on sustainability, towards topics that are truly applicable in the real world, causes the science of sustainable development not to be adopted as it should be (Jonas & Littig, 2015).

Finally, the UN mentions that despite the fact that the concept of sustainability has a positive correlation with the competitiveness of nations, and despite the fact that it seeks to direct its efforts especially from the most developed nations to other developing nations, there is great resistance to the sustainable development approach, from the adoption of practices inherent to it, to the collection and management of data that allow thus being able to have an objective measurement on the objectives that are sought to be developed (ONU, 2019).

THE SUSTAINABLE DEVELOPMENT GOALS (SDGS)

To talk about the Sustainable Development Goals (SDGs), we should first refer to the Millennium Development Goals (MDGs), since the SDGs are an evolution of these. In the year 2000 at a summit where 189 member states of the UN focused on sustainable development, they established the priority need for certain aspects focused on sustainability, these were the search to eradicate poverty, improve equality, as well as the benefit of the planet; and thus 8 goals and 21 tasks associated with these were established (Wysokinska, 2017)The following figure officially illustrates the MDGs.

1. Eradicate extreme poverty and hunger.
2. Achieve universal primary education.
3. Promote gender equality and women's empowerment.
4. Reduce infant mortality.
5. Improve maternal health.
6. Combating HIV/AIDS, malaria and other diseases.
7. Ensure environmental sustainability.
8. Foster a global partnership for development.

As a result of the above, it was in 2015 at a UN summit which was named Agenda 2030, where the SDGs were declared as an evolution of the MDGs for the pursuit of sustainability, which were completer and more complex as they established 17 goals, 169 tasks and 304 indicators. It is because of this, that the SDGs seek to establish systemic responses to a global vision, which focuses in a holistic way to

sustainable development, facing situations of great importance such as inequality and extreme poverty, try to eradicate unsustainable consumption patterns, which are linked to environmental degradation, seek to strengthen institutional capacities and processes of global solidarity among nations, being somehow novel, covering the aspects that the MDGs neglected and being an evolution of them (Gómez-Gil, 2017).

Having said the above, it is of great importance to explain in detail the SDGs in order to understand their magnitude of focus, and to explain the dimensions that they encompass towards sustainable development. The UN (2018) establishes the SDGs as follows.

1. End Poverty in all its forms, and in all parts of the world. }
2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.
3. Ensure healthy lives and promote well-being for all people at all ages.
4. To ensure inclusive and equitable quality education and promote lifelong learning activities for all.
5. Achieve gender equality and empower all women and girls.
6. Ensure availability and sustainable management of water and sanitation for all.
7. Ensure access to affordable, reliable, sustainable and modern energy for all.
8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.
9. Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.
10. Reduce inequality within and between countries.
11. Make cities and human settlements inclusive, safe, resilient and sustainable.
12. To ensure sustainable consumption and production patterns.
13. Adopt urgent measures to combat climate change and its effects.
14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.
15. Protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss.
16. Promote peaceful and inclusive societies for sustainable development, facilitate access to justice for all, and build effective and inclusive accountable institutions at all levels.
17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

In summary, the SDGs seek to make the world a better place, establishing sustainable development as their backbone, and thanks to the constant support of all stakeholders, progress is being made in the development of their fulfillment. However, the road is still long and the greatest number of parties involved is required in order to achieve the implementation of a sustainable approach (Naciones Unidas, 2018).

THE ROLE OF THE UN SDGS FOR THE 2030 AGENDA 2030

The 2030 Agenda has been established as a new cooperative, multilateral way to seek to end social inequalities, end poverty, improve the use of natural resources, combat climate change, and all aspects inherent to a sustainable approach, all hand in hand with nations, the private sector, and civil society (Denny et al., 2017).

Therefore, the role of the SDGs is a priority for sustainable development and a central piece of the 2030 Agenda. These are a large-scale effort by humanity to simultaneously raise the standard of living of millions of people around the world (Guillén, Abreu, Toribio, & Fernández, 2018). They were established on the premise of the three dimensions of sustainable development, but from an innovative point of view, although it is recognized that the SDGs are the greatest innovation for sustainable development ever created, a good part of their goals come from agreements, summits and international conferences set years ago and systematically unfulfilled (Gómez-Gil, 2017).

Similarly, it should be mentioned that despite their adoption and dissemination, the SDGs are far from being developed in accordance with the provisions of the 2030 Agenda, and with only 12 years to go before the deadline, the efforts of governments and society are at a fairly ambitious stage, and that is why any help that can bring the achievement of these goals closer to a reality is of great importance (Naciones Unidas, 2018).

In conclusion, it is possible to ensure that the SDGs have entered with great force and international linkage, seeking to replace the old neoliberal models, which throughout the last century and to date have been a strategy of global control, through economic development, which seeks development at all costs regardless of environmental degradation, as well as social injustices and inequities. That is why the SDGs seek to create an environment of respect, equity, justice, improvement and inclusion in society, the environment and the economy of nations (Tapia Gutiérrez, 2018).

ORGANIZATIONS FOCUSED ON SUSTAINABLE DEVELOPMENT

Despite being an initiative led by the UN, there are different organizations which seek that sustainable development can be a concept that remains rooted in the present and transcends for future generations, which is why a growing list of social entrepreneurs, business leaders, public and private initiative corporations are responsible for promoting sustainable development (Fry, 2017). An example of this social phenomenon is the creation of AIM2Flourish, a body that focuses on sustainability.

On the other hand, other agencies focused on driving sustainability are the International Monetary Fund (IMF) and the World Bank, which have an active role in the development of the SDGs, because these financial agencies can condition loans to companies that establish sustainable, accessible and resilient types of quality infrastructure to be implemented, as well as features in business models and core processes that demonstrate a sustainable basis. Similarly other agencies such as the Infrastructure Investment Fund, the Global Infrastructure Hub, the New Development Bank, the Asia-Pacific Project Planning Fund, the World Bank Group's Global Infrastructure Fund and Africa 50 Infrastructure Fund, and the Inter-American Investment Corporation serve as a pillar in financings towards companies seeking to create change in the world through sustainable development (Denny et al., 2017).

Also, the World Economic Forum is an organization that seeks to measure the competitiveness of nations through a tool called the Global Competitiveness Index. This index measures the level of development in certain factors related to competitiveness, which are likewise related to certain parameters of sustainable development in the 2030 Agenda (Schwab & WEF, 2019).

Similarly, another organization that measures the competitiveness of nations and is related to sustainable development is the IMD World Competitiveness Center, which applies a tool known as the World Ranking of Digital Competitiveness. This generates a classification of certain member countries to this

association, and measures the degree of development in competitiveness, as this is related to the sustainable development of the 2030 agenda (Brits & Cabolis, 2019).

Also, in the case of Mexico, the Mexican Institute of Competitiveness is an organization that focuses on the development of competitiveness at a national and global level, which is why it has a tool called the International Competitiveness Index. This tool, like the two previous ones, is based on factors, which cover the three dimensions of sustainable development, in such a way that it compiles data from several countries comparing their degree of development year by year (IMCO, 2019).

On the other hand, foreign direct investment, as well as technology transfer on sustainable development issues are of great importance for companies seeking to implement a business model based on sustainability. These companies have characteristics of innovation, sustainability, and value creation focused on creating a better world, but they also benefit from the economic incentives promoted by the UN, such as carbon credits, which is an economic bonus by promoting the use of green energy, bonuses for the use of renewable energy, which are given for using solar energy, or clean energy that does not depend on any fossil fuel (Clinton & Whisnant, 2019).

SUSTAINABILITY MEASUREMENT TOOLS

There are different types of indicators to be able to assess sustainability, there are also some models focused on processes and others focused on the resulting product, however to establish a more complex tool that encompasses different indicators, certain parameters defined by experts in sustainable development must be structured (Couckuyt et al., 2018).

Some models that seek to correctly measure sustainability are related to environmental problems, such as carbon dioxide and methane emissions, water pollution, deforestation, ecological footprint, and environmental sustainability index, among others. Despite being established and accepted by the scientific community, they do not provide a broader view on the social and economic dimensions that encompass sustainability (Babcicky, 2012). And although there are some indexes that focus on the three dimensions of sustainability, over time they have been questioned due to the reference parameters and their lack of foundation to evaluate an organization as sustainable (Afful-Dadzie et al., 2016).

On the other hand, as time goes by, the concept of sustainability is becoming more and more relevant, and that is why the scientific community is paying more and more attention to it. This has led to the development of two theories for measuring sustainability, which have become very popular: the Legitimacy theory and the Signaling theory. The former establishes a social contract, and has traditionally focused on types of symbolic actions that might guarantee the legitimacy of an organizational entity, while the latter looks for “signals” from stakeholders that might help them better understand something in relation to an uncertain or ambiguous attribute. However these theories are far from being established and standardized (Mura, Longo, Micheli, & Bolzani, 2018).

TYPES OF SUSTAINABILITY MEASUREMENT TOOLS

The measurement of sustainability is a topic that has not been fully explored, and there is currently an effort to promote its research and dissemination, especially by companies. Likewise, part of its complexity

is due to the fact that it assumes challenges in the correct processing of information for its measurement, which limits its evaluation and standardization (Afful-Dadzie et al., 2016).

Now, if what is sought is to achieve a correct comparable and standardized measurement of the indicators managed by the different organizations that seek sustainable development, there must be a methodology that standardizes qualitatively and quantitatively the criteria and indicators of sustainability, and that facilitates decision-making, ensuring their integration within economic, social and environmental policies (Guillén, Abreu, Toribio, & Fernández, 2018).

Consequently, some tools that have a global impact on the measurement of sustainability will be explained in synthesized form, such as the Global Competitiveness Index of the World Economic Forum, the IMD World Digital Competitiveness Ranking of the IMD World Competitiveness Center, the International Competitiveness Index of the Mexican Institute of Competitiveness, the Dow Jones Sustainability Index and the ISO 14001 standard for environmental management systems.

Global Competitiveness Index

It is a report that poses a look into the future, in such a way that it seeks to build two pillars which focus on a shared global prosperity, and a correct management towards a sustainable economy, this grouping it in the aspects of the competitiveness of nations (Schwab & WEF, 2019). The GCI takes into account a total of 103 indicators, distributed in 12 pillars. The indicators come from international organizations, academic institutions and non-governmental organizations. Forty-seven indicators, representing 30% of the total ICG score, are derived from the World Economic Forum's Executive Opinion Survey, which is a unique, global study that annually surveys approximately 15,000 business executives with the help of 150 Partner Institutes.

The main pillars on which it focuses are the following:

- Institutions.
- Infrastructure.
- Adoption of information technologies.
- Macroeconomic stability.
- Health.
- Skills.
- Product market.
- Labor market.
- Economic system.
- Market size.
- Business dynamism.
- Innovation capacity.

In conclusion, the GCI is a fairly complete index with a sustainable base, and focused on the competitiveness of nations, however, despite being a reference framework on competitiveness and sustainability, it only evaluates the most developed nations, leaving aside emerging economies in Africa, Central America, Sub-Saharan Africa, and the Middle East.

IMD World Digital Competitiveness Ranking

It is an index which analyzes the performance of the 63 economies included in the World Digital Competitiveness Ranking. At a glance it seeks to assess the digital evolution of each economy at the end of time and its relative strengths and weaknesses, such that each economy's particular situation is influenced by its level of development, political constraints, and the social value of the system (Brits & Cabolis, 2019).

Basically the RMCD focuses on three main factors, which in turn are divided into 3 sub-factors, which comprise 51 criteria in total, although each sub-factor does not necessarily have the same number of criteria, all are focused on competitiveness, degree of technological advancement, and a focus on sustainable development.

The main evaluation aspects are as follows:

- Talent.
- Education and training.
- Scientific concentration.
- Regulatory framework.
- Capital.
- Technological framework.
- Adaptive skills.
- Business agility.
- Integration of information technologies.

In summary, this index, in the same way as the GCI, analyzes competitiveness among nations, based on sustainability, with the difference that the CDMR has other evaluation criteria, is more focused on competitiveness and technological development, and only applies to developed and developing nations except for areas such as Africa, the Middle East, Central America, and Sub-Saharan Africa (Brits & Cabolis, 2019).

Dow Jones Sustainability Index

This index measures the market capitalization and performance of selected companies based on sustainability criteria. Therefore, one of its main objectives is to provide investors with a benchmark based on sustainability criteria of a certain group of companies in a similar industry which are evaluated with sustainable criteria. (S&P Dow Jones Indices, 2019).

That said, the process of implementing the Dow Jones index begins with the selection of a company, which must be listed in some other Dow Jones index in the stock market, which implies that they are fairly large companies with high capital. Once the company is selected, it is invited to be evaluated using the Dow Jones Sustainability Index criteria (York & Indices, 2019).

Similarly, in order to evaluate the degree of sustainability of the selected companies, the score of the other stock market and competitiveness indexes of the Dow Jones family is analyzed, and around 600 data are collected, from which certain criteria related to the three dimensions are analyzed:

- Corporate governance.
- Codes of conduct.

- Risk and crisis management.
- Anti-crime policy and measures.
- Business risks and opportunities.
- Climate strategy.
- Talent attraction and retention.
- Controversies, dilemmas, loans and financing.

In conclusion, it is observed that it is a fairly complete and accurate index, however it is inaccessible for most emerging companies seeking to position themselves within sustainable development (Gallón & Valencia, 2019).

ISO 14001 Standard for Environmental Management Systems

This standard is an index which is based on the three dimensions of sustainability, however it is mostly focused on the environmental dimension, because it was created through the need to protect the environment, however it seeks to create a balanced frame of reference between environmental and socioeconomic conditions.

It consists of different evaluation criteria and variables, the main criteria being the following:

- Organizational context
- Leadership
- Planning
- Support
- Operation
- Performance Evaluation
- Improvement.

In conclusion this standard can be applicable to any company, however it is specified that the companies that should seek its application are those whose operations can create affectations in the environment and although it provides a sustainable approach, it has a greater weight in the environmental dimension (ISO 14001, 2015).

ADOPTION AND USE OF SUSTAINABILITY MEASUREMENT TOOLS

Due to the acceptance by the population on companies seeking to focus on the development of sustainable, as well as its dissemination and implementation, it is an increasing number of companies, and organizations which join the development of a more sustainable world (Yang, Vladimirova, & Evans, 2017).

Therefore, it is of vital importance that organizations adopt implementation systems that allow them to achieve sustainable development, however due to the increasing media pressure in the search for improvements in sustainable indicators, most companies are lost in achieving a correct implementation of sustainability in their processes (Schaltegger, Etzeberria, & Ortas, 2017).

However, despite the existence of different tools that allow measurements in the different dimensions of sustainability, there is quite a large variability, due to the lack of standards, as well as the different

approach provided by the author of such methodology, as well as the company that implements it. Likewise, the conscientious application of methodologies that evaluate sustainability becomes a problem, due to the resistance to change that remains in most companies that are not born from a sustainable base (Vergara, 2015).

In conclusion, if good results are sought in sustainable development, there must be a willingness to apply effective tools focused on the three dimensions established by sustainability. Therefore, it is a priority that all areas of the organization should be involved, so that a special focus is established in the correct measurement of the indicators, which allow establishing a reference framework to ensure proper decision making (Bergmann, Günther, & Kara, 2017).

CHALLENGES IN APPLICATION AND STANDARIZATION

Despite the existence of a wide variety of indexes and sustainability measurement systems, there are still many gaps in them, due to the fact that a model has not been adapted globally, which causes a gap between nations and companies that have more time in the application of a culture focused on sustainability, and less experienced entities. This causes that there are no comparable metrics, and these tools cannot be standardized or replicated, which causes a setback for the achievement of the SDGs (Couckuyt et al., 2018).

On the other hand, the primary focus of sustainable development by nations at the global level is the development of the SDGs, which is why it is of vital importance to seek tools that allow the development and fulfillment of these objectives and especially creating a link that encourages companies to achieve these goals. It is therefore vital to establish a methodology to measure, replicate and standardize the SDGs in organizations and nations (Nieto, 2017).

Similarly, a correct management of the data obtained to create competitiveness indexes, which are related to economic and sustainable development, is a problem that is latent in all tools. Especially in data from developing countries, it is for this reason that tools must be generated to help in a correct measurement, as well as alliances between the different countries that allow a good comparison and cooperation between the different economies (ONU, 2019; Schwab & WEF, 2019).

CONTEXT ON SUSTAINABLE BUSINESS AT THE GLOBAL LEVEL

To speak of sustainable companies, it is necessary to mention Benefit Companies (BC). Although the concept of BC is fairly new, it has been adopted with great force due to the benefits it brings, and has grown rapidly and proportionally to the SDGs. Therefore, part of the success is due to the benefits of a sustainable world, which is increasingly dynamically driven by nations and consumers who have shifted their preferences towards a more sustainable world. (Buerkle et al., 2018).

At the same way, some benefits that BC provide, is that they can be resilient to economic instability, thanks to the sustainable approach in the certification, certified BC have an annual survival rate of 90 to 99 percent, unlike other companies that their rate is about 70 percent, and this is because certified BC are focused on having consistent and long-term benefits generating social responsibility, and better job satisfaction, which results in a success in their finances. It is also important to mention the brand recognition that is generated due to the sustainable approach that is given, guiding the image of the company

as a company that cares about the environment, and for the benefit of the planet, and this is something positive to boost its development, and especially in advertising campaigns. Another great advantage are the strategic networks and partnerships, which are part of B System, and allow companies to always be in constant development, exercising best practices, and working with a win-win approach. Therefore, one aspect that all companies are always looking for is to be able to have a good ability to attract talent, and that their workforce is highly trained, and this is because thanks to the nature of B companies, the “Millennials” and later generations are looking for a positive change towards the planet, seeking to contribute something to improve the current situation, this together with the technical and efficient management contributions provided in the certification, allows the workforce to always remain oriented and standardized towards the objectives that are being sought (Barnes, 2017).

In conclusion, BC are companies that seek sustainable development, and demonstrate tangible benefits when developing sustainability, however despite all these benefits, the scope of these companies only covers companies with a wide degree of development, which can afford a considerable amount to invest in this type of audits, and these types of companies are companies with several years of operation, therefore small companies always lag behind, and this causes a large-scale delay in the fulfillment of the SDGs (Michellini, Nigri, Lasevoli, & Grieco, 2016).

NECESSARY CONDITIONS OF COMPANIES FOR A SUSTAINABLE APPROACH

For a company to become sustainable, it must first start from the desire to contribute to the achievement of sustainable development, which is why the mission and vision must be focused on creating solutions to meet environmental and social challenges, while being financially successful (Abdelkafi & Täuscher, 2015).

Similarly, the thinking in most companies about the creation of value in sustainability is given in thinking that it will be achieved through innovations in products, processes and technology, however they are far from reality, because the creation of value is given through their business models, which seek to mitigate the negative impact on the environment and improve the positive impact on the social aspect, which is in favor of sustainable development (Abdelkafi & Täuscher, 2015).

On the other hand, Clinton and Whisnant (2019) emphasize the importance of a good business model focused on sustainability, and a common characteristic of them, in addition to the inherent dimensions that encompass sustainability, is that they seek to be innovative. These innovations occur in different areas, with a sustainable approach in common, by way of examples some of these can be classified as follows.

Environmental Impact

These models are characterized by continuous efforts in favor of recycling, making the highest percentage of inputs in their products recycled, which implies a high participation of sustainability in the value chain, from their suppliers to their processes and even their customers.

There are also business models that focus on offering products and services based on the physical to the virtual, which implies changing from physical products to virtual products, which saves manufacturing materials, to focus on software development.

On the other hand, demand-driven production models are business models that design and produce according to customer demand, which allows reducing inventories and materials for surplus production.

There are also business models based on re-materializing a product, which consist of taking a product that has been discarded, and converting it into a completely different product, which allows the reduction of waste and garbage to transform it into high value products.

Social Impact

There are business models that seek to focus on the social aspect, such as reducing poverty and improving the quality of life, an example is the buy one, give one model. This model focuses on promotions where, in exchange for donating a product of the same brand, a discount can be given on the purchase of another, allowing the donated product to be sent to associations of people living in poverty.

On the other hand, there are cooperative ownership models, which are based on community members being able to share profits and make decisions together, which allows for a greater distributed profit margin and the development of the community where they are established.

Another business model is inclusive sourcing, which allows small-scale producers to supply other companies with supply chains in larger markets, benefiting from advantages such as economic development, ongoing training and low risk aversion.

Financial Innovations

Regarding business models with financial innovations, there are some that are called collective financing, this type of financing consists of obtaining resources from a fund of donations and investments in order to start a company, this type of financing has the advantage of paying little or no interest, and the procedures are more friendly, the requirement is to perform actions and value propositions that establish sustainable development.

Another business model based on finance is called differentiated pricing, which consists of providing similar products or services, but people who can pay more are charged a higher fee than those who are in a more vulnerable situation, which makes it possible to even out financial resources by making an average collection. It is usually used in hospital services or educational institutions.

There is also a business model called “Freemium” which is an acronym for “Free” and “Premium”, which means that a product or service is offered for free to all customers, but those who want to obtain additional functionalities to those of the free version, must pay for the full version.

On the other hand, there is a model called innovative product financing, which is focused on leasing a product that the client cannot afford, or is not looking to buy at that moment, generally used in infrastructure focused on renewable energies.

On the other hand, the model called pay for success, is focused on addressing social problems that concern the state, in such a way that they serve as a social prevention generating savings, usually in the health sector. It works through private investors, government funds and civil associations.

Social Innovations Focused on the Base of the Pyramid

This type of business model, known as building a market, consists of creating new markets in regions where they do not exist, allowing the creation of social programs, alliances, micro-financing and technical assistance. What is sought here is to create value in the communities through sustainable enterprises, and that seek wellbeing as a whole.

Another model is called microfinance, which falls into this category because it focuses on people who do not have access to a credit history, or are in a situation of poverty, to whom a loan is provided, which is community-based, with the aim of carrying out actions with sustainable benefits for their communities.

On the other hand, the business model called micro franchises, this model is based on traditional franchises, but in search of a social sense, which implies that it focuses on people who are low-income and do not have the money to invest, and that they themselves are the ones who work on it, and the franchise provides the knowledge of the business model, as well as networks in supply chains.

Diverse Impact

With regard to this type of business model, the alternative market model consists of seeking a characteristic of an untapped community and providing value to it in order to generate a new potential market through alliances, technology transfer and a focus on sustainable development.

The model that is called behavioral change, consists of trying to convince its customers to change their consumption habits, and orient them towards sustainable development, to mitigate consumerism, purchasing patterns, and modify their daily habits, this could generate controversy in most companies, however what is sought with this model is to create a bond of trust and commitment between the consumer and the brand.

On the other hand, the model called product as a service, is to offer a product with an assistance and replacement service, so that the customer knows that he is protected against any type of eventuality, which in turn promotes recycling and a reduction in the amount of resources and waste used to create new products.

Finally, the business model known as shared resources is focused on changing the consumer's mentality about property and creating a new level of commitment, which consists of renting or providing a product or service only when the consumer requires it, a clear example of which is AirBnB.

In conclusion, the above types of business models can serve as a frame of reference of the changes in the mindset of companies over the years, and the encouragement in innovation, due to the fact that they perform sustainable practices and have changed the paradigm in the industry. (Clinton & Whisnant, 2019).

ADOPTION OF SUSTAINABILITY IN COMPANIES

As in any company, there are always difficulties when making changes within the policies and business models of the same, in the case of sustainable companies, many start from a status where in the first place their approach was that of a market economy, and did not seek sustainability, which is why in the beginning there is usually skepticism, which causes company managers to debate whether it is worth making changes towards a sustainable approach, when they have always obtained benefits without making substantial changes (Barnes, 2017).

On the other hand, it should be clarified that the changes towards sustainability do not mean that they are only concerned about the environment, by trying not to pollute excessively, use recycled materials, or seek to be responsible with society. The changes are systemic and permanent, and these imply that a sustainable company has greater transparency in access to information in data that show its operation, and not necessarily in those that are within the financial statements, also seeks that there is a comparison between the best practices of sustainable management and always allow to be updated and at the forefront,

also seeks that there are periodic audits to ensure proper management towards sustainable approach, Another aspect is to seek to improve and facilitate transparency in accountability and legal aspects, it is also sought that a strength of the organization is the ability to attract and retain talent, as well as a good ability to attract and build reliable relationships with its customers and also seek cooperation with other competing companies with similar ideas, so that a win - win agreement is established for sustainability (Buerkle et al., 2018).

As a consequence of the above, it can be seen that becoming a sustainable company is something that requires many changes focused on sustainable development, and although some challenges were mentioned in the previous paragraph, there are also some cons which in some way could be considered as limitations to make the change towards a sustainable one.

Therefore, it could be said that despite having a positive image, a sustainable company is more subject to public scrutiny, especially by social activists, because they will seek to have a greater capacity to inquire about its capabilities, as opposed to a smaller company that does not have this distinction.

Another important aspect to consider is that becoming a sustainable company requires a considerable amount of resources, due to the personnel needed to document the aspects required for certification, in the case of seeking certification as a sustainable company. Similarly, the systems that are used, and even the time focused on the change can be from months to years, since it depends on the management capacity and plausible evidence of its processes.

And finally there is a potential threat on the return on investment in the short term, which is a critical factor that impacts the decision making of most managers, in this case it is mentioned because the changes to establish a sustainable approach are gradual, and permanent, which is why sometimes the investment in necessary technologies, the network of suppliers, and obtaining resources in a sustainable way, is a factor that causes the return on investment is higher than what any neoliberal company is commonly used to. (Barnes, 2017).

CONCLUSION

In order to study the correct way to measure sustainability, it is necessary to start from the needs that companies are looking for in terms of sustainable development. Therefore, the application of a methodology that helps to measure and evaluate the degree of compliance of its processes according to sustainable development is a priority.

The aim of this study is to show the benefits of using a methodology capable of measuring sustainability and aligned with the UN SDGs, which can be applicable in companies, because currently both the metrics of the SDGs and the tools for measuring sustainability lack a correct measurement and standardization, as well as an index to assess their status and focus on their development, which causes a challenge for the fulfillment of the 2030 Agenda.

Regarding social impact, this research considers that by adopting a methodology that helps in the measurement of sustainability, it can provide any company with the possibility of having an evaluation that allows it to improve its indicators, in such a way that it can boost its growth and allow the company to be considered as a sustainable company.

Similarly, by adopting a sustainability measurement tool, it allows the development of continuous improvement in the organization's processes, which achieves improvements in productivity, and even access to financing provided by some agencies focused on the fulfillment of the 2030 Agenda, which drives companies towards competitiveness.

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Chapter 6

Organizational Sustainability: An Index From Macroeconomic Variables

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ABSTRACT

The objective of the chapter is to develop an organizational sustainability index based on development indicators from 1980 to 2019. The sample is made up of the aggregation of low, low middle, upper middle, and high income countries constructed by the World Bank. High-income economies had the least sustainable organizations in 1980 with an index value of -13.8, while in 2019 its value was 25.7. On the other hand, the lower middle-income countries had an increase of 15.2, going from -9.2 in 1980 to 5.9 in 2019. Similarly, the upper middle-income economies went from -3.8 in 1980 to 6.6 in 2019, with a growth of 10.48. Low-income countries started with the highest levels of sustainability among the four categories with 1.6; in 2019 the value of the calculated index was 5.20, that is, a growth of only 3.5 units.

INTRODUCTION

The complexities and challenges faced by modern organizations force them to evolve and change their structures to respond to social, economic, and environmental challenges. All organizations must operate in an environment with risks and uncertainty (Rivera & Rivera, 2019). In order to achieve higher levels of efficiency and sustainability, stability and coherence must be balanced with flexibility and change capacity (Carayannis et al., 2014). Due to the above, in recent years there has been a considerable increase in research in the field of organizational sustainability.

Within this diversity, most of the works can be classified into four groups: theoretical research, sustainable supply management, impacts of human behavior on the organization and case studies or empirical research. The first group includes the works of Moizer & Tracey (2010) on causal loops diagrams, Thomas & Lamm (2012) about elemental categories, Carayannis et al. (2014) covering governance,

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Evans et al. (2017) on business models, Islam et al. (2018) covering strategic alliances, and Mazutis et al. (2020) about organizational sustainability frames. While some relevant studies on sustainable supply management are Ageron et al. (2012) dealing with sustainable supply management, Silvestre (2015) in developing and emerging economies, Moldavanova & Goerdel (2017) referring to social connectedness, Bastas & Liyanage (2019) about management approaches.

Unlike most of the literature focused on efficiency and business models, there is a branch of management research focused on how human behaviors impact organizations, some of the works in this category include Linnenluecke & Griffiths (2010) on cultural backgrounds, Smith (2011, 2012) covering cultural and structural barriers, Florea et al. (2012) dealing with multicultural values, Wals & Schwarzin (2012) on dialogic interaction, Carmeli et al. (2017) about ethic of care, Vodonick (2018) in respect to resistance to change, and Soderstrom & Weber (2019) on situational interactions.

The literature on organizational sustainability also abounds in empirical research with large volumes of data or detailed information on a specific case. This category is broad and classifying the articles in it requires a chapter dedicated to it, however, some relevant works are Michelin & Parbonetti (2010), Boiral & Paillé (2011), Paulraj (2011), Eccles et al. (2014), Santora et al. (2015), Merwe (2016), De Freitas et al. (2017), Lopes et al. (2017), Sroufe (2017), Batista & Francisco (2018), Yu et al. (2018), and Grecu et al. (2020).

Most empirical work relies on the use of microdata, surveys, financial reports, or qualitative information from one or more companies. Based on these studies, the indices have become popular to incorporate the Triple Bottom Line (TBL) into corporate strategy. The TBL system can assess the profits that organizations are making through corporate sustainability solutions dealing with social, environmental, and economic sustainability. These indexes include the Dow Jones Sustainability Index, the Global Sustainable Competitiveness Index using concepts suggested by Global Report Initiative. The Dow Jones Sustainability Indices are a set of various sustainability indices that comprise companies listed on the New York Stock Exchange with high performance in the economic, social, and environmental spheres. Standard and Poor's divides the calculation of these indices between the following geographic areas: World, Europe, North America, Asia Pacific, Nordic and Korean. For its part, the Global Sustainable Competitiveness Index measures the competitiveness of countries using 131 quantitative variables from international agencies such as the World Bank and the International Monetary Fund. Its methodology consists of grouping the variables into five sub-indices of Natural Capital, Resource Efficiency and Intensity, Intellectual Capital, Governance Efficiency and Social Cohesion, and then integrating them.

Considering the above context, the objective of the chapter is to develop an organizational sustainability index based on development indicators from 1980 to 2019. The sample is made up of the aggregation of low, low middle, upper middle, and high income countries constructed by the World Bank. High-income economies had the least sustainable organizations in 1980 with an index value of -13.8, while in 2019 its value was 25.7. On the other hand, the lower middle income countries had an increase of 15.2, going from -9.2 in 1980 to 5.9 in 2019. Similarly, the upper middle income countries went from -3.8 in 1980 to 6.6 in 2019, with a growth of 10.48. The group of middle-income countries did not advance at the same speed as those of high income, however they are economies that have an environment that does not interfere with efforts to increase the sustainability of their organizations. The situation of low-income countries is something particular, in 1980 they started with the highest levels of sustainability among the four categories with 1.6, in 2019 the value of the calculated index was 5.20, that is, a growth of only 3.5 units. The proposed index weights the economic, social, and environmental characteristics of an economy, thus giving the capacity of its organizations to be sustainable over time.

This chapter is divided into three sections in addition to introduction and conclusion. The first does a literature review highlighting the different fields of research in organizational sustainability. The second presents details of the research objectives and methodology employed. Section three presents the results of the estimated index with its respective analysis.

LITERATURE REVIEW

In this section, we review the available literature on organizational sustainability, chronologically classifying the articles found in theoretical research, sustainable supply management, impacts of human behavior on the organization and case studies or empirical research. First, theoretical research allows for a logical exploration of a system. This type of research includes theorizing or defining how a system and its environment behaves and then exploring or developing the implications of how it is defined. The value of this type of research arises when the functioning of the system and its emerging dynamics are understood, which allows it to be successfully intervened. Second, research focused on sustainable supply management is necessary to understand the dynamics of its problems and their influence on the other functional areas of an organization. Third, research focused on the impacts of human behaviors is inspired by work in the field of psychology and experimental economics. In this case, the objective is to relax the assumptions that organizational models have about the way agents make decisions and analyze how cognitive biases translate into business practices. Finally, empirical work allows obtaining clear measures of the impact of sustainability variables on performance and behavior within an organization.

Theoretical models on organizational sustainability are characterized by their variety of approaches and conclusions. Moizer & Tracey (2010) explore the tension between allocating resources to commercial activity and social action. Social enterprises face high levels of complexity in their operation since they must meet social goals through commercial activities. The methodology used is based on the design of causal-loop diagrams (CLD) with a positive and negative alteration process to balance the system. Using the CLD, Moizer & Tracey (2010) propose three strategic options to social enterprise decisionmakers to reach organization sustainability:

- Separate the social and commercial mission of an enterprise.
- Integrate the social and commercial missions.
- Build alliances with for-profit businesses

Thomas & Lamm (2012) develop a conceptual model that identifies six elemental categories of attitudes that can be held independently or aggregated to yield a meta-attitude representing the legitimacy of sustainability. Innovation in business models is the central axis for a business to communicate its strategy within its ecosystem. Carayannis et al. (2014) focus on the organizational design and governance and the role different stakeholders, predominantly customers and partners play in the innovation process towards organizational sustainability. The authors identify a set of factors that generate innovation, among which stand out position within a business ecosystem, routines and capabilities, organizational culture, performance (3P) and patents. A business model centered in innovation towards sustainability must have the above items to be successful.

In a similar way, Evans et al. (2017) develop a unified theoretical perspective for understanding business model innovations that lead to better organizational economic, environmental, and social per-

formance. In the first place, business model innovations for sustainability bring great levels of complexity to understand the impact on the business and its causal path. Second, for long-term viability, their business plan should reflect the scope and complexity of business model innovation, as well as the need for new business models developed via testing. And third, the authors conclude that policy makers have an impact at industrial system levels and must be alert to the proposed challenges and propositions of all the stakeholders regarding innovation towards sustainability. On the other hand, Islam et al. (2018) examine how strategic alliances influence a firm's innovation and product life cycle and how innovation in turn influences organizational sustainability through product life cycle, and innovation from the perspective of the balanced scorecard (BSC). Their results show that product development is incrementally benefited from strategic alliances.

The combination and perception of time and place that a company has are central in the design of strategies aimed at sustainability. Mazutis et al. (2020) explore how sense of time and sense of place shape the development of organizational sustainability frames (OSFs). The authors argue that the time-space compression of globalization, not only has changed the perception of time and place of many businesses but has thus established companies with dominant transactional OSFs. While community and cosmopolitan OSFs can also assist to tackle some of the planet's most insistent environmental challenges.

The changing economic environment forces organizations to rethink theoretical models and functional strategies for manufacturing and service sustainability. In this context, Ageron et al. (2012) develop a theoretical framework for the Sustainable Supply Management (SSM) along 7 dimensions and apply it in an empirical analysis of a group of companies in France. Their main results show that:

- Performance objectives, rather than processes, are better for selecting suppliers in the upstream supply chain.
- Sustainability strategies and action plans have a better track record than performance targets when it comes to sustainable supply management.
- Customer happiness, supplier innovation, quality, and capacity all have a higher positive influence on SSM than lead-time, cost, flexibility, or inventory management.
- External pressures have a positive and bigger impact on the development of SSM than internal factors.

Silvestre (2015) explores how supply chain sustainability can be implemented and managed in developing and emerging economies using an in-depth case study of the upstream oil and gas industry supply chain in Brazil. This study provides three major results and contributions to the supply chain literature. First, a sustainable supply chain has the same evolutionary characteristics of an organization, they learn and evolve. Second, natural resource-based supply chains are geographically bounded and susceptible to local social demands. Third, in developing and emerging economies, supply chains confront extra challenges to sustainability, including increased levels of complexity and unpredictability due to volatile economic conditions and institutional gaps.

Moldavanova & Goerdel (2017) extends theories of organizational survival, social connectedness, and sustainability research, with sustainable management practices from the field of the US culture nonprofits to investigate the questions: What are the antecedents of organizational social connectedness? What role does social connectedness play for the sustainability of organizations? The product of the paper is a detailed framework of three-pillar of social connectivity that offers a more complex perspective of organizational sustainability, focusing mostly on organizational social relationships than was previously

found in the literature. Moldavanova & Goerdel (2017) argue that while internal variables such as financial health and internal capability are essential to corporate survival, social connections are an integral part of corporate sustainability and that an organization that is really sustainable is ultimately well-linked.

In a similar way, Bastas & Liyanage (2019) explores at how sustainability is incorporated into two important management approaches: quality management and supply chain management. Through a literature review, the authors formulate a theoretical framework that holistically incorporates quality and supply chain management in sustainable development. The main theoretical result of the proposed model shows that systemic integration with supply chain members and other stakeholders is a strategic parameter for integration of sustainability into intra and interorganizational processes.

Unlike most of the literature focused on efficiency and business models, there is a branch of management research focused on how human behaviors impact organizations. Through the competing values framework, Linnenluecke & Griffiths (2010) argue that employees from various cultural backgrounds emphasize various areas of business sustainability, such as internal staff development, resource efficiency, environmental preservation, and stakeholder involvement. Also, integrating sustainability indicators into employee performance evaluations or training can provide a favorable environment for employees to modify their attitudes, beliefs, or even basic assumptions.

Smith (2011, 2012) studies cultural and structural barriers that block the advance of sustainability within organizations. The main finding in understanding organizational sustainability focuses on relationships within the organization. Different styles of leadership have an effect on the development of a positive and negative sustainable environment and are shown to help develop an approach to the on-going socio-ecological crisis, through better understanding of an organization's ability to adapt and self-regulate on key sustainable issues.

Likewise, Florea et al. (2012) integrate scholarship on organizational sustainability, human resource practices, and values in delineating how altruism, empathy, positive norm of reciprocity, and private self-effacement support effective human resource practices in organizations. The authors conclude that ethical and multicultural values are crucial for designing and executing successful management practices and ensuring organizational sustainability. Further, human resource management methods that are applied without a genuine regard for the values that employees contribute to the business do not function effectively in fostering organizational sustainability.

Wals & Schwarzin (2012) investigate dialogic interaction as a key element of achieving a transition towards sustainability in people, organizations, and society as a whole. In terms of methodology, the authors use two case studies to ground the argument in real efforts by communities to create a sustainable way of living. Wals & Schwarzin (2012) conclude that an organization can achieve dialogic interaction of sustainability embracing uncertainty, complexity, controversy, and indeterminacy in its structure. While Carmeli et al. (2017) explore the socio-psychological mechanisms that link an ethic of care (EoC) and involvement in sustainability-related behaviors. With this objective in mind, the methodologies used are an experimental design and time-lagged data modelling. The main results show that EoC is linked to participation in sustainability-related behaviors through workers' emotional reactions to organizational sustainability and employee satisfaction with organizational sustainability is linked to an EoC both directly and indirectly through improved organizational identity.

In the field of organizational resistance to change, Vodonick (2018) explores the social and historical roots of resistance to change and develops a new strategy to accommodate organizational change is executed. Vodonick (2018) concludes that an organizational culture of change is created making change an everyday expectation by adapting the organizational structure to promote the assumption of power,

authority, and creativity in the entire organization. Working in the field of interactionist perspectives on how organizational structures emerge in new issue domains, Soderstrom & Weber (2019) study of a large biomedical company that sought to become more sustainable using data collected over 18 months. The authors identify that the quality of situational interactions between organizational members is the driving force behind organizational sustainable development attempts. In addition, it is identified that the processes carried out at medium and low levels of the organization are central to guarantee sustainable practices.

The literature on organizational sustainability also abounds in empirical research with large volumes of data or detailed information on a specific case. An example of them is the work of Michelon & Parbonetti (2010) in the field of stakeholder theory. The authors examine the relationship of board composition, leadership, and structure on sustainability disclosure among US and European companies. Their results show that the variability of disclosures of the sustainability of US and European businesses is shaped by corporate governance. Also, a positive link between the impact of community and disclosure of sustainability is identified. Such a favorable correlation also includes two of the information subcategories that comprise the overall disclosure index: environmental and strategic information.

Boiral & Paillé (2011) propose and validate an instrument for measuring organizational citizenship behavior for the environment (OCBE) for improving the environmental practices and performance of organizations. OCBE is defined as individual and discretionary social behaviors that contribute to more efficient environmental management by businesses but are not explicitly acknowledged by the formal incentive system. Boiral & Paillé (2011) carry out an exploratory study in 228 individuals and a confirmatory study in 651 individuals. In this way, three main categories are identified of OCBEs centered on a different aspect of environmental management:

- Eco-initiatives: personal environmental initiatives.
- Eco-civic engagement: contributions to corporate environmental activities.
- Eco-helping: mutual pro-environmental assistance.

On the other hand, Paulraj (2011) empirically evaluates the effect of firm-specific resources and/or capabilities on sustainable supply management (SSM) and sustainability performance. The methodology used is based on advanced structural equation modeling approaches and hypothesis testing using data collected from 145 U.S. firms. The study indicates that the capacities of companies may have a considerable impact on the environmental, social, and economic performance of companies, in addition to the external stakeholder demands. SSM is shown as a socially complex connection that may act as an essential mediator in the link between business-specific resources/competence and corporate sustainability. Paulraj (2011) argues that companies should thus not only build single internal resources/capabilities but also leverage them to find strategic partners, jointly manage them, and further assess them to achieve future objectives and needs in sustainable development.

Eccles et al. (2014) investigate the effect of corporate sustainability on organizational processes and performance using a matched sample of 180 U.S. companies. The authors discover a change in organizational processes by 2009 in organizations that implemented sustainability policies in 1993, compared with those companies that adopted almost no sustainability policies. Eccles et al. (2014) argue that low sustainability organizations are generally aligned with the traditional paradigm of corporate profit maximization, which treats social and environmental concerns as externalities. While the high sustainability companies are distinguished by different governance procedures that directly involve the board

in sustainability issues and link executive compensation to sustainability objectives. The main impact of these procedures is a company characterized by higher level and deeper level of stakeholder engagement, longer-term time horizon in their external communications, greater attention to nonfinancial measures regarding employees, and a greater emphasis on external environmental and social standards.

Santora et al. (2015) compare the extent to which nonprofits have planned for executive director succession in six different countries using data from the survey findings of six published articles that used the same questionnaire in Australia, Brazil, Israel, Italy, Russia, and the United States. Most charities do not prepare for a successor, according to the findings of each study; moreover, the organizations in these studies prefer to pick and appoint outsiders, even excluding internal deputy directors. This behavior suggests that nonprofits need to be attentive to strategic priorities to deal with expected and unexpected departures of executive directors.

A case study of organizational sustainability in the education sector is carried out by Barnard & Van der Merwe (2016), their objective is to give an outline of the University of Johannesburg's (UJ) creative management techniques in its search for a sustainable future. Through a holistic and multidisciplinary approach, the authors demonstrate that innovation in higher education is the product of multiple planning sessions, policy, and procedure formulations, brainstorming and benchmarking exercises, performance evaluations, managerial interventions, and statistical analysis. In addition, the authors identify a series of necessary and sufficient conditions, among which stand out decisive leadership on strategic direction, regular, strategic ability, and inclusive planning.

De Freitas et al. (2017) verify how Lean Six Sigma (LSS) could influence the organizational sustainability through their projects. The methodology is qualitative with the use of questionnaires made to 106 LSS experts with Green Belt, Black Belt, Master Black Belt or Champions certification. The surveys explore the expert's perception of LSS over economic, social, and environmental performance of a company over time. With this procedure the authors find five impacts of LSS stand out as the most relevant to organizational sustainability:

- Reduce waste.
- Reduce defect rate.
- Increasing the quality of service.
- Increasing product quality.
- Reduce process variability.

In one more case study, Lopes et al. (2017) explore the case of a Brazilian family-owned company of rubber products, operating in the sectors of health, education, and coatings, which based on organizational sustainability uses knowledge to develop open innovation aiming to promote sustainable innovations. The methodology used in this case study is based on casual observation, semi-structured interviews with key informants, and focus group discussions. The authors achieve two main practical lessons. First, companies should work on methods to encourage knowledge production and open innovation, because they can no longer rely exclusively on internal spheres, requiring oxygen from external sources of technology, information, or innovation to boost domestic growth. Second, the methods for active engagement of suppliers, customers, and communities are effective drivers to gain market-share and maintain the client basis.

Sroufe (2017) examines why and how corporate leaders operationalize sustainability in organizational strategy, systems, and activities. The methodology used is based on the analysis of responses to structured

interviews with sustainability professionals using a cross-industry sample of multinational organizations recognized as top performers by multiple sources (Dow Jones Sustainability Index, Newsweek Green Rankings, GRI, and KLD). Sroufe (2017) argues that the operationalization of sustainability takes place through the alignment of performance metrics within and across business units and functions. Also, integration and change management are critical success factor for the advancement of strategic sustainability initiatives.

Batista & Francisco (2018) identify the sustainable practices performed by large corporations in the implementation of organizational sustainability in environmental, economic, and social dimensions. With this objective in mind, the authors use data from the Corporate Sustainability Index (CSI) from 2012–2016, belonging to the Brazilian stock market in services sector of the economy and employed the Global Reporting Initiative (GRI) methodology. The results showed the strategic planning involving infrastructure, environment, human resources, product innovation, organizational management and deadline setting acted as the baseline for the implementation of the practices towards organizational sustainability. The findings will also guide the managers' decisions in the development of their strategic planning, based on practical and objective results. The insights given by Batista & Francisco (2018) can guide managers' strategic planning decisions based on practical and objective outcomes.

Yu et al. (2018) examine innovative climate as a boundary condition and organizational trust as a mediating mechanism to explain when and how the employee-organization relationship (EOR) is associated with workplace innovative behavior. The authors carry out a field study using multi-source data to test our hypotheses. The results show that creativity predicted innovative behavior favorably through trust and an inventive climatic environment mitigated the indirect impact of EOR on the innovative behavior through corporate trust.

The absence of reports or failures in these can hinder the advances in sustainability proposed in the business model. Grecu et al. (2020) describe a software solution that simplifies the sustainability reporting process and is useful for decisions concerning sustainable management. The proposed tool is based on a mathematical algorithm that combines several sustainability indicators to calculate a Global Sustainability Index for five companies. The software designed by the authors simplifies the sustainability reporting process by allowing users to use a robust mathematical algorithm for generating a global index that highlights the organization's progress toward its sustainability goals.

RESEARCH OBJECTIVES AND METHODOLOGY

After developing a literature review on the different fields of research in organizational sustainability, we present the research methodology for the operability of calculating the organizational sustainability index for economies classified by income with the help of data collected from the World Bank databases. The focus of this research seeks to obtain conclusions about the behavior of organizations from the aggregate data of the economies. Since the results of the macroeconomic variables of interest are given by the combination of actions of the organizations and regulatory actors, the assess correctly the TBL. Details of the methodology employed are presented here after.

RESEARCH METHODOLOGY

The variables are obtained from the World Development Indicators compiled by The World Bank (2021). In order to develop an organizational sustainability index based on development indicators from 1980 to 2019, a series of variables must be chosen that represent each of the dimensions of the TBL. With this in mind, the following variables are chosen:

- **Social Sustainability:**
 - Life expectancy at birth: average number of years a newborn is expected to live if mortality patterns at the time of its birth remain constant in the future.
 - Adolescent fertility rate: number of births per 1,000 women between the ages of 15 and 19.
 - Percentage of urban population: people living in urban areas as defined by national statistical offices
- **Environmental Sustainability:**
 - Annual growth of GDP: Annual percentage growth rate of gross domestic product (GDP) at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars
 - Constant GDP per capita: GDP per capita is gross domestic product divided by midyear population. Data are in constant 2010 U.S. dollars.
 - Annual inflation: measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.
- **Economic Sustainability:**
 - CO₂ emissions: carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring. Data are in metric tons per capita.
 - Percentage of coal rents of GDP: coal rents are the difference between the value of both hard and soft coal production at world prices and their total costs of production.

The chosen sample is made up of the four group aggregates of countries constructed by the World Bank according to their income:

- Low income: economies in which 2020 GNI per capita was \$1,045 or less.
- Lower middle income: economies in which 2020 GNI per capita was between \$1,046 and \$4,095.
- Upper middle income: economies in which 2020 GNI per capita was between \$4,096 and \$12,695.
- High income: economies in which 2020 GNI per capita was \$12,696 or more.

The missing observations are filled in with the average of the three previous observations. Once we have the complete database, we proceed to calculate the standard score of each variable. The Z-score is defined as number of standard deviations by which an observed value or data point is above or below the mean value of what is being observed or measured. Raw scores above the mean have positive standard scores, while those below the mean have negative standard scores. This procedure is done using the mean and standard deviation for each income category for the entire period. The objective of standardizing the variables is to allow their comparison and computation, since the z-scores are on the same scale and

therefore, an index can be built from them. Based on the standardized variables, a sustainability index is obtained as follows:

$$Index_{it} = \frac{\sum_{i,j=1}^{TN} \xi_i - \sum_{i,j=1}^{TN} \phi_i}{8} \quad (1)$$

where i refers to the four income categories and t refers to the years of the sample. With this, the index is a weighted average of the z-scores of the eight chosen variables. The variables that have a positive correlation with the index are life expectancy at birth, percentage of urban population, annual growth of GDP, and constant GDP per capita; denoted by ξ_i . While the variables with negative correlation are adolescent fertility rate, annual inflation, CO2 emissions, and percentage of coal rents of GDP, denoted by ϕ_i . The resulting value shows the capacity of a country and its organizations to respond before the social, environmental, and economic needs of themselves and of their stakeholders.

EMPIRICAL ANALYSIS

First, the average life expectancy from 1980 to 2019 was 66.4 years. In high-income economies it was 77.4 years, while in low-income economies it was 54.7 years. Despite historical differences, in all economies regardless of income, life expectancy increased by around 12 years in the study period. This increase translated into greater accumulation of human capital and more flexible labor markets. In this way, organizations achieved higher levels of productivity, new developments in different functional areas and improvement in the quality of life of their workers.

The average adolescent fertility rate is defined as the number of births per 1,000 women between the ages of 15 and 19 was 63 births. In advanced economies its value was 23 births, while in low-income economies it was 120. This shows the great disparity in access to planning methods and sex education between countries. Furthermore, in the final year of the study period, the situation continued to be complex in the less developed economies, with low-income economies registering 93 births and low income economies lower middle with 42. The choice of adolescent pregnancies in the calculation of the organizational sustainability index is due to their impact on the labor market. There is evidence that motherhood has a negative effect on school attendance. Programs for the prevention of adolescent pregnancy should be strengthened to reduce school dropouts, but it is also important to establish government programs that allow adolescent mothers to continue with their basic education. This means that organizations cannot access the full potential of human capital in their respective labor market, and it also does not encourage the hiring of women within them, thus generating a negative impact on the social dimension.

In third place, the percentage of urban population in 2019 was 55.8% and by category it was 33%, 41.9%, 66.8% and 81.5% for the low, lower middle, upper middle and high income economies respectively. The transfer of the rural population to municipal capitals or cities is due to the socioeconomic advantages it represents, especially differences between field-city salaries, better quality of social services and greater possibilities of social mobility. In addition to the above, the increasing urbanization in modern economic growth is due to increases in the productivity of agricultural activities, which cause production per farmer to increase, and the economy needs fewer of them to feed itself. The process of economic

development gradually raised education levels, which generated a new segment of qualified labor supply in search of jobs in the service and manufacturing industries in companies and businesses of all sizes.

The measures of economic growth present a positive performance in the study period for all groupings of countries. The average annual growth of total GDP was 3.6% where the low, lower middle, upper middle and high income economies grew 3.5%, 4.1%, 4.3% and 2.3% respectively. This resulted in an increase in the standard of living worldwide, where the global GDP per capita for 2019 measured in constant 2010 US dollars was 838, 2415, 8920 and 44360 for the low, lower middle, upper economies. middle and high income respectively. This growth translated into higher levels of demand and investment for companies in all sectors since the potential for sales and economic performance is determined by the size of the market in which it is located. Since, for more successful internal strategies that an organization designs, it will not be able to maintain itself over time with a negative economic environment. In addition, this growth driven by the whole of society translated into higher levels of taxation and public spending.

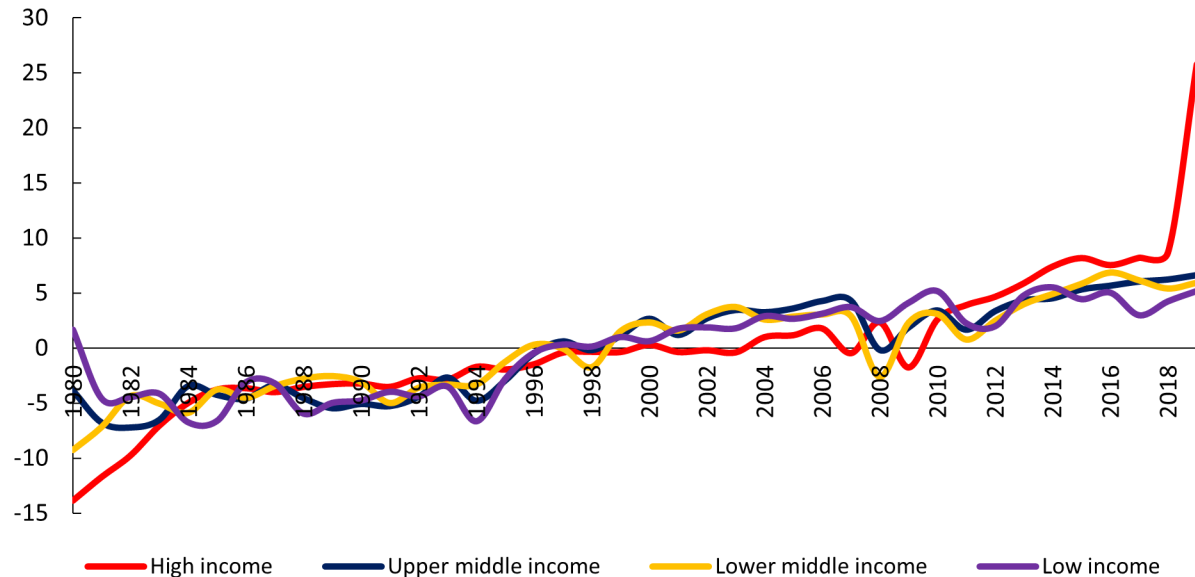
Regarding inflation levels, it was observed that average inflation was 6% for the entire study period. However, when dividing the study period into shorter time intervals, it is observed that inflation increases for all groups of countries, especially in the 1980s and 1990s. At the world level, inflation stabilized since the loss of importance of fiscal policy in the 1990s, monetary policy has taken the main place to achieve stability in output and inflation. In addition, the inflation targeting scheme became popular. The scheme is based on the announcement of a central bank inflation target and the use of a reference interest rate as an instrument, while the other monetary aggregates and the exchange rate are, for the most part, determined by the effective market. In this environment, political decisions are transmitted with a lag in inflation, since they tend to affect different variables and only afterwards, through various channels, the inflation rate. Inflation has direct effects on the finances of companies since companies sell much less than usual. When inflation is higher, the purchasing power of the public is reduced and less is bought. Inflation also has an effect on the salary of employees. By lowering the purchasing power of the currency, the most normal thing is that employees ask for a re-categorization of their salary in order to continue living and consuming as usual. On the other hand, a process of uncontrolled inflation produces uncertainty in the market, with which many projects and investments stop being developed while waiting for the bad times to be overcome.

Regarding the environmental dimension, the metric tons of CO₂ per capita of the high-income countries went from 12.1 in 1980 to 10.2 in 2019. While the upper-middle-income countries went from 4.2 tons to 6.1. For their part, the low-income and lower-middle economies kept their emissions relatively constant. With this, it is seen that the efforts of governments and organizations to reduce their CO₂ emissions have been heterogeneous and require more joint work. Contrary to the above, the Percentage of coal rents of GDP fell in the world economy, going from 0.40% in 1980 to 0.25% in 2019. This is largely due to the actions of companies that they have sustainable strategies are valued more than the rest. Considering the variables already exposed together with the calculation methodology, Figure 1 shows the index calculated for the period from 1980 to 2019 by income level of the economy.

The proposed index weights the economic, social, and environmental characteristics of an economy, thus giving the capacity of its organizations to be sustainable over time. The trend of the four group of countries considered is positive, with slow growth towards higher levels of sustainability. It is noteworthy that the 2008 financial crisis negatively impacted the performance of all economies worldwide, and therefore of the actors within it.

Figure 1. Index results: 1980-2019

Source: Author's Construction



High-income economies had the least sustainable organizations in 1980 with an index value of -13.8, while in 2019 its value was 25.7. The explanation for this change is due to two main reasons. Organizations can execute better policies and business plans aimed at sustainability when they are in an efficient, stable economic environment and with a clear regulation. Second, organizations in these economies have followed a series of processes that ensure better social, economic, and environmental performance. Some of these processes are reduce waste, reduce defect rate, increase the quality of service, increase product quality, and reduce process variability. The combination of the two reasons resulted in an increase of 39.6 points in the proposed index.

On the other hand, the lower middle income countries had an increase of 15.2, going from -9.2 in 1980 to 5.9 in 2019. Similarly, the upper middle income countries went from -3.8 in 1980 to 6.6 in 2019, with a growth of 10.48. The group of middle-income countries did not advance at the same speed as those of high income, however they are economies that have an environment that does not interfere with efforts to increase the sustainability of their organizations.

The situation of low-income countries is something particular, in 1980 they started with the highest levels of sustainability among the four categories with 1.6, in 2019 the value of the calculated index was 5.20, that is, a growth of only 3.5 units. With this value, they remain at a similar level to that of middle-income countries, however, the other categories presented growths 3 to 12 times higher in the sustainability value. In developing and emerging economies, companies confront extra challenges to sustainability, including increased levels of complexity and unpredictability due to volatile economic conditions and institutional gaps. Due to this, its progress has been so low in relation to the other categories.

CONCLUSION

In this chapter, the literature on organizational sustainability was chronologically classified in theoretical research, sustainable supply management, impacts of human behavior on the organization and case studies or empirical research. Theoretical models on organizational sustainability and impacts of human behavior are characterized by their variety of approaches and conclusions. While the literature on empirical research is characterized by large volumes of data or detailed information on a specific case. From this information, relevant conclusions can be drawn in each case study by carrying out a triangulation with its respective theoretical framework.

The proposed index weights the economic, social, and environmental characteristics of an economy, thus giving the capacity of its organizations to be sustainable over time. The trend of the four group of countries considered is positive, with slow growth towards higher levels of sustainability. It is noteworthy that the 2008 financial crisis negatively impacted the performance of all economies worldwide, and therefore of the actors within it.

The sample is made up of the aggregation of low, low middle, upper middle, and high income countries constructed by the World Bank. High-income economies had the least sustainable organizations in 1980 with an index value of -13.8, while in 2019 its value was 25.7. On the other hand, the lower middle income countries had an increase of 15.2, going from -9.2 in 1980 to 5.9 in 2019. Similarly, the upper middle income countries went from -3.8 in 1980 to 6.6 in 2019, with a growth of 10.48. The group of middle-income countries did not advance at the same speed as those of high income, however they are economies that have an environment that does not interfere with efforts to increase the sustainability of their organizations. The situation of low-income countries is something particular, in 1980 they started with the highest levels of sustainability among the four categories with 1.6, in 2019 the value of the calculated index was 5.20, that is, a growth of only 3.5 units. The proposed index weights the economic, social, and environmental characteristics of an economy, thus giving the capacity of its organizations to be sustainable over time.

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KEY TERMS AND DEFINITIONS

Governance: Rules and principles by which the company is governed when developing its operations. This includes interaction with all its stakeholders such as customers, suppliers, competitors, among others.

Income: All profits that are added to the total budget of an entity, whether public or private, individual or group. In general terms, income is both the monetary and non-monetary elements that accumulate and that consequently generate a consumption-profit circle.

Index: type of economic data of statistical nature that allows an analysis of the economic situation, both past, present, and future, of a territory or entity.

Macroeconomics: Field that studies the global functioning of the economy as an integrated whole, in order to explain the evolution of economic aggregates.

Moving Average: Averages calculated from artificial subgroups of consecutive observations.

Organization: Association of people who interact with each other and use resources of various kinds in order to achieve certain objectives or goals.

Standard Score: Variable that is used in statistics to compare data from different samples or populations and is defined as the number of standard deviations that a given value takes with respect to the mean of its sample or population.

World Bank: International organization specialized in finance whose main activity is helping developing countries that need financial support through loans or credits and that are in a situation of poverty.

Chapter 7

Searching for Sustainability in the Generation of Knowledge: Reducing the Gap Between Academia and Business

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ABSTRACT

The link between the practitioner's world and academia is not without its complications. If we assume that academics are responsible for producing knowledge while practitioners are responsible for its application, we could be excused for thinking that the natural procedure would be a joint effort, where these two worlds coincide. However, thanks to globalization—and scenarios of unheard-of speed and polarization—these human conditions, far from tending to converge, have in fact diverged due to technology's erasing of distances. Evidence suggests that these two groups function better apart, given the nature of their particular realities, and the so-called “Mode 2” was proposed in 1994, as a methodology capable of bringing both visions closer together; however, despite Mode 2's benefits, sizeable changes have yet to be observed. This work analyzes certain elements that could help to reverse this situation.

INTRODUCTION

The gap between the academic and applied worlds has given rise to a profuse number of studies that have analyzed the reasons and causes seeking to explain the existence of these two visions founded on authentic and well-defined professional communities - ‘practitioners’ and ‘academics’ (Brannick & Coghlan, 2006; Worrall, 2008; MacLean & MacIntosh, 2002; Bartunek & Rynes, 2014).

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Authors such as Weick (2001) and Bartunek & Lynn (1987) affirm that approximately 87% of the publications regarding this gap are non-empirical and rather serve to propose normative opinions. The situation has not changed much, and researchers continue to point to the need for more investigation in this regard (Ellström, Elg, Wallo, Berglund & Kock, 2020; Gauri & Grewal, 2021; Sharma & Bansal, 2020). The need for further investigation into this matter is thus clearly established.

This work delves into the evaluation of these differences, and then introduces the concepts of Mode 2 and knowledge sustainability, closing with some recommendations and conclusions.

PRACTITIONERS AND ACADEMICS: THE DIFFERENCES BETWEEN THEIR TWO WORLDS

Methodology vs. Purpose

One of the most relevant findings on this topic is related to the cognitive conditions that divide practitioners and academics, associated with what Schulze (1997) called the “transition state”. He identified two delimited states - “*not knowing what the ends are*” on the one hand and “*ignorance of the means*” on the other.

In detail, this perspective suggests that academia shares the same paradigm and has focused its attention on the *means* of obtaining knowledge for the specific purpose of continuing to be part of that integrating academic paradigm (Kuhn, 2013). On the other hand, practitioners enjoy greater flexibility and focus their attention mainly on the *ends*, as we can see when observing the traditional system of professional goals.

This does not infer that academics, unlike practitioners, are exempt from a framework of goals, but rather that they do not share the same focus on parameters. An example that reflects this situation is that which is proposed by Sharma & Bansal (2020), who develop a very interesting viewpoint based on the fact that the knowledge systems for academics and for practitioners are different. Their analysis concludes that a fundamental premise for achieving the co-creation of knowledge is the formulation of an explicit process that somehow contemplates both these parameters and has them converge.

In other study, Carson (2001) identified three groups of marketing researchers: academics, business consultants and members of the applied world or practitioners. These groups are distinguishable by applying two criteria, on the one hand rigor and validity and on the other qualitative and quantitative methods. For this author, academics and business consultants share a tendency towards the rigor and validity given to the use of quantitative techniques, while practitioners rely on intuition and qualitative techniques. This consequently enables different, clearly-identified paradigms between the two groups.

Different Paradigms

In his work *Liquid Modernity* of 2015, Professor Bauman proposes the concept of “liquidity” as an analogy to refer to the Present in constant change, since fluids are not fixed in a space or fixed in time, tending rather towards continuous change.

Using this approach, we could say that practitioners operate within this paradigm of liquid modernity, whilst academics operate in an environment of high demand for the development of knowledge, finding themselves at the forefront of scientific production and usually specializing in a particular area

of knowledge development (Kram, Wasserman & Yip, 2012). This situation further impacts the particularities resulting from the governance structures of the journals and the reviewers' own interests, in turn contributing to the distancing between the production and application of knowledge (Dunbar & Bresser, 2014).

This would allow the latter to have more time available to them, resembling a more intermediate "solid" state, given that they have a structural dimension that neutralizes the impact of time.

In keeping with this vision, authors such as Brinberg and Hirschman (1986) point out that the applied world would be affected by its urgent and permanent need to act every day in its decision-making, while academics do not face such everyday situations.

According to some scholars, these differences in the stated visions would support the growing distancing.

The Contributions of Globalization

In a scenario of continuous change - at new speeds and new polarizations - with technology canceling-out distances, have meant that human conditions tend towards ever greater divergence (Bauman, 1998).

Although advances in communications have allowed for greater availability of knowledge, in some ways this has also pinpointed academics' specialization, making them more immersed in their methodologies and contributions, and subject to increasingly complex and demanding standards. In this sense, academics are subject to homogeneous training parameters which, together with their work environment, favor a particular communicative form required for the continuous generation of knowledge (Kram, Wasserman & Yip, 2012).

For practitioners, on the other hand, these advances have meant greater immediacy in their decision-making, and consequently less time for reflection and analysis in their professional performance. A good example of this, without going further, would be the adoption of concepts such as "infoxication". The implementation process, thanks in part to these complexities, has become an even more difficult task, rendering the communication of the adaptation and transformation of knowledge more and more difficult in constantly changing contexts (Austin, 2013).

Background to this Gap

This distancing generates an authentic "iron curtain of knowledge"¹, characterized by:

Duplication of Resources: A production divided between the two worlds that prevents interaction between the parties and the joint creation of knowledge. This has led to the existence of two sources of knowledge development; on the one hand the practical and on the other the academic, which neither encourages nor enhances joint work between the parties. Hence, what is learned in the academic world does not reach the practitioner's world and vice versa, which implies that knowledge is built twice.

Conflicting Perceptions: An environment that creates a sense of distance between the parties, where the practical world looks on academic actions with distance and suspicion, assessing them from a critical perspective and considering them a minor influence on its daily actions. Conversely, academia moves ahead with the development of its theories, peering simplistically at the practical world, basing its decisions on aspects that are merely empirical and experiential - intuitive even.

Rigidity of the Parties' Positions: Both parties make a critical and biased evaluation of the other. This translates into the practical world's evaluation of the university researcher as someone far-removed from practical professional experience, with little decision-making power in critical situations of high

uncertainty or in highly competitive and changing environments. For its part, the academic world sees the practical professional as having fewer tools to evaluate and assimilate more complex theoretical models.

Even though there are more revolutionary views from the scientific perspective, such as that of Feyerabend (1993), who is in favor of any form of knowledge creation, the current academic paradigm is far from accepting any knowledge creation methods that come from the practitioner environment. Therefore, both parties are hardly inclined to adapt their methods and thus achieve a common spectrum where both could give their best.

Greater Distancing: This is associated with the relative importance assigned to methodology and purpose. Specifically, this gap becomes wider when we consider the perspective of academic work, where concepts such as academic rigor in the development and implementation of research processes hold little value for practitioners.

For the practical world, these highly meticulous methodologies are generally deemed less relevant, when compared with saving time and emphasis on expected results, aspects that are greatly valued among practitioners. The latter are used to placing more emphasis on practical aspects in the development of their investigative processes, precisely overlooking greater rigor in the methodological and theoretical aspects.

Thus, for those who have shared these experiences both in the practitioner's world and in academia, it is easy to recognize these differences, since working in each of these groups one has to share, live and participate in different paradigms. These deep differences lead to a dissociation that makes it difficult for both parties to join forces.

A graphical example of these divergencies is how few of those graduating from doctoral programs in Chile get jobs and succeed in corporations - just 6.8% of their workforce (Ministry of the Economy, 2014).

Consequences

This gap between academia and the world of the practitioner has several consequences that negatively impact their interaction. Among them:

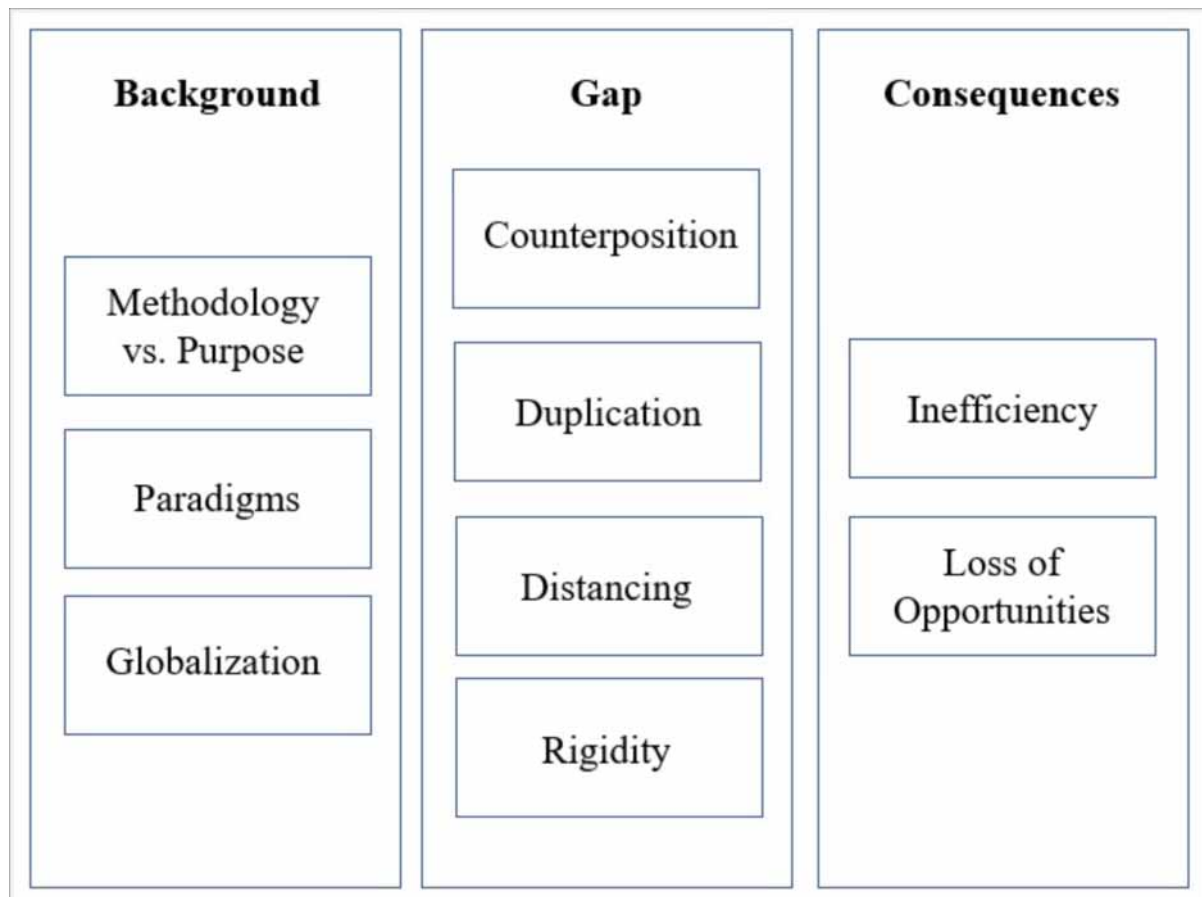
Inefficiency: A more extensive, profound and significant generation of knowledge is impaired, since the generation of "knowledge incubators" is prevented by the lack of an interaction between the academic and practical world that would generate interesting and fruitful spaces and formal sites for joint endeavors.

Absence of Potential Opportunities for Practitioners: As a result of this limited interaction, the practical world fails to take advantage of the opportunities and benefits it can receive from academia, both by seeking to maximize business potential and also by strengthening its competitive position. This prevents it from accessing a valuable source of knowledge and technical advice, contributing as a true lever for improvements in the face of crisis, volatility and competitive complexity.

Absence of Potential Opportunities for Academics: The other side of the coin is that academia also suffers from the lack of access to a far greater number of interactions with the world practical. This loss is reflected, both in access to practical knowledge and to the enormous "case bank", which would otherwise add to its academic 'toolbox' and thus enrich its research and teaching activities. This would also contribute significantly to aspects such as generalizability, so desired by academics, and to refutability, so necessary for the construction of theory and the development of scientific knowledge.

Figure 1, summarizes the context of this knowledge gap:

Figure 1. Context of the gap between practitioners and academics



Reaction to the Loss of Opportunities

As can be seen, the diverging courses of the work of practitioners and academics has consequences that lead to significant inefficiencies in the construction of knowledge. This essay looks at some of the attitudinal dimensions that undermine the development of joint work and collaborative efforts, and which are essential requirements for the functioning of a new paradigm of knowledge generation between these two worlds, called Mode 2. A review on this Mode 2 follows, seeking to understand its beginnings, its development and consequently propose alternatives that would improve its effectiveness.

MODE 2. DEFINITION AND CHARACTERISTICS

As a bridge to overcome this gap between both worlds, authors Gibbons *et al.* (1994), proposed a new form of knowledge production as an extension of the traditional model, which they called Mode 2.

It contemplated a close interaction between different actors throughout the knowledge-production process, employing a wider and a trans-disciplinary range of evaluation criteria, arising from a continuous collaboration between practitioners and academics.

This Mode 2 of knowledge production seeks to better combine both academic rigor and relevance to the applied world (Tranfield & Starkey, 1998). Moreover, this new form of knowledge production uses a greater and broader range of criteria to evaluate the quality of the results, through a more reflective process that affects the deepest levels of what can be deemed “Good Science”.

The bases of this model of knowledge production integrate the different audiences for which the creation of knowledge is focused, a phenomenon called the “three audiences of knowledge”.

According to the authors of this concept (Reason, P. & Marshall, J., 1987), emphasis has to be placed on what they call “what good research communicates”, on the understanding that knowledge is also conceived in the way in which it is disclosed.

This approach proposes that all good communication must be conceived from the perspective of three specific audiences:

For Them: Since it produces some kind of generalizable ideas and results.

For Us: Since it responds to our concerns and practices.

For Me: Since it responds to the needs of the individual researcher.

Authors Brannick and Coghlan argue that the nature of this gap between the applied world and the academic world is unclear and that based on this ‘three-audiences’ approach the “for them” audience - understood to be the applied world - academic communication would be less interesting than it would be for the university research community, insofar as the results are perceived as less ‘generalizable’ ideas from their particular perspectives of the development of their businesses.

Other authors also analyze this model of the three audiences and point out that traditional research is directed “for them”, i.e., framing knowledge within a scientific community, while the applied world’s research is directed “for us”, i.e., we being members of a system that has experienced joint actions and hopes to see their benefits from a pragmatic perspective.

This is why Gibbons *et al.*, as well as other authors, propose this Mode 2 as a new form of knowledge production, an extension of the traditional model labeled Mode 1, traditionally based only on researchers’ questions and answers.

On the contrary, Mode 2 would seek the interaction of many actors in the knowledge production process, making use of a wider range of evaluation criteria and marked trans-disciplinary by nature (both in terms of its members as well as their work processes, as indicated by Maclean & Macintosh in their practical study of 25 organizations in the United Kingdom (2002)). This approach would operate according to the Brannick & Coghlan model, accepting the integration of the “three audiences” as a key aspect for understanding the gap between the academic and practical worlds.

This integration would take place within the scope of the research process; it would consider collaboration between academics and practitioners and a put a critical-realism process at the service of the research activities.

As opposed to Mode 1, Mode 2 considers a knowledge production process inserted into a Social Organization in a way that is completely different from the traditional form of organization in which current knowledge production is framed.

Searching for Sustainability in the Generation of Knowledge

In Mode 1, for example, knowledge is produced from a disciplinary, unitary perspective with little emphasis on adoption and deployment. In fact, Huff (2000) characterizes Mode 1 as a discipline dominated by individual training and by its production of cognitive knowledge carefully validated by peer review and subsequently applied by others, if indeed it is actually applied by them.

Many of the aspects considered relevant for knowledge production in Mode 2, on the other hand, are already used from the very outset in the current social organization of academic and scientific research, highlighting and even promoting the positive effects of trans-disciplinary research.

However, it should be noted at this point that much of the research is restricted to the traditional discipline of knowledge production “silos”, institutionally established in most business schools. Thus, Mode 2 knowledge production was to have implications not only for the optimization of the social organization of the scientific research community, but also for redesigning business schools and development of managerial education programs.

Seen from this perspective, Mode 2 points to a new value system that:

1. Encourages high-quality research oriented towards the practical world and at the same time highly valued in academic research journals.
2. Provides academics with a tool for advancing their careers, based on their contribution to the practical world through the development of their respective specialties, employing a model and an approach to their individual disciplines that is more eclectic and inclusive than the accustomed isolated and relegated professional performance (Starkey & Madan, 2001).

Therefore, Mode 2 points to a formal research model whose design takes both academic rigor and practical relevance into account, opening the door to a wider diffusion both in the academic and practical world.

The simple fact that this methodology encourages the development of knowledge that reduces the gap between practitioners and the academic world, gives it an intrinsic and unique value that deserves a more in-depth and detailed analysis, based on more empirical evidence and theoretical and methodological evaluation.

Finally, it is paradoxical that this Model that promotes a knowledge generation bridge between these two worlds, also lacks the widespread dissemination by practitioners and academics that is essential for its strengthening and deployment.

Some of the fundamental differences between these modes of knowledge development can be observed in Table 1 below. Source: Worrall (2008).

MODE 2: AN EVOLUTIONARY PERSPECTIVE

The first Mode 2 approach was introduced by Gibbons *et al.*, (1994) to the natural sciences in the UK, contrasting with standard Mode 1 research. Researchers Transfield & Starkey (1998) subsequently presented the Mode 2 discussion to business and administration literature. These authors described Mode 1 as organizational research defined with academic rigor and focusing only on the researchers' own questions and answers, but which was frequently of no great relevance to the practical world.

Table 1. Comparison of mode 1 and mode 2

Issue	Mode 1	Mode 2
Research frontiers:	Single discipline, impermeable, paradigmatic conformity.	Transdisciplinary and permeable.
Stakeholders and audiences:	Academics, who are often ensconced within a discipline and offer much less space for expert subfields.	Academics and practitioners.
Objectives:	Production of new knowledge; construction of theory by adding to the disciplinary knowledge base, to replicability and validity.	Harvests knowledge that will be useful and usable for practitioners and society in general.
Results	Basic and applied research.	Applied and applicable research.
Organization:	Often individualistic; a research agenda that is autonomously established and hierarchical; substantial commitment to the extension of the body of knowledge.	Team-based, hierarchical, network-based; research agenda established externally.
Dissemination:	Review of articles controlled by peers who are usually other academics; well-defined institutionalized channels; limited and specific audience.	Transferred by practice; articles aimed at practitioners; dissemination that is frequently done through professional bodies and aimed at multiple audiences.
Use:	Production precedes consumption; can never be used to support practice; potential use does not influence research design.	Simultaneous production and consumption; production of knowledge and its dissemination are interrelated and may be multimodal.
Orientation:	Elitist and exclusive.	Pluralistic and participatory.
Evaluation criteria:	Peer-determined excellence; disciplinary standards; auditable quality.	Applicability perceived through use by research users; contribution to practice by practitioners.
Validation:	Validation through peer review and publication	Validated through usage
Methodology:	Defined by academic discipline.	Plural and defined by the context of the research; often novel and emergent.

In their analysis, they described Mode 2 as trans-disciplinary, that is, as opposed to a unitary discipline thinking. This includes the dissemination of the implications of the practice based on the findings that occur in the research process and operating through teams of researchers that include academics and practitioners, both groups contributing with their combined experience, capacities and skills.

From the political and social perspective this combination would generate a more responsible production of knowledge and is also framed, almost by definition, in a combination of both rigor and relevance.

Bearing the above in mind, within the academic discussion developed around the gap existing between practitioners and academics, there have been positions that make a positive evaluation of the possibility of achieving a significant rapprochement between the practitioner and academia.

For example, Avenier & Cajaiba (2012) suggest that it is indeed possible to develop questions that guide future research, managing to combine the interests of academics and the practical world. Orr & Bennett (2009) and Knights & Scarbrough (2010) suggest that the interests of practitioners and academics can perfectly overlap in a harmonious fashion, achieving adequate knowledge management together with a practical contribution to the community.

In this regard, Pettigrew (2001) pointed out that Mode 2 brings research closer to a new opportunity for a more dynamic and contextualized social science that would offer management researchers an attractive bridge to be used by communities interested in how and why general patterns vary in different configurations of organizations and nations.

Going even further, Keleman and Bansal (2002) argue that Mode 2 research can accommodate a wide range of interests in a particular required setting.

Given the importance of Mode 2, its implementation has been promoted in practice through government initiatives. The most emblematic case has been that of the British Government, which promoted its development in the 1990s as applied to the natural sciences, achieving interesting results. In 2018, as a result of the historical practice of introducing mode 2 in the United Kingdom, the government agency UK Research and Innovation (UKRI) was created, attached to the Department of Business, Energy and Industrial Strategies. This unit is responsible for promoting public-private alliances to support the exchange of research and knowledge oriented towards the improved management of higher education institutions in that country. A specific example of the implementation of mode 2 is the creation of a funding area called Engineering and Physical Sciences Research Council (EPSRC), which designed a complete manufacturing-oriented engineering program called Engineering for Manufacture (EFM), based precisely on a prior joint project carried out between practitioners and researchers that had analyzed the different aspects of manufacturing management (Tranfield and Starkey, 1998).

The detailed study carried out by Swan, Bresnen, Robertson, Newell & Dopson, (2010), showed, however, that the aforementioned governmental efforts to introduce Mode 2 generated conflicting results, since multiple difficulties were encountered that led to the termination of this experimental program and with Mode 1 being again regarded as the only, valid and “known” formulation for the approach to science.

Although they could weaken the favorable stance *vis-à-vis* the importance of Mode 2 as proposed in this work, these disparate results in fact served to guide this work towards its identification of the attributes that have been missing for the trans-disciplinary work.

Even an optimistic view as to the potential of Mode 2 implementation must admit that the existence of Mode 1 is not, *per se*, harmful and it is very likely that Mode 2 will never completely replace Mode 1. In fact, Gibbons *et al.* (1994) state that Mode 2 should coexist with Mode 1 and should not be seen as its total replacement.

At this point, one has to be aware that the task of making Mode 2 work correctly is highly complex. Authors such as Hodgkinson, Herriot & Anderson (2001) and Pettigrew (2001), for instance, see research conducted applying Mode 2 as being complicated and even with a low probability of narrowing the gap between practical relevance and academic rigor.

Nevertheless, these authors also highlight the importance of encouraging research that is strongly oriented towards methodological theory and rigor but which, at the same time - and very relevantly - employs a combined research model that exploits the strengths of both Mode 1 and Mode 2, suggesting (Huff, 2000) a kind of “Mode 1.5”.

In short, one of this essay’s basic assumptions is that the limited success in adopting Mode 2 for the British government’s investigation, has little to do with the design stage of the process of knowledge creation, but more likely in a failing to conduct its implementation stages.

ARGUMENTS FOR MODE 2 WHEN LOOKING TOWARDS THE FUTURE OF KNOWLEDGE GENERATION

According to Gibbons *et al.*, (1994), Mode 2 continues to be the formula with most possibilities of reducing the gap between practitioners and academics. However, the fact that there is no empirical test validated by critical consensus leaves room for speculation regarding the true utility of this variant.

Our argument here is that this situation is due to the fact that this method, even while being very good for the purposes for which it was designed, is insufficient unless certain structural requirements necessary for its application are met; these being:

Willingness to Integrate: To reduce the gap under study, the willingness of both parties to participate is a minimum requirement. If there is no common ground in their approach, such as the execution in practice of Mode 2 by both sides, such approach could hardly be proposed. After having overcome this first aspect, we must consider certain other critical elements, prior to the possibility of joint work between practitioners and academics.

Disposition to Form Alliances: According to Kandemir, Yaprak & Cavusgil (2006) alliances are voluntary collaborative agreements between companies that involve the exchange, sharing and co-development of products, services and knowledge. This orientation involves probing, coordinating and learning alliances. Although the definition is aimed at companies, its essence also makes sense for research centers.

One must therefore recognize what the authors call “alliance-oriented companies”, which are characterized by assigning high priority to existing relationships and that have advanced their abilities to monitor and identify opportunities, competently coordinate them and learn successfully from their experiences in these combined efforts.

If organizations made up of practitioners and those made up of academics do not have this *voluntary* orientation, it will be difficult for them to achieve a successful application of Mode 2 - or any other form of joint work, for that matter. Therefore, to understand how to build this orientation towards alliances, it is especially important to consider the relationship between this concept and the competencies needed for alliances (Llanos-Herrera & Andrade-Valbuena, 2017).

Promoting strategic alliances sometimes requires advocacy by governments. For example, the Bayh-Dole Act of 1980, established by the United States government, facilitated a notable increase in formal cooperative research alliances between universities and industries (Rynes, Bartunek & Daft, 2001). Likewise, the National Science Foundation, in the same country, promotes research and fundamental education in all non-medical fields of science and engineering, encouraging cooperation between the country's universities and corporations to promote the financing of research projects (Cohen, Florida, Randazzese, & Walsh, 1998).

Competencies for Alliances: As proposed in the work of Lambe, Spekman & Hunt (2002), certain capacities and resources are also necessary for successful alliances. On the one hand, the idiosyncratic and complementary resources, and on the other, the competencies developed by experience in alliances, alliance management capacities and the propensity to identify new partners.

In this sense, the above-mentioned research recommends the formation of idiosyncratic and complementary resources, meaning that trust has to be created for this joint work, trust that is difficult to generate from a distance, since it can only be achieved through interaction between the parties.

However, if there is no motivation that allows us to glimpse some beneficial results for both parties in the short term, this type of initiative will have no basis, especially considering the paradigm of liquid modernity experienced by practitioners, as mentioned above.

Generation of Bonds: Taking networks of contacts between people as an analogy, not all of us have the capacities and abilities to generate bonds and work together successfully. Even though, in the case of companies and organizations, these can be acquired or developed, clearly not all have them.

These bonds are also based on affinity or similarity, as proposed by Granovetter (1973), where entities that have more elements in common are more likely to generate stronger bonds, which can lead to beneficial alliances for both parties. If the parties do not have these elements or do not have the adaptive capacities required for their deployment, it will be difficult for them to achieve alliances (Castillo-Alarcón, 2015).

An example of this association is the one proposed by Bartunek (2011), who presents as an example of the development of Mode 2, the growth and development in recent years of Doctorate programs in Business Administration, which combine rigor and relevance in the development of novel research applied to the service of management issues.

In brief, if the conditions set forth above are generated both through the creation of bonds, as well as the perfection of capacities and orientation towards alliances, the possibility of reaching the optimum situation of Mode 2 exploiting the potential of knowledge production will be real and achievable, as well as the generation of knowledge, and the consequent increase in productivity and competitiveness on both sides.

Once these conditions have been attained, it will also be possible to project their results and evaluate their expected cost-benefit ratio, which should lead to the further development of these conditions to generate these and further alliances, and even focus the search on those joint opportunities that are more attractive.

WHAT DO THE ACADEMICS HAVE TO SAY?

An essential part of this work involved reviewing and considering the attention paid by academia to this link between its own ambit and that of its counterparts, the practitioners. A simple search was conducted in the Web of Science (WoS) database, one of the world's most prestigious publication databases of academic articles. The use of a single database served to provide a degree of homogenization of all the articles found. Dialing in the 'topic' word "practitioner", in combination with "academic" or "researcher", we obtained over 36,000 results - a very considerable number - but of course most of the articles focused on topics that were unrelated to our review, we therefore opted to delve deeper.

When examining the results, proposals to strengthen ties with the practitioners' world were indeed present but in the smallest of fractions, reflecting a weak concern for the practitioner-academic relationship that undoubtedly requires greater attention. In fact, among the articles most cited in the results obtained, only one involved a deeper reflection on the relationship and a search for best practices in the work done between practitioners and academics (Lang *et al.*, 2012).

Since the systematic search for results in WoS failed to produce satisfactory results, a free approach was employed using a 'snowball' technique, taking material from the articles found and following-up on clues that led us to others that were more exclusively dedicated to joint work between academics and practitioners. By applying this more laborious methodology, we came upon to a group of articles that proved to us that the issues and concerns are already several decades old (e.g., Havelock *et al.*, 1969).

A case of particular interest is the study carried out by Havelock *et al.* (1969), which in some way lays the foundations for addressing the problem under study from a “Dissemination and Use” (D&U) perspective. The work in question addresses this relationship by examining the vision of communicational systems and aspects, and goes further still by also considering the psychological undercurrents of the knowledge-dissemination relationship. A series of main models is highlighted, sorted into three broad areas: the first, which includes research, development and dissemination; the second, which covers social interaction; and the third, which includes problem solving. These models follow the series of interactions that lead to a bond which should, in theory, unite the theoretical advances with the work of the practitioners.

It is precisely the last point addressed - that of bonds - which is developed in greater depth in the work of Huberman (1990). The author makes an important contribution to the relevant literature, developing and empirically testing a model and incorporating aspects related to the work involved in dissemination (intensity of effort, quality of execution, dissemination skills and usage, and products quality), the networks exploited (inter-organizational links, contacts in the process), effects of the study (conceptual use, instrumental use, degree and scope of use, relative influence, strategic use, degree of transformation, negative effects and durability of use) and secondary effects (“spillover”, attitude towards research, organizational effects, career effects), just to mention the most innovative elements included in the model proposed in this work.

Continuing with our search, we found other articles dedicated to the generation of knowledge and its application to different contexts, such as the case of Switzerland (Rönnerman, 2005), which delves into the challenge facing professionals when wishing to convert their own knowledge and their research into practical effect.

We can therefore conclude that the academics’ view of the bond with practitioners is truly complex. Given the dating of the works found in the literature review, it would appear that more attention was paid to this relationship at some point, but such efforts have diminished over the time between then and now. We should also note that not all scientific areas share this same problem. In medicine, for example - a case that will be discussed later - it is less serious a problem than in other areas, such as conservation (Gossa, Fisher & Milner-Gulland, 2015).

MODE 2 CHALLENGES IN THE FACE OF A PANDEMIC

The ongoing COVID-19 pandemic has caused a grave economic and social crisis throughout the world and from the perspective of practitioners; in particular, it has affected the performance of different types of firms, generating restrictions and rethinking of the deployment of their businesses and new approaches to their relationship with clients (Kraus, Clauss, Breier, Gast, Zardini & Tiberius, 2020).

This situation, unprecedented in our recent history, has evidenced the relevance of strengthening science for the promotion of research in the field of prevention and promotion of mitigation measures for global events that affect public health and that result in adverse consequences for human development.

The extreme speed of the global spread and virulence of the coronavirus, contrasted with the speculative slowness of measures taken by governments and institutions worldwide, uncovered, among many other things, clear structural weaknesses in the framework of institutional cooperation between the public and private world.

For example, the chief of the US National Institute of Allergies and Infectious Diseases, Dr. Anthony Fauci, recognized that one of the causes of the rapid spread of COVID-19 and its devastating consequences in terms of human lives and its economic impact on the first economy of the world, was precisely due to the absence of interdisciplinary coordination and the consequent slowness in the early implementation of mitigation actions (<https://www.bbc.com/mundo/noticias-internacional-52273159>).

This failure to react also extended to the field of cooperation between practitioners and academics, impacting the timely and applied development of crisis management plans capable of calibrating the impact of specific actions such as confinement and telework, on economic and social performance (Lui, Lee and Lee, 2020).

This highlights the relevance of Mode 2 in contributing to the development of crisis management strategies, capable of breaking down the barriers and overcoming the apparent cleavage observed by the World Bank during this pandemic period, which has brought about a complex dilemma in the form of an “axis of balance” between economic development as opposed to actions to control public health (<https://www.bancomundial.org/es/news/press-release/2020/06/08/covid-19-to-plunge-global-economy-into-worst-recession-since-world-war-ii>).

In this sense, Mode 2 can become a key tool for strengthening transdisciplinary cooperation in the face of new global threats, for enabling urgent and complementary actions that society as a whole requires both for the generation of the new knowledge necessary to understand and identify the scope of these new challenges that threaten our development, and in the simultaneous adoption of effective actions that contribute to mitigate their economic and social impact.

In its recent status report on the pandemic situation issued last March, the World Health Organization, through its Director Adhanom Ghebreyesus and a group of 27 world political leaders, made an urgent call to develop a new “pan-governmental” approach that encompasses the efforts of the academic research world and the public and private sectors to strengthen their transdisciplinary and integrative work (<https://www.who.int/es/news-room/commentaries/detail/op-ed---covid-19-shows-why-united-action-is-needed-for-more-robust-international-health-architecture>). The idea is clearly to be better prepared in terms of capacities, resources, plans and scientific knowledge that reinforce national, regional and global resilience to the pandemic.

This call for the development of a pluralistic and participatory plan is in perfect alignment with the characteristics of Mode 2, since it encourages an increase in international cooperation to improve scientific research, alert systems, data sharing and the production and distribution of medical and public health countermeasures, such as the management of vaccines, drugs, diagnostic tests and personal protective equipment, that defend both public health and the preservation of economic and social growth.

Consequently, the above-mentioned actions inherent to health care, far from opposing economic development, effectively point to quite the opposite, i.e., enabling nations to be better prepared, where the practical world can deploy its functions in the private field with minimum consequences and timely identify new opportunities for development.

Our painful learnings during the current health crisis have undoubtedly taught us the pressing need to strengthen an authentic “international health architecture”, as described by the World Health Organization, to quickly and appropriately respond, applying a comprehensive approach and unselfish transdisciplinary cooperation, to overcoming the magnitude of these threats. It is precisely in this regard that the public and private promotion of knowledge generation management models, such as Mode 2, can play such a significant role in contributing to integration and coordination.

Finally, according to estimates by the World Health Organization, it is likely that this type of pandemic will repeat itself in the near future, added to the growing impact of new social challenges such as immigration and the negative consequences of climate impact, which will mandate the consolidation of new applied research approaches such as Mode 2. There can be no doubt that this approach will contribute to a joint commitment in the field of scientific research and the work of the practitioners of this world to provide faster, more timely and efficient responses to safeguard human development, exploiting to the full what has been learned in this complex period of pandemic, when the magnitude of global threats cannot and should not be addressed in isolation.

MODE 2 IN THE ERA OF KNOWLEDGE SUSTAINABILITY

In this era of sustainability, the production and application of knowledge proposed as Mode 2 should not be neglected. The need to be efficient in the knowledge generation processes and their respective application in the organizational world, is the responsibility of both parties. If this does not happen, there will continue to be an economic and social cost overrun, difficult to quantify.

In their recent research into the ecological impact generated by processes in companies, Couckuyt & Van Looy (2019) found that around 94% of the publications made have academic authors, and the rest, around 6%, are from the business world or governments. According to their diagnosis, research must balance the amount of relevant work performed by academics and that of professionals, as emphasized by Gauri & Grewal (2021) when noting the importance of joining efforts in the production of knowledge through joint work between academics and practitioners.

The formula of joint work is absolutely necessary, not just to ensure the prolonged existence of both parties, but to operate sustainably. This implies understanding the economic cost, on the one hand associated with the generation of knowledge, and on the other hand, with the under-production of value, in the practitioner's world.

Both parties must also consider the social and, eventually, the environmental cost implied by the non-generation of knowledge or the non-application of same under new integral and collaborative production approaches such as that proposed in Mode 2.

These aspects may seem occasional, or not particularly significant; however, not paying attention to this situation over time can represent very high costs for society in general.

We should also highlight another fundamental aspect in the development of sustainable knowledge, which is its "transdisciplinary" nature, since this concept explains the need to involve all parties with interests in a certain problem (see Lang *et al.*, 2012; Couckuyt & Van Looy, 2019; Ellström *et al.*, 2020). This increases the likelihood of implementation and therefore of the practical success of the theoretical advances achieved up until this point.

RECOMMENDATIONS FOR THE FUTURE OF KNOWLEDGE GENERATION

Based on this work, and according to the elements discussed, we will set forth some propositions that could contribute to reducing the gap between the academic world and the applied world.

The application of these proposals or recommendations, bearing in mind the key development elements discussed above, will contribute to reducing this gap and encouraging joint management between the two groups.

Creation of Mode 2 Research Units. The generation of applied research units in universities that promote the development of consultancies that support the management of the practical world and that also promote greater insights that contribute to strengthening academic management, in terms of more material for teaching and for research.

These true management “polyclinics” for research in the practical world would be true instances of applied management that would link these worlds together and respond to a specific need to activate their joint efforts.

To meet this challenge, it is necessary to change the institutional-business paradigm that unquestionably separates academia and the practical world. Some institutions that have achieved this task are the Brazilian Micro and Small Business Service (*Serviço Brasileiro de Apoio às Micro e Pequenas Empresas* - SEBRAE)² and the Economic Environment unit of Universidad EAN de Colombia³.

Dissemination of Mode 2. Promote knowledge of Mode 2 through the academic training for undergraduate and postgraduate careers. Although, little by little, methodologies have been introduced that relate the practical world with the academic world, such as “learning plus service” (Eyler & Giles Jr, 1999; and Furco, 1996), in practice, they are far from reaching the dissemination of Mode 2 one would hope for.

The ignorance that we have noted in many professionals regarding this methodology highlights the need to intensify its training aspects, so that future practitioners and academics can develop this ability in their respective fields of action.

At this point, some additional elements are in order to achieve a greater dissemination of Mode 2, such as the opening of specialized journals for the dissemination of applied research, focused on the presentation of concrete success stories for practitioners.

In accordance with the foregoing, the development of Mode 2 workshops should also be considered, thus allowing a more direct approach between academia and the practical world, where teamwork relationships and trust are encouraged as determining factors for their transdisciplinary work.

Academic approach to Mode 2. Finally, as the last proposal, and perhaps the most energetic, is the generation of Applicability Indicators for research articles.

Just as there are impact indicators of research articles that calculate their citation by the academic community, we propose the creation of an applicability index, associated with the specific usage of research studies to support management by the applied world, in terms similar to the academic citation.

In this way, we would have a “dual validation”, represented by that which is provided by peers in the scientific community and at the same time that of the world of practitioners, which would highlight the relevance that the applied world has assigned to academic research in terms of its recognition and contribution to its respective professional work.

CONCLUSION

The paper has sought to identify elements that could contribute to the reduction of the gap that exists between the worlds of practitioners and academics, through the analysis of certain authors’ work and some reflections regarding the positions of each of these worlds.

Specifically, it argues that the influences of globalization, rather than benefiting the joint work between these visions, have triggered a greater polarization. However, far from discouraging efforts to unite both worlds, this leads us to consider with greater emphasis the search for the elements that would bring about a sea change in the current paradigm.

In this sense, considering Mode 2 as a generator of knowledge, is preponderant because of its role in reducing this gap. Moreover, it recognizes the importance of generating certain basic conditions that openly encourage the execution of this methodology.

At this point, we would emphasize that since it is a bi-directional relationship, these conditions must be generated in both of the interested parties. In this sense, the development of these performance skills is fundamental, and from this moment on, they should be included as a parameter for job selection, both for practitioners from the public and private world and for academics.

We have sought to systematize the elements that lead to a successful application of Mode 2, however, it should be noted that these elements have been viewed from an internal perspective, both from the academic's and practitioner's viewpoint, excluding other contextual elements.

Without delving deeper, the legal-institutional context faced by universities is of vital importance, since they must nurture their permanent link with the practitioner's world, representing, as it does, a fundamental performance indicator for their respective institutional accreditations.

Future research on this topic could address the different practical perspectives involved in the design, planning and deployment of a successful project developed in Mode 2. This would allow investigators to more closely observe and analyze different practical elements that have so far been removed from the scope of this work. For example, an examination of the hierarchical structures that these projects should have, the most appropriate profiles and roles of their participants, and the key aspects and milestones for their successful completion, among other aspects.

Finally, the socialization of Mode 2 should be considered an essential focus for the rapprochement between the practical and academic worlds. This should be done through the development of a joint body of work that would positively impact both productivity and the generation of professional value, as well as the consequent relevance and methodological rigor of the scientific field for future development.

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ENDNOTES

- ¹ The authors consider this concept to be appropriate for describing this particular situation where these two paths associated with know-how, head towards the same place but arrive side-by-side, without converging, even though both could potentially benefit.
- ² See https://www.sebrae.com.br/sites/PortalSebrae/canais_adicionais/sebrae_espanol
- ³ See <http://investigacion.ean.edu.co/seccion/entorno-economico.html>

Chapter 8

Sustainable MSEs in Turbulent Environments Thanks to Innovation

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ABSTRACT

The purpose of this chapter is to present the state of micro and small enterprises (MSEs) in Bogota, Colombia with respect to the contribution of innovation as support to reach sustainable organizations in turbulent environments. To achieve this objective, a questionnaire structured and validated in 2020 by the Latin American Studies Network in Management and Business (RELAYN, its abbreviation in Spanish) was applied to 400 directors of MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda, and Tunjuelito in Bogota. For the development of this research, a correlational analysis is made, evaluating the degree of association between some dependent variables such as increase in sales, increase in profit and the risk of closure of the establishment, and an independent variable, which is innovation. Three hypotheses are proposed, which are approved in part, as can be seen in the results and conclusions of this research.

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INTRODUCTION

Organizations are constantly immersed in increasing and complex changes in their environmental surroundings; hence, innovation becomes a fundamental strategy to face the different situations that arise before them. Obviously, MSEs are not strangers to this volatility and uncertainty. In this sense,

Garcia-Cali, Garcia-Tamayo & Cardeno-Portela (2018) quoting Emery & Trist (1965), forerunners of defining “turbulence” in the managerial environment, explain that it is understood as an instability or rate of change in the environment of organizations, thus determining a type of dynamic and uncertain environment.

Those organizations that want to achieve sustainability in the midst of turbulent environments, require an innovation strategy that helps them to face the new challenges that arise before them every day and in this way, reach a position in the market with sustainable competitive advantages. It should be understood then that innovation refers to “the changes foreseen in their activities and that are oriented towards improving their results”, which implies having a capacity on the part of the company to involve “scientific, technological, organizational, financial and commercial actions” in its innovation process (Perez, 2019, p. 92 and 95, quoting OCDE, 2006). Regarding sustainability, it is considered that it occurs when the organization generates value in the economic, social and environmental areas in the medium and long term, contributing to the well-being and progress of current and future generations in the environment in which they operate (Uribe-Macias, Vargas-Moreno & Merchan-Paredes, 2018, quoting Barcellos, 2011).

Given the foregoing, the objective of this research is to know if the components of innovation aimed at the market, innovation in processes, innovation of goods or services and innovation in human resources affect the increase in sales, increase in profit and the risk of closure of the establishment (sustainability) of the MSEs located in Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments.

Rivera-Rodriguez (2010) quoting Ansoff, (1965, 1990); Davis et al, (1991); Miller et Friesen, (1982); Naman, & Slevin, (1993); D’Aveni, (1995); Morris et al, (1995); Mason, (2006), assures that innovation activities break with routine and tradition, encouraging creativity and undertaking for the development of new products and services, this being one of the most recommended mechanisms to face turbulent environments and achieve sustainability.

INNOVATION, SUSTAINABILITY, AND TURBULENT ENVIRONMENTS

Entrepreneurial Innovation

The concept of innovation goes back to Greek thinkers such as Plato and Aristotle who in their writings on politics revealed its meaning as “to introduce a change in the established order”, which indicates “incorporating new things that change customs and the order of things in an extraordinary way” (Castro-Martinez & Fernandez-de Lucio, 2020, p. 12). Classics of the history of economic thought have also taken into account the concept of innovation. This is the case of Adam Smith in 1776 – in his work *The Wealth of Nations*-, who shows that the concept of innovation plays a central role in the growth of wealth, although he does not define it. In this sense, during the first half of the twentieth century, around 1934, economist Schumpeter contributes to the importance of innovation with respect to economic growth, becoming a fundamental force thanks to its “creative destruction.” The ability to invent,

that is, to create ideas, to innovate by implementing the ideas commercially and to disseminate them, has an effect on the economic development of an organization, a country or a society. The organization generates a creative idea to fulfill a need that can affect an entire society (Lopez- Mielgo, Montes-Peon & Vazquez-Ordas 2007).

On the other hand, around 1995, the EU states in its Green Paper on Innovation that it consists of “the production, assimilation and successful management of the novelty in the economic and social fields. It offers new solutions to problems; therefore, it allows to meet the needs of the individual and the society” (Castro-Martinez & Fernandez-de Lucio, 2020).

For a product, service or process of an organization to be considered innovative, it should be new or, failing that, significantly improved so the company can put it into practice. It is worth mentioning that a company is considered innovative when, thanks to its knowledge, effort or acquisition of equipment, it is able to implement a new process or to sell a new product or service, even if the same product or service that has been recently launched to the market is produced or sold in the sector (Castro-Martinez & Fernandez-de Lucio, 2020).

This research takes the definition given by (Posada-Velazquez, Peña-Ahumada & Aguilar- Rascon, 2021, p. xviii, quoting OECD & Eurostat, 2007).

The introduction of a new, or significantly improved, product (good or service), a process, a new marketing method or a new organizational method into the internal practices of the company, the organization of the workplace or external relations.

Perez (2019), quoting OCDE (2006), assures that an organization can reach innovation thanks to its ability to involve scientific, technological, organizational, financial and commercial actions in its processes in order to improve its results, increase demand and reduce costs.

Achieving sustainability over time requires organizations to be flexible in such a way that they are able to adapt to the changes in the environment. For this reason, innovation becomes an essential element for them to be competitive in the market in which they operate. Being competitive through innovation generates an advantage because the company achieves greater productivity and profitability, higher sales volume and net income, a higher market value and greater benefits (Lopez-Mielgo et al. 2007).

Micro and small enterprises require that their productivity and competitiveness are immersed within their strategy. For this reason, technological changes need organizations to be flexible, innovative and, in addition, that they increase the intensity of knowledge (Lopez-Fernandez, Urquiola-Sanchez & Capa-Benitez, L. B., 2018, quoting Porter, 1990). According to Lopez-Fernandez et al., (2018), the foregoing means that it is not enough to incorporate technology to improve production; it is also necessary to develop policies and strategies aimed at human resources, in such a way that they allow to have an organizational culture based on motivation, knowledge and organizational commitment. Given the above, people become a valuable resource for innovation and, therefore, there is the need to invest in them to help them grow and develop, which in turn will be reflected in the growth and development of the organization; this is a source of competitive advantage for micro and small enterprises.

Sustainability

Regarding sustainability, this can be seen from different contributions: 1) philanthropic actions aimed at legitimizing the company before the society where environmental problems and social responsibility are privileged through the implementation of strategies that balance the economic part with the social and environmental areas (Justribo and Zaragoza 2014; Barcellos 2010, ONU 2015); 2) business strategy

aimed at achieving higher profitability, creating added value to products or services through sustainability practices that generate recognition and loyalty by consumers (Research Sustainability Asser Management Researd, 2018; GRI, 2018;); 3) sustainability is seen as a management strategy to achieve durability over time, supported by the values set forth by the organization (Bradford 2018).

This research takes the concept of sustainability framed in that the organization reaches durability in the long term, achieving profitability in the business.

Although the concept of sustainability is derived from the concept of sustainable development that was formalized by Brudtland since 1987, some companies, micro and small enterprises in particular, do not know its meaning nor how sustainability is undertaken in an organization. Perez, Acosta and Acurero (2020), quoting Barcellos (2010), assure that because investment is required, MSEs are not interested in the subject. However, this does not exclude them from incorporating the concept of sustainability given the impact they have on the economy of the countries. Every organization, no matter its size, must have a moral and ethical commitment to preserve the environment, to act in a transparent way with its stakeholders and to improve the quality of life of its collaborators.

Turbulent Environments

A turbulent environment occurs in organizations as a result of a series of transforming events that in some cases are unpredictable because they come from different elements such as demographic, economic, technological, regulatory and globalization and that cause changing and incomprehensible environments due to the heterogeneity of scenarios, thus affecting the normal performance of the sector where the organization operates (Rivera-Rodriguez, 2011).

Returning to the contributions of Emery & Trist (1965), according to Rivera-Rodriguez (2010, p. 88), turbulence for these authors “is the underlying instability or rate of change in the environment of the organizations; it is a situation where the resources and restrictions constantly change, forcing companies to react.” Other definitions given by Rivera (2010) and quoting other authors state that: turbulence occurs due to factors such as economic growth, scientific advances and modern communication systems (Galbraith, 1973); it is the leader’s responsibility to manage turbulence (Ansoff, 1979); turbulent environments generate uncertainty and they are difficult to predict due to the high degree of sporadic changes (Bourgeois & Eisenhardt, 1988).

There are similar concepts related to turbulence such as the *hostile environment*, which is defined as:

The number of threats faced by a company due to the intensity, vigor and multiple facets taken by the competition and by the cycles of the industry. Some characteristics of this environment are price intensity, product, distribution and technological competition, regulatory restrictions, negative demographic trends, cuts in personnel and materials (Calantone, Schmidt & Di Benedetto, 1997, quoted by Rivera-Rodriguez, 2010).

In this sense, a turbulent economy is observed when the domestic market grows slowly, the distribution and manufacturing costs are affected by the inflationary pressure, there are pressures to the investment regulation and competition increases with current competitors and the arrival of new ones (Rivera-Rodriguez, 2020, quoting Hall, 1996).

Some of the factors that generate turbulent environments are: changes in customer purchases, variations in economic cycles, changes in government regulation policies, among others. Despite the foregoing, turbulence has positive effects when seen as an opportunity to generate profitability and growth in the organization and in the sector to which it belongs. When there is a fluctuation in demand, organizations

are forced to be more flexible and are driven to innovate in their products and services (Drucker, 1980; Stigter, 2002, quoted by Rivera-Rodriguez, 2010).

MSEs (MICRO AND SMALL ENTERPRISES)

According to article 43 of Law 1450 of 2011, micro and small enterprises are units of economic exploitation managed by a natural or legal person and that can be engaged in different activities such as agricultural and livestock, industrial, commercial or service, either in the rural or urban area. As for their classification by company size, there are several criteria, namely: total number of workers, value of annual gross sales and value of total assets. According to Law 590 of 2000, micro enterprises have a staff of no more than ten workers and the staff of small enterprises is between 11 to 50 workers, being this criterion used to select the MSEs of this research (Velandia-Pacheco, Hernandez-Fernandez, Portillo-Medina & Alvear-Montoya, 2016).

Velandia-Pacheco et al., (2016) quoting Orozco (2005), assure that micro enterprises in Colombia are characterized for having a board of directors (if any) or a director focused on reviewing the accounting results and not in projecting the future; the priority of the director is to envision the future but not to build it; the vision is at short term and the personnel of the organization are not cleared about the strategy. Micro enterprises are born by business ideas of recent graduates who are in training or who interrupt their studies; of former employees that due to their expertise choose self-employment or of people seeking economic independence.

Regarding small enterprises, Velandia-Pacheco et al., (2016) quoting Longenecker (2001), assure that they are an important part of the country's economy because they employ approximately 65% of the labor force; they adapt easily to technology; they supply local markets with basic consumer goods; they establish in a dispersed manner in different regions, thus contributing to the regional development; they are flexible to adapt to the variations of the market; they solve problems in an agile manner because they have a reduced number of employees and the owner of the company is the manager; they do not require large disbursements of resources; they have the ability to solve problems on-the-fly; they have a unique command unit that allows an effective communication between the administrative and operational staff; the expenses and profits are low, allowing them to offer products or services on the market at competitive prices; contact with customers, suppliers and personnel is more direct and, finally, the owner usually has a great knowledge of the area in which the company operates, thus making it easier to carry out adjustments to the business on the go.

Micro and small enterprises also have important disadvantages, such as: they are exposed to economic changes of the environment as devaluation and inflation; in long periods of crisis, it is difficult for them to keep going because their sales rates decrease; they live on a day-to-day basis due to low capital investment; they are more vulnerable to government audit and control institutions; their finance can be affected by penalties or any other problem; it is difficult for them to access sources of financing; their chance to carry out merges or acquisitions of other organizations is low; it is difficult for them to become large enterprises; large companies try to make them disappear; owners are also managers, who usually manage in an empiric and not in a specialized manner; many hours of work and poor performance of the administrator.

In terms of their function, MSEs are characterized by four essential aspects: 1) subcontractor as suppliers of materials and parts; 2) service agency for large enterprises; 3) agents or distributors, and 4) customers Velandia-Pacheco et al., (2016) quoting Rodriguez (2002).

METHODOLOGY

Type of Research

The type of this research is descriptive because it analyzes how a phenomenon is and how it shows itself and its components by answering to the following questions:

1. What is the level of innovation in the MSEs located in Bogota?
2. What is the type of innovation most commonly used by MSEs located in Bogota?
3. What is the impact of innovation on the sustainability of these organizations?

In addition, it is correlational, because this type of study aims “to know the relationship or degree of association that exists between two or more concepts, category or variables in a specific sample or context” (Hernandez-Sampieri, Fernandez and Baptista 2014, p. 93). The research evaluates the degree of association between the increase in sales, in profit and the risk of closure of the establishment, and the innovation used by MSEs.

The quantitative approach is chosen because it determines the impact of the above-mentioned independent variables on the three dependent variables. To determine their impact, a factor and correlational analysis is performed. According to Hernandez-Sampieri et al., (2014), the quantitative approach allows to collect data to prove the hypotheses raised, taking into account the statistical analysis of the aforementioned variables.

Hypothesis

According to Hernandez-Sampieri et al., (2014) the hypotheses allow in a tentative way to explain a phenomenon subject of study and since the scope of the research is correlational, the following hypotheses are proposed:

- H1. Some forms of innovation have an impact on the increase in annual sales of the MSEs located in Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments.
- H2. Some forms of innovation have an impact on the increase in profit of the MSEs located in Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments.
- H3. Some forms of innovation have an impact on the risk of closure of the MSEs located in Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments.

Sample

Taking into account that the neighborhoods worked on in this research were Candelaria, Bosa, Puente Aranda and Tunjuelito, following are some data regarding the population at the district level and economic units.

Candelaria has 21,830 inhabitants, Bosa 799,660, Puente Aranda 211,802 and Tunjuelito 183,067 for a total of 1,216,359 inhabitants (Bogota Mayor's Office, 2020).

As of 2019, these neighborhoods account for 11.6% of share of companies created and renewed per neighborhood (Chamber of Commerce of Bogota, 2020).

According to data provided by the Chamber of Commerce of Bogota (2020), the companies registered and renovated in Bogota per size and neighborhood are:

Table 1. Companies registered and renovated in Bogota in the neighborhoods of Puente Aranda, Bosa, Tunjuelito and Candelaria.

Neighborhood	Micro Enterprise	Small Enterprise
Puente Aranda	18,489	2,013
Bosa	18,021	171
Tunjuelito	7,127	208
Candelaria	4,123	238

Source: Chamber of Commerce of Bogota (2020).

For this area, a convenience sample was taken, achieving a participation of 401 directors of micro and small enterprises. Students collaborated in gathering the information.

Data Collection Instrument

An instrument validated by the Latin American Studies Network in Management and Business (Relayn) is used and 43 questions related to innovation in MSEs are chosen, as well as three questions regarding the dependent variables of increase in annual sales, increase in profit and risk of closure of the establishment, nine questions on development of innovation processes and also questions for the demographic profile of the sample. The types of innovation investigated and the variables considered are shown in table 2.

FINDINGS

In the first instance, a KMO and Bartlett test was carried out for the bank of reagents, which allowed to measure the perception of the directors regarding innovation in the MSEs located in the neighborhoods selected.

The results of the Kaiser-Meyer-Olkin and Bartlett test show that it is appropriate to use the factor analysis statistical technique for the bank of reagents that measure innovation in MSEs by presenting a measure of sampling adequacy of 0.933 and significance of 0.000, as shown in table 3.

Sustainable MSEs in Turbulent Environments Thanks to Innovation

Table 2. Bank of reagents to measure innovation in MSEs

Component	Variables
	Independent
Innovation aimed at the market	[1.1. In my company we do studies on customer satisfaction]
	[1.2. We respond to suggestions, complaints and evaluations on customer satisfaction]
	[1.3. We provide after-sales service]
	[1.4. There is a person responsible for promotion and advertising]
	[1.5. I have an annual budget for promotion and advertising]
	[1.6. We frequently carry out promotion and advertising campaigns]
	[1.7. We design in-house the promotion and advertising campaigns]
	[1.8. We have identified the customers to whom each of the products or services are addressed]
	[1.9. The company frequently identifies new markets]
	[1.10. I'm always looking for new ways to reach my customers]
	[1.11. I seek that my intermediaries add value to the products or services that I offer]
	[1.12. It takes a short time for the products or services to be available to the customer]
	[1.13. The products or services of the company are always available to those who want to buy]
Innovation in processes	[2.1. I seek to get informed in different ways, trying to incorporate knowledge to decision making]
	[2.2. In the company, the decisions are made by me without consulting anyone]
	[2.3. When I make decisions, I take into account the opinion of other people in the company]
	[2.4. The company is part of a chamber or association]
	[2.5. The company has detected probable cost reductions in its inputs]
	[2.6. I have recently incorporated materials, labor force or tools that reduce costs]
	[2.7. I have recently incorporated materials, labor force or tools that improve the quality of my products or services]
	[2.8. The company adapts the parameters with which the quality of its products, services or processes are evaluated]
	[2.9. The company has received recognition for the quality of its products, services or processes]
	[2.10. There are mechanisms that assure continuous improvement of the processes which result in better products or services]
	[2.11. There is a department or person that design objectives related to innovation in the company]
	[2.12. The company has a budget allocated to the area of innovation]
Innovation of goods or services	[3.1. We strive to create competitive advantages that distinguish us from the competition]
	[3.2. There are company personnel dedicated to creating competitive advantages]
	[3.3. We allocate resources (people, time, money) for the generation of competitive advantages]
	[3.4. We make constant changes to our products or services]
	[3.5. We have more than one product to meet the needs of the same market]
Innovation in human resources	[4.1. The company has recently implemented new methods of recruitment, selection or hiring of personnel]
	[4.2. The company has recently implemented new performance appraisal methods]
	[4.3. The company has defined staff responsibilities and adjusts them to improve efficiency]
	[4.4. The company has measured the organizational climate]
	[4.5. The company has recently implemented control methods of financial resources]

continues on following page

Table 2. Continued

Component	Variables
	Dependent
	Increase in annual sales
	Increase in profit
	Risk of closure of the establishment

Source: Own elaboration based on the questionnaire Relayn 2020

Table 3. KMO and Bartlett test for the bank of reagents that measure innovation in MSEs

KMO and Bartlett test		
Kaiser-Meyer-Olkin measure of sampling adequacy		,933
Bartlett's sphericity test	Approx. Chi-square	8173,550
	gl	595
	Sig.	,000

Source: Results based on SPSS

When analyzing the results of the anti-image matrix, no items are excluded despite the low results of item 2b: “in the company, the decisions are made by me without consulting anyone” which yields a result of 0.372.

Feasibility Study for the Bank of Reagents that Measure the Perception of the Directors regarding Innovation in MSEs

When analyzing the reagents within the four main components, an adequate internal consistency is obtained for each component, as shown in table 4.

Table 4. Feasibility study for the components that measure the perception of the directors regarding innovation in MSEs.

Component	Cronbach Alpha	N of elements
Innovation aimed at the market	.901	13
Innovation in processes	.851	12
Innovation of goods and services	.787	5
Innovation in human resources	0.891	5

Source: Results based on SPSS

Results of the Perception of the Directors regarding the Orientation and Development of Innovation in the MSEs located in the Neighborhoods of Bosa, Tunjuelito, Puente Aranda and Candelaria in Bogota

The reagents with the highest result of the perception of the directors regarding the orientation and development of innovation in the MSEs located in the neighborhoods selected in Bogota are frequently offering new products or services based on suggestions made by my customers (75.1), focusing a lot on offering innovative products or services that distinguish the company (70.3) and being attentive to detect the new trends in the business and find out what the competition is doing (67). On the other hand, the least result corresponds to developing or paying to innovate the way the product or service is sold (56.6), developing or paying to innovate the production or distribution processes (55.9), developing or paying to innovate the way I organize the company (55.6), developing or paying to innovate the products or services that I offer (55.1) and attending fairs, courses, congresses or other business-related activities (53.4), as shown in table 5.

Table 5. Results of the perception of the directors regarding the orientation and development of innovation in the MSEs located in the neighborhoods selected in Bogota.

Reagents	Do not know / Not applicable	Strongly disagree	Disagree	Negative	Agree	Strongly agree	Positive
I'm attentive to detect the new trends in my business and find out what my competition is doing	8.1	5.0	19.9	33	37.0	30.0	67
I encourage employees to propose changes to my products, services and processes	15.0	7.5	22.9	45.4	35.9	18.7	54.6
I frequently offer new products or services based on suggestions made by my customers	6.5	6.0	12.5	24.9	43.9	31.2	75.1
I focus a lot on offering innovative products or services that distinguish the company	8.2	5.7	15.7	29.7	40.4	29.9	70.3
I develop or pay to innovate my production or distribution processes	23.4	13.0	19.5	55.9	28.4	15.7	44.1
I develop or pay to innovate the products or services that I offer	21.9	12.7	20.4	55.1	28.7	16.2	44.9
I develop or pay to innovate the way in which I sell my product or service (Design, packing, promotion, way of quoting, etc.)	23.2	13.2	20.2	56.6	27.4	16.0	43.4
I develop or pay to innovate the way in which I organize the company	22.2	13.7	19.7	55.6	29.7	14.7	44.4
I attend fairs, courses, congresses or other business-related activities	19.5	15.7	18.2	53.4	25.4	21.2	46.6

Source: Results based on SPSS

Results of the Perception of the Directors regarding the Innovation Components in the MSEs located in the Selected Neighborhoods in Bogota

The innovation component with the highest result is innovation aimed at the market (56.7), driven by the reagents of responding to the suggestions, complaints and evaluations on customer satisfaction (73.8), having identified the customers to whom each product or service is addressed (73.4), the search of new ways to reach customers (70.8), the short term in which the products or services are available to customers (81.6) and proper availability of products for those who want to buy (87.5).

The innovation component with the lowest result is that of innovation in human resources because it is unusual for this type of organizations to implement new methods of recruitment, selection or hiring of personnel (70.8) and neither new performance appraisal methods (62.1).

With respect to the component of innovation in processes, there are high ratings on the item that they take into account the opinion of other people in the company (74.8), that they have recently incorporated material, labor force or tools that improve the quality of the products or services (65.3) and that the company adapts the parameters with which it evaluates the quality of its products, services or processes (68.3). Finally, regarding the component of innovation of goods or services, the reagent of we strive to create competitive advantages that distinguish us from the competition has 76.8 and that of having more than one product to meet the needs of the same market, 83.1, as shown in table 6.

Impact of the Perception of the Innovation Components on the Increase in Sales

The relationship between the perception of the components and the increase in sales has a significant correlation at level 0.05 in the component of innovation aimed at the market in the reagent of taking a short time for the products or services to be available to the customers. Although the component of innovation in human resources has a low rating, correlation is found with sales in the reagents related to the company has recently implemented new methods of recruitment, selection or hiring of personnel and has defined staff responsibilities and adjust them to improve efficiency, as shown in table 7.

Impact of the Perception of the Innovation Components on the Increase in Profit

A relationship between the perception of the innovation components and the increase in profit is only found in the reagent the company has defined staff responsibilities and adjusts them to improve efficiency of the component of innovation in human resources, as shown in table 8.

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Table 6. Results of the perception of the directors regarding the innovation components in MSEs in Bogota

Component	Reagents	Do not know / Not applicable	Strongly disagree	Disagree	Negative	Agree	Strongly agree	Positive
Innovation at the market	[1.1. In my company we do studies on customer satisfaction]	18.2	9.2	20.7	48.1	32.9	19	51.9
	[1.2. We respond to the suggestions, complaints and evaluations on customer satisfaction]	8.5	5.2	12.5	26.2	40.1	33.7	73.8
	[1.3. We provide after-sales service]	24.9	10.3	16.7	51.9	24.9	23.2	48.1
	[1.4. There is a person responsible for promotion and advertising]	28.9	12.7	21.7	63.3	20	16.7	36.7
	[1.5. I have an annual budget for promotion and advertising]	28.7	13.5	24.7	66.9	21.4	11.7	33.1
	[1.6. We frequently carry out promotion and advertising campaigns]	26.7	15.2	27.2	69.1	20.7	10.2	30.9
	[1.7. We design in-house the promotion and advertising campaigns]	23.9	13	22.9	59.8	25.7	14.5	40.2
	[1.8. We have identified the customers to whom each of the products or services are addressed]	7.5	5.7	13.4	26.6	39.2	34.2	73.4
	[1.9. The company frequently identifies new markets]	16.2	7	23.7	46.9	31.2	21.9	53.1
	[1.10. I'm always looking for new ways to reach my customers]	9	4.5	15.7	29.2	37.9	32.9	70.8
	[1.11. I seek that my intermediaries add value to the products or services that I offer]	18.2	6.7	18.5	43.4	34.7	21.9	56.6
	[1.12. It takes a short time for the products or services to be available to the customer]	7.2	2.7	8.5	18.4	39.7	41.9	81.6
	[1.13. The products or services of the company are always available to those who want to buy]	3.5	1.5	7.5	12.5	38.1	49.4	87.5
Average component 1		17.0	8.2	18.0	43.3	31.3	25.5	56.7

continues on following page

Table 6. Continued

Component	Reagents	Do not know / Not applicable	Strongly disagree	Disagree	Negative	Agree	Strongly agree	Positive
Innovation in processes	[2.1. I seek to get informed in different ways, trying to incorporate knowledge to decision making]	16.2	5.5	17.5	39.2	37.2	23.6	60.8
	[2.2. In the company, the decisions are made by me without consulting anyone]	5.2	14.7	35.4	55.3	26.2	18.5	44.7
	[2.3. When I make decisions, I take into account the opinion of other people in the company]	6.5	5.7	13	25.2	45.9	28.9	74.8
	[2.4. The company is part of a chamber or association]	33.9	16.5	16.2	66.6	19.4	14	33.4
	[2.5. The company has detected probable cost reductions in its inputs]	14.7	10.7	31.9	57.3	31.7	11	42.7
	[2.6. I have recently incorporated materials, labor force or tools that reduce costs]	16	9.5	24.7	50.2	33.4	16.4	49.8
	[2.7. I have recently incorporated materials, labor force or tools that improve the quality of my products or services]	13.2	7.2	14.3	34.7	35.9	29.4	65.3
	[2.8. The company adapts the parameters with which the quality of its products, services or processes are evaluated]	14	4.2	13.5	31.7	39.6	28.7	68.3
	[2.9. The company has received recognition for the quality of its products, services or processes]	23.4	9.5	21.2	54.1	29.2	16.7	45.9
	[2.10. There are mechanisms that assure continuous improvement of the processes which result in better products or services]	17	8	15.5	40.5	37.9	21.6	59.5
	[2.11. There is a department or person that design objectives related to innovation in the company]	33.2	11.7	22.4	67.3	18.5	14.2	32.7
	[2.12. The company has a budget allocated to the area of innovation]	33.2	13.7	23.9	70.8	18	11.2	29.2
	Average component 2	18.9	9.7	20.8	49.4	31.1	19.5	50.6

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Table 6. Continued

Component	Reagents	Do not know / Not applicable	Strongly disagree	Disagree	Negative	Agree	Strongly agree	Positive
Innovation of goods and services	[3.1. We strive to create competitive advantages that distinguish us from the competition]	8.5	3	11.7	23.2	39.2	37.6	76.8
	[3.2. There are company personnel dedicated to creating competitive advantages]	27.9	11.7	22.9	62.5	24.3	13.2	37.5
	[3.3. We allocate resources (people, time, money) for the generation of competitive advantages]	25.7	10.7	20.7	57.1	28.9	14	42.9
	[3.4. We make constant changes to our products or services]	13	10	21.9	44.9	35.9	19.2	55.1
	[3.5. We have more than one product to meet the needs of the same market]	6.7	2.5	7.7	16.9	37.2	45.9	83.1
	Average component 3	16.4	7.6	17.0	40.9	33.1	26.0	59.1
Innovation in human resources	[4.1. The company has recently implemented new methods of recruitment, selection or hiring of personnel]	30.9	18	21.9	70.8	19.5	9.7	29.2
	[4.2. The company has recently implemented new performance appraisal methods]	25.4	13.5	23.2	62.1	24.9	13	37.9
	[4.3. The company has defined staff responsibilities and adjusts them to improve efficiency]	18	8	16	42	34.1	23.9	58
	[4.4. The company has measured the organizational climate]	24.4	12	19.7	56.1	25.9	18	43.9
	[4.5. The company has recently implemented control methods of financial resources]	20.9	12	17	49.9	31.4	18.7	50.1
	Average component 4	23.9	12.7	19.6	56.2	27.2	16.7	43.8
	OVERALL AVERAGE	19.7	10.0	19.1	48.8	30.4	20.7	51.2

Source: Results based on SPSS

Table 7. Pearson's correlation between the perception of the innovation components in the increase in sales.

Correlations			
Component	Reagent	Sales	
		Pearson's correlation	Sig. (bilateral)
Innovation aimed at the market	[1.1. In my company we do studies on customer satisfaction]	-0.036	0.478
	[1.2. We respond to the suggestions, complaints and evaluation on customer satisfaction]	-0.088	0.077
	[1.3. We provide after-sales service]	-0.021	0.671
	[1.4. There is a person responsible for promotion and advertising]	0.011	0.823
	[1.5. I have an annual budget for promotion and advertising]	-0.055	0.276
	[1.6. We frequently carry out promotion and advertising campaigns]	-0.065	0.196
	[1.7. We design in-house the promotion and advertising campaigns]	-0.041	0.413
	[1.8. We have identified the customers to whom each of the products or services are addressed]	-0.014	0.780
	[1.9. The company frequently identifies new markets]	0.023	0.650
	[1.10. I'm always looking for new ways to reach my customers]	-0.010	0.841
	[1.11. I seek that my intermediaries add value to the products or services that I offer]	0.036	0.474
	[1.12. It takes a short time for the products or services to be available to the customer]	-.098*	0.049
	[1.13. The products or services of the company are always available to those who want to buy]	-0.067	0.184
Innovation in processes	[2.1. I seek to get informed in different ways, trying to incorporate knowledge to decision making]	0.015	0.770
	[2.2. In the company, the decisions are made by me without consulting anyone]	0.034	0.498
	[2.3. When I make decisions, I take into account the opinion of other people in the company]	-0.052	0.301
	[2.4. The company is part of a chamber or association]	-0.014	0.786
	[2.5. The company has detected probable cost reductions in its inputs]	0.046	0.357
	[2.6. I have recently incorporated materials, labor force or tools that reduce costs]	-0.016	0.753
	[2.7. I have recently incorporated materials, labor force or tools that improve the quality of my products or services]	0.004	0.935
	[2.8. The company adapts the parameters with which the quality of its products, services or processes are evaluated]	-0.044	0.383
	[2.9. The company has received recognition for the quality of its products, services or processes]	-0.007	0.886
	[2.10. There are mechanisms that assure continuous improvement of the processes which result in better products or services]	0.017	0.731
	[2.11. There is a department or person that design objectives related to innovation in the company]	-0.042	0.401
	[2.12. The company has a budget allocated to the area of innovation]	-0.051	0.306

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Table 7. Continued

Correlations			
Component	Reagent	Sales	
		Pearson's correlation	Sig. (bilateral)
Innovation of goods or services	[3.1. We strive to create competitive advantages that distinguish us from the competition]	0.030	0.546
	[3.2. There are company personnel dedicated to creating competitive advantages]	-0.011	0.820
	[3.3. We allocate resources (people, time, money) for the generation of competitive advantages]	0.047	0.353
	[3.4. We make constant changes to our products or services]	0.006	0.897
	[3.5. We have more than one product to meet the needs of the same market]	0.018	0.722
Innovation in human resources	[4.1. The company has recently implemented new methods of recruitment, selection or hiring of personnel]	-.103*	0.040
	[4.2. The company has recently implemented new performance appraisal methods]	-0.048	0.336
	[4.3. The company has defined staff responsibilities and adjusts them to improve efficiency]	-.147**	0.003
	[4.4. The company has measured the organizational climate]	-0.093	0.062
	[4.5. The company has recently implemented control methods of financial resources]	-0.064	0.202

** . The correlation is significant at level 0.01 (bilateral).

* . The correlation is significant at level 0.05 (bilateral).

Source: Results based on SPSS

Impact of the Perception of the Innovation Components on the Risk of Closure of the Establishment

The relationship between innovation and the risk of closure of the establishment shows a significant correlation of 0.019 in the component of innovation aimed at the market in the reagent of responding to suggestions, complaints and evaluations of customer satisfaction. There is also a correlation at level 0.01 with the component of innovation of goods or services in the reagents of we strive to create competitive advantages that distinguish us from the competition and, there are company personnel dedicated to creating competitive advantages; also, with a correlation of 0.031, we allocate resources (people, time, money) for the generation of competitive advantages, as shown in table 9.

Results of the Variables of the Demographic Profile of the Sample and the Perception of the Innovation Components

In the variables of the demographic profile no significant correlation was found at level 0.01 or 0.05 with the innovation components, as shown in table 10.

Table 8. Pearson's Correlation between the perception of the innovation components in the increase in profit.

Correlations			
Component	Reagents	Profit	
		Pearson's correlation	Sig. (bilateral)
Innovation aimed at the market	[1.1. In my company we do studies on customer satisfaction]	-0.047	0.346
	[1.2. We respond to the suggestions, complaints and evaluation on customer satisfaction]	-0.082	0.102
	[1.3. We provide after-sales service]	-0.030	0.555
	[1.4. There is a person responsible for promotion and advertising]	-0.022	0.657
	[1.5. I have an annual budget for promotion and advertising]	-0.055	0.275
	[1.6. We frequently carry out promotion and advertising campaigns]	-0.079	0.113
	[1.7. We design in-house the promotion and advertising campaigns]	-0.055	0.274
	[1.8. We have identified the customers to whom each of the products or services are addressed]	-0.013	0.796
	[1.9. The company frequently identifies new markets]	0.016	0.751
	[1.10. I'm always looking for new ways to reach my customers]	-0.028	0.583
	[1.11. I seek that my intermediaries add value to the products or services that I offer]	0.046	0.361
	[1.12. It takes a short time for the products or services to be available to the customer]	-0.051	0.305
	[1.13. The products or services of the company are always available to those who want to buy]	-0.076	0.127
Innovation in processes	[2.1. I seek to get informed in different ways, trying to incorporate knowledge to decision making]	0.019	0.707
	[2.2. In the company, the decisions are made by me without consulting anyone]	0.060	0.230
	[2.3. When I make decisions, I take into account the opinion of other people in the company]	-0.054	0.277
	[2.4. The company is part of a chamber or association]	-0.011	0.827
	[2.5. The company has detected probable cost reductions in its inputs]	0.019	0.700
	[2.6. I have recently incorporated materials, labor force or tools that reduce costs]	-0.016	0.756
	[2.7. I have recently incorporated materials, labor force or tools that improve the quality of my products or services]	-0.002	0.962
	[2.8. The company adapts the parameters with which the quality of its products, services or processes are evaluated]	-0.047	0.348
	[2.9. The company has received recognition for the quality of its products, services or processes]	-0.010	0.836
	[2.10. There are mechanisms that assure continuous improvement of the processes which result in better products or services]	0.002	0.960
	[2.11. There is a department or person that design objectives related to innovation in the company]	-0.031	0.540
	[2.12. The company has a budget allocated to the area of innovation]	-0.034	0.495

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Sustainable MSEs in Turbulent Environments Thanks to Innovation

Table 8. Continued

Correlations			
Component	Reagents	Profit	
		Pearson's correlation	Sig. (bilateral)
Innovation of good or services	[3.1. We strive to create competitive advantages that distinguish us from the competition]	0.016	0.755
	[3.2. There are company personnel dedicated to creating competitive advantages]	-0.035	0.484
	[3.3. We allocate resources (people, time, money) for the generation of competitive advantages]	0.036	0.468
	[3.4. We make constant changes to our products or services]	-0.023	0.651
	[3.5. We have more than one product to meet the needs of the same market]	0.002	0.963
Innovation in human resources	[4.1. The company has recently implemented new methods of recruitment, selection or hiring of personnel]	-0.095	0.058
	[4.2. The company has recently implemented new performance appraisal methods]	-0.071	0.157
	[4.3. The company has defined staff responsibilities and adjusts them to improve efficiency]	-.164**	0.001
	[4.4. The company has measured the organizational climate]	-0.097	0.052
	[4.5. The company has recently implemented control methods of financial resources]	-0.068	0.174

** . The correlation is significant at level 0.01 (bilateral).

* . The correlation is significant at level 0.05 (bilateral).

Source: Results based on SPSS

Table 9. Pearson's correlation between the perception of the innovation components in the risk of closure of the establishment.

Correlations			
Component	Reagents	Risk of closure of the company	
		Pearson's correlation	Sig. (bilateral)
Innovation aimed at the market	[1.1. In my company we do studies on customer satisfaction]	-0.066	0.188
	[1.2. We respond to the suggestions, complaints and evaluation on customer satisfaction]	-.117*	0.019
	[1.3. We provide after-sales service]	-0.030	0.554
	[1.4. There is a person responsible for promotion and advertising]	-0.007	0.893
	[1.5. I have an annual budget for promotion and advertising]	-0.039	0.442
	[1.6. We frequently carry out promotion and advertising campaigns]	-0.033	0.504
	[1.7. We design in-house the promotion and advertising campaigns]	-0.025	0.612
	[1.8. We have identified the customers to whom each of the products or services are addressed]	-0.097	0.053
	[1.9. The company frequently identifies new markets]	-0.041	0.413
	[1.10. I'm always looking for new ways to reach my customers]	-0.072	0.151
	[1.11. I seek that my intermediaries add value to the products or services that I offer]	-0.013	0.794

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Table 9. Continued

Correlations			
Component	Reagents	Risk of closure of the company	
		Pearson's correlation	Sig. (bilateral)
	[1.12. It takes a short time for the products or services to be available to the customer]	-0.002	0.975
	[1.13. The products or services of the company are always available to those who want to buy]	0.009	0.850
Innovation in processes	[2.1. I seek to get informed in different ways, trying to incorporate knowledge to decision making]	-0.017	0.728
	[2.2. In the company, the decisions are made by me without consulting anyone]	-0.009	0.856
	[2.3. When I make decisions, I take into account the opinion of other people in the company]	0.087	0.082
	[2.4. The company is part of a chamber or association]	-0.050	0.316
	[2.5. The company has detected probable cost reductions in its inputs]	-0.011	0.828
	[2.6. I have recently incorporated materials, labor force or tools that reduce costs]	0.023	0.644
	[2.7. I have recently incorporated materials, labor force or tools that improve the quality of my products or services]	-0.057	0.251
	[2.8. The company adapts the parameters with which the quality of its products, services or processes are evaluated]	-0.061	0.226
	[2.9. The company has received recognition for the quality of its products, services or processes]	-0.086	0.085
	[2.10. There are mechanisms that assure continuous improvement of the processes which result in better products or services]	-0.047	0.344
	[2.11. There is a department or person that design objectives related to innovation in the company]	-0.067	0.178
	[2.12. The company has a budget allocated to the area of innovation]	-0.045	0.372
Innovation of good or services	[3.1. We strive to create competitive advantages that distinguish us from the competition]	-.128*	0.011
	[3.2. There are company personnel dedicated to creating competitive advantages]	-.154**	0.002
	[3.3. We allocate resources (people, time, money) for the generation of competitive advantages]	-.108*	0.031
	[3.4. We make constant changes to our products or services]	-0.075	0.136
	[3.5. We have more than one product to meet the needs of the same market]	-0.020	0.685
Innovation in human resources	[4.1. The company has recently implemented new methods of recruitment, selection or hiring of personnel]	0.017	0.734
	[4.2. The company has recently implemented new performance appraisal methods]	-0.013	0.800
	[4.3. The company has defined staff responsibilities and adjusts them to improve efficiency]	0.057	0.255
	[4.4. The company has measured the organizational climate]	-0.001	0.992
	[4.5. The company has recently implemented control methods of financial resources]	-0.066	0.186

** . The correlation is significant at level 0.01 (bilateral).

* . The correlation is significant at level 0.05 (bilateral).

Source: Results based on SPSS

Table 10. Pearson's correlation between the demographic variables and the perception of the innovation components.

Correlations		
Demographic variables	Overall innovation rating	
	Pearson's correlation	Sig. (bilateral)
Size	0.082	0.100
Academic background	-0.077	0.125
Age	0.023	0.658
Gender	0.047	0.343

*The correlation is significant at level 0.05 (bilateral)

**The correlation is significant at level 0.01 (bilateral)

Source: own elaboration based on SPSS

Results of the Relationship between the Productivity Index Variable and the Perception of the Innovation Components

In the productivity index variable, no significant correlation was found at level 0.01 or 0.05 in the item of overall rating of the perception of the innovation components and the productivity index that corresponds to the company, as shown in table 11.

Table 11. Pearson's correlation between the productivity index variable and the perception of the innovation components.

Correlations		
Variable	Overall innovation rating	
	Pearson's correlation	Sig. (bilateral)
Productivity index that corresponds to the company	-0.001	0.978

** The correlation is significant at level 0.01 (bilateral)

Source: own elaboration based on SPSS

DISCUSSION

The relationship between the perception of the components and the increase in sales has a significant correlation in the component of innovation addressed at the market in the reagent *It takes a short time for the products or services to be available to the customer*. This result is observed in the contributions of Posada-Velazquez et al., (2021) and Perez (2019) when they assure in their research that innovation is reached when business processes are involved, either new or with significant improvements, in order to obtain better results in terms of increasing demand and decreasing costs.

There is a relationship between the perception of the component of innovation in human resources and the increase in profit in the reagent *The company has defined staff responsibilities and adjusts them to improve efficiency*. According to Lopez-Fernandez et al., (2018) human talent is a valuable resource so

that with their knowledge MSEs can achieve better productivity and competitiveness, which is a source of competitive advantage for the company.

The relationship between innovation and the risk of closure of the establishment shows a correlation in the component of innovation aimed at the market in the reagent of *Responding to suggestions, complaints and evaluation of customer satisfaction*. Having sustainable MSEs requires management strategies framed in values that respond to the customers' needs so as to obtain their recognition and loyalty, thus achieving higher profitability, as suggested by Bradford (2018) and Research Sustainability Asser Management Researd (2018).

There is also a correlation between the risk of closure of the establishment with the component of innovation of goods or services in the reagents *We strive to create competitive advantages that distinguish us from the competition, there are company personnel dedicated to creating competitive advantages and we allocate resources (people, time, money) for the generation of competitive advantage*. Innovation helps organizations, in this case MSEs, to achieve competitive advantages because they are companies that, thanks to their investment in goods and services and in the human resource, obtain greater productivity and profitability, a higher volume of sales and revenues, a higher market value and greater benefits, as evidenced by the contributions of Lopez-Mielgo et al. (2007).

The results of this research show that the MSEs located in the neighborhoods of Tunjuelito, Bosa, Candelaria and Puente Aranda in Bogota can increase their sales and profit, besides being sustainable, thanks to the innovation in the market, of goods or services and in human resources, in the reagents indicated in each of them; which means that they have the necessary tools to face turbulent environments due to their feasibility of adapting and being flexible. The foregoing is supported by the ideas of Rivera-Rodriguez, (2010), quoted in this research, in the sense that organizations must be flexible when fluctuations in demand arise, which leads them to innovate in their products and services.

CONCLUSION

This demand sought to know if the components of innovation aimed at the market, innovation in processes, innovation of goods or services and innovation in human resources affect the increase in sales, the increase in profit and the risk of closure of the establishment (sustainability) of the MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments. The objective was achieved since it was found that there is an association of the innovation components with the increase in sales, the increase in profit and the risk of closure of the establishment, although they are in turbulent environments.

It is worth mentioning that the results of some reagents for the components of innovation aimed at the market and innovation in human resources prove in part hypothesis H_1 , because some reagents of these components have an impact on the increase in annual sales of the MSEs in Bogota investigated.

Hypothesis H_2 is proven in part because it is observed that only the component of innovation in human resources with reagent *the company has defined staff responsibilities and adjusts them to improve efficiency*, has an impact on the increase in profit of the MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments.

Finally, with respect to Hypothesis H_3 , it is partially proven because there is a relationship between innovation aimed at the market in the reagent *we respond to the suggestions, complaints and evaluation on customer satisfaction* and innovation of goods or services in the reagents *we strive to create com-*

petitive advantages that distinguish us from the competition, there are company personnel dedicated to creating competitive advantages and we allocate resources (people, time, money) for the generation of competitive advantages, with the risk of closure of the establishment, which means that these companies can be sustainable in turbulent environments.

RECOMMENDATIONS

Taking into account the results obtained in this research, it is recommended that the MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Candelaria in Bogota focus their management on innovating in their way they address to the markets, innovating in all their processes in general, innovating in the products or services that they offer to the market and innovating in the way human resources are managed or handled, since it was observed that if the companies innovate in these components, they can achieve good results in the sense that their sales and profit will increase and, in addition, the risk of closure of the establishment will decrease, thus maintaining sustainability over time, although they are in turbulent environments.

As can be observed in the results, taking into account that the reagent of the component of innovation aimed at the market *it takes a short time for the products or services to be available to the customer*, have an impact on the increase in sales, it is recommended that MSEs use managerial information systems that help them to keep and improve the time of disposal of the products or services that they offer to their customers. Some of these tools are, among others, MRP (Material Requirement Planning), CRM (Customer Relationship Management), ECR (Efficient Customer Response) or ERP (Entrepreneurial Resource Planning Systems).

Regarding the component of innovation in human resources, in the reagents that have an impact on increase in sales: *the company has recently implemented new methods of recruitment, selection or hiring of personnel and the company has defined staff responsibilities and adjusts them to improve efficiency* (which also have an impact on the increase in profit), it is recommended that in their recruitment methods documentation from internal or external sources be permanently used in order to recruit the necessary personnel, that a documented procedure be implemented in the Manual of Processes and Procedures, and that mechanisms for evaluating this process are carried out.

As to selection of personnel, it is recommended that interviews, psychotechnical, knowledge and skill tests are permanently carried out in this process and that background and references of the possible candidates are checked; that the responsibilities, duties and the competence profile of the position is documented in the Manual of Functions, so the applicants can respond to the priorities of the company with respect to their skills, abilities, knowledge and values. Once the candidate suitable for the position has been selected, it is recommended that hiring policies be defined and used and that contract models are made which are in accordance with these policies.

In the reagent *we respond to the suggestions, complaints and evaluation on customer satisfaction* of the component of innovation aimed at the market, which has an impact on the company's sustainability in turbulent environments, it is recommended that the company has clear policies regarding the orientation towards customer service, besides training the collaborators in matters related to the improvement of customer service, in such a way so as to obtain the loyalty of its current and potential customers and to have an excellent rating in evaluations on customer satisfaction.

In the reagents we strive to create competitive advantages that distinguish us from the competition, there are company personnel dedicated to creating competitive advantages and we allocate resources (people, time, money) for the generation of competitive advantages of the component of innovation of goods or services, which have an impact on the sustainability of the company in turbulent environments, it is recommended that the company relies on external talent to undertake sustainable innovation activities and that this external talent helps to develop innovation skills in the personnel, in such a way that it is possible to have collaborators with skills and experience to undertake innovation projects in the products and services of the company and in this way obtain competitive advantages with respect to its main competitors. It is also recommended that the organization keeps a sustainable innovation culture as an essential element for having a competitive advantage.

FUTURE RESEARCH

Continue researching with a systematic approach on the MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota in different components of their management and make correlations between these components and their impact on profit, sales and sustainability.

To expand the research to other zones or municipalities and to make comparisons of the results with the MSEs studied located in Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota.

To perform comparisons with results in data bases of MSEs located in Latin America, either on topics related to the components of management innovation developed in this research or with new management components. Likewise, to perform correlation analysis between the components studied and their impact on profit, sales and sustainability.

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KEY TERMS AND DEFINITIONS

Increase in Profit: Achieving an interest or benefit due to the operations executed in the operations of the organization.

Increase in Sales: Reaching an optimal level of sales due to the actions taken to place the products or services in the market.

Innovation Aimed at the Market: Implementing new methods to trade products or services involves efforts to make significant changes in the design of the product or packaging, location of the product, way of promoting the product or service and in valuation.

Innovation in Human Resources: It entails changes or improvement proposals by the organization in its methods related to the practice of human resources management, organization of the workplace or the way the external relations of the company are managed.

Innovation in Processes: Implementing new methods or significant improvements in production or servuction. This not only includes significant changes to processes but also to the equipment or software required.

Innovation of Goods or Services: To introduce in the company a good or service that is new or significantly improved taking into account its characteristics or previous use. This innovation includes significant improvements in technical specifications, components and materials, built-in software, ease of use or any other functional characteristic.

Risk of Closure of the Establishment: Possibility that an organization closes or is liquidated due to different factors such as lack of sales, liquidity, and non-access to credit, which lead it to take this decision.

Chapter 9

EBITDA as a Key Indicator of Sustainability in Colombian Companies

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ABSTRACT

Between 2017 and 2021, the RISE model (route of innovation and sustainability for enterprises) has been applied in 106 organizations of different sizes and economic sectors in the Colombian environment. From the results of application of the RISE, the following research question arises for the authors of this chapter: Which variables or descriptors better explain the financial performance of the EBITDA Margin and in which should a manager should concentrate his efforts for organizational sustainability, in terms of this indicator? The objective of this work is to present the analysis of the variables that best explain the financial performance of the EBITDA Margin to facilitate the organizational sustainability of Colombian companies. The data were processed with the statistical package Statgraphic Centurion XVI, using factorial analysis with multiple regression, and seven variables were obtained from the 36 that make up the model, which explain at 51.15% the performance of the EBITDA.

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INTRODUCTION

The Rise Model (from its acronym in Spanish, Path for Organizational Innovation and Sustainability) helps managers to implement the best practices related to innovation and sustainability business; it has been useful to evidence the technological gaps to manage innovation and sustainability that organizations face today compared to top enterprises in each industry; this model allows enterprises to have an orientation to improve their current situation (Perez-Uribe & Ramírez- Salazar, 2020).

The RISE had been applied to 86 organizations so far, enabling them to develop paths for innovation and sustainability (Pérez-Uribe, Ramírez-Salazar, Ocampo-Guzmán & Saiz-Álvarez, 2021, p.1). This chapter aims to present those descriptors or variables that explain EBITDA as a key indicator to measure Colombian enterprises' sustainability so managers can rely on it to develop activities that let them have certain control over this factor.

Therefore, first, the reader will find the theoretical foundations related to the main descriptors or variables that explain or have a higher effect on the EBITDA as a key indicator to explain an enterprise's sustainability. Then, the methodology used to develop the model is explained, showing which descriptors or variables are more important to explain the EBITDA. Finally, conclusions and recommendations useful for the academic and business communities are drawn up based on the former parts; such conclusions allow having a guide to develop actions to keep or improve the EBITDA.

THEORETICAL FRAMEWORK

RISE Model – General Structure

According to Perez-Uribe and Ramírez-Salazar (2020) the RISE Model is based on three managerial models and one international standard: 1) *The Model for Modernization of Organizational Management –MMGO-* (Pérez-Uribe *et al*, 2013), 2) *el Open Colaborative Innovation Model* (Ramírez-Salazar, 2016; Ramírez-Salazar, Salcedo-Perez, Castañeda, 2021), 3) the *Design Thinking Model* (Razzouk & Shute, 2012) and 4) the *Global Reporting Initiative Standard* (GRI, 2016).

Four dimensions (social, environmental, managerial, and economic), 9 factors and 36 descriptors and/or variables compose the RISE Model (table 1).

Table 1. Factors, dimensions and descriptors of the RISE model

No	FACTORS	Dimension	DESCRIPTORS
1	Innovation: it is the creation or transformation of a product, process, market strategy and business model. It is a process of transformation and invention into something useful and valuable for the market; the final consumer is who validates the usefulness when satisfying a need. In this factor the level of innovation of the organizations is measured.	Social	Way to innovate
		Environmental	Ecodesign-Circular economy
		Managerial	Type of innovation
		Economic	Value creation

continues on following page

EBITDA as a Key Indicator of Sustainability in Colombian Companies

Table 1. Conintued

No	FACTORS	Dimension	DESCRIPTORS
2	Sustainable Production: to promote the efficient use of resources to improve the quality of life of present and future generations. It is aimed at improving human quality of life without overflowing the capacity of ecosystems.	Social	Suppliers- Raw materials and/or components necessary for operation
		Environmental	Efficient use of water-wastewater-Energy-polluting emissions, solid waste
		Managerial	Plans, Environmental certifications
		Economic	Budget for environmental management- Circular economy model
3	Leadership and Strategic Direction: Managerial focus from which top management sets a path and promotes the necessary actions so all the organization moves in the same direction.	Social	Social trends, Mobilization capabilities-Ethics, Values, Anti-Corruption Policies
		Environmental	Accountability-Value of sustainability
		Managerial	Corporate government-Knowledge Management-Corporate Strategies.
		Economic	Environment Analysis-Decision-making
4	Organizational Culture: Basic assumptions and beliefs shared by members of an organization. Top management can plan and influence them to create organizational change.	Social	Work environment
		Environmental	Paradigm change
		Managerial	Communication
		Economic	Shared-value
5	Recognition: Practice to value and recognize people's contribution through symbols, actions, and material compensations.	Social	Happiness-at-work
		Environmental	Environmentally conscious worker
		Managerial	Motivation practices
		Economic	Value of work
6	Collaborative Processes: Actions in which people, organizations or industries get involved to develop projects with the same objective to get mutual benefits.	Social	Associativeness
		Environmental	Work safety
		Managerial	Agreements -Consensus
		Economic	Corporate volunteering
7	New Markets: Set of new consumers able to buy the products of the enterprise.	Social	Degree of influence on other markets
		Environmental	Green markets
		Managerial	Strategic plan to enter to new markets
		Economic	Commercial strategy
8	Technology: System of knowledge and information that arise from research, experimentation, or experience, that along with production, commercialization and management processes, allow the creation of new improved products or processes.	Social	Wider Access to technology
		Environmental	Clean technologies
		Managerial	Prospective
		Economic	Technological transfer
9	Financial Indicators: Metrics that show the financial situation of the enterprise regarding its liquidity, efficiency, performance, productivity, debt, and financial assessment.	Social	Impact on stakeholders
		Environmental	Environmental protection and/or recovery
		Managerial	ROA
		Economic	EBITDA

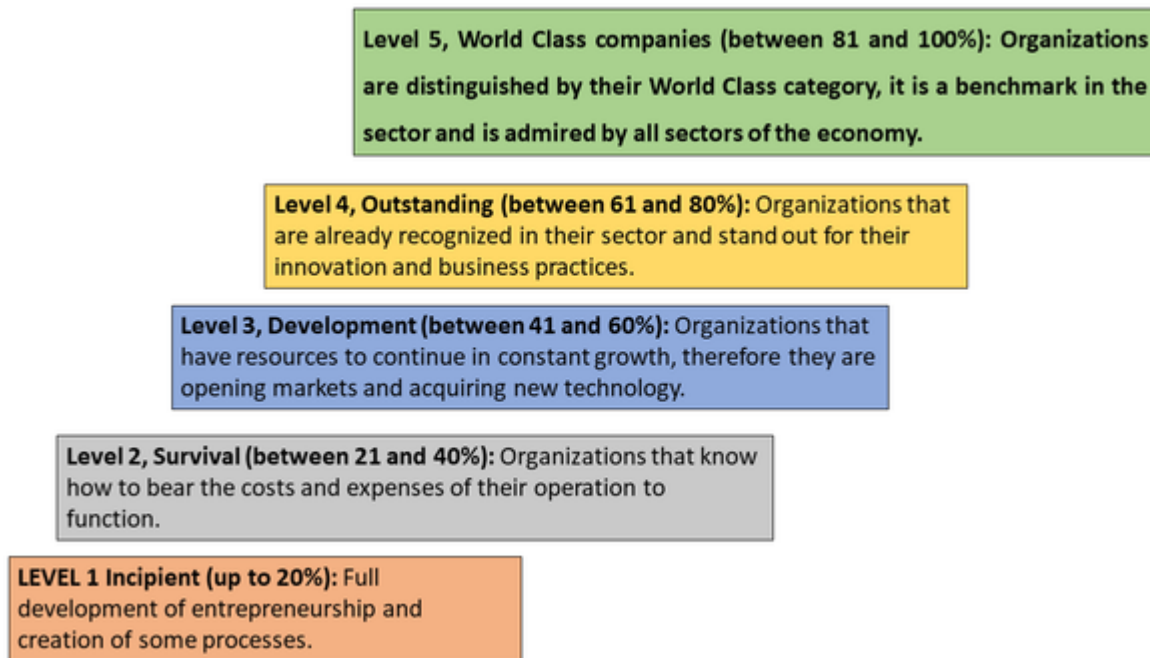
Source. Perez-Urbe and Ramírez-Salazar (2020, p.7)

Each dimension has descriptors and/or variables related to the characterization of the level of maturity of the enterprise (Perez-Urbe and Ramírez-Salazar, 2020, p.8-9) (figure 1):

- Level 1, Incipient (up to 20%): Organizations that are just starting operations and so creating processes. It is an excellent time to define strategies of differentiation.
- Level 2, Survival (between 21 and 40%): Organizations that know how to deal with costs and expenses.
- Level 3, Development (between 41 and 60%): Organizations with enough resources to keep expanding, therefore, they are entering into new markets and acquiring new technology.
- Level 4, Prominent (between 61 and 80%): Organizations recognized by their innovation and business practices.
- Level 5, World-Class (between 81 and 100%): Organizations distinguished as top class, that are referent for others in their industry and considered worthy of admiration by all sectors of the economy.

Figure 1. RISE evaluation levels

Source: Own elaboration from Perez-Urbe y Ramírez-Salazar (2020, p.8-9)



In general, the steps to implement RISE in an organization are the following: 1) Initial contact with the manager to explain what the model consists of, 2) With the endorsement of management, a work schedule is structured that includes meeting with each responsible for each factor of the RISE, defined by management, in a virtual way, 3) work begins on the innovation factor, in which all leaders must participate accompanied by selected workers to evaluate this factor, 4) evaluation of the factor of sustainable production. Those responsible for the core business of the organization participate, 5) evaluation of the

leadership factor and strategic direction, which must be evaluated by the managers of the organization, 6) the following factors are: organizational culture, recognition, and collaborative processes, which should be evaluated by a representative sample of workers from all areas of the organization, 7) the new markets factor is evaluated by those responsible for this process, 8) the technology factor is evaluated by the workers who are involved in its management and 9) the factor of financial indicators, is evaluated by those responsible for its management. It is estimated that by factor it could take about an hour for each one. Once the complete matrix is completed, a report with the graphic results and a tentative sustainable innovation route will be presented to the management, defining which will be the most priority factors to work on, which are generally those evaluated below 50%.

Next, the concepts of the variables are going to be described. The EBITDA is the dependent variable. The results of the factor analysis show the following as those that have a higher effect on the dependent variable: suppliers of raw material and/or components necessary for operation, business model (including circular economy), communication, work safety, commercial strategy, ROA, and environment recovery.

EBITDA Financial Performance

IT is a financial indicator that stands for Earnings Before Interest, Taxes, Depreciation, and Amortization (Alvarado, 2017, p. 23). It is useful but it must be analyzed carefully since it may lead to hasty conclusions. Its formula is:

EBITDA = Operating Profit + Taxes + Depreciations and Amortizations (Calabrese & Rafferty, 2003 cited by Alvarado, 2017, p. 28).

The EBITDA margin can be calculated by dividing the EBITDA by its operating income, which indicated the amount of currency received by the enterprise before interest, taxes, depreciation, amortization, and other items for each unit of currency sold: $ME = \text{EBITDA} / \text{operating income}$ (García Serna, 2009).

The EBITDA helps to get conclusions about the operating management efficiency of the enterprise and to compare enterprises of different size and different industries (Méndez Bastidas, 2007). The EBITDA is at the core of the financial analysis since it shows the increase or decrease between different time periods, which could be caused by an increase of production costs, prices or a combination of factors. A weak EBITDA could result from an inadequate business design, unable to satisfy the customers' priorities (Quiry, Fur, Salvi, Dallochio, & Vernimmen, 2014).

Lukic & Lalic (2019) state that there is a growing trend to use the EBITDA as a key financial indicator, and that a study about retail stores in Serbia shows that the long-term performance of those enterprises has improved. The average EBITDA of such enterprises as percentage of income is slightly higher than 5% (average of 5.184) of the countries analyzed, due to a more efficient management of the financial capital structure that results in improvement of profitability on sales, measured as the relation between the EBITDA and total income. A more efficient management of capital structure, income obtained from sales, costs of goods sold (including operating costs and interests) and profits can significantly increase the EBITDA margin, becoming a trustable indicator or long-term performance.

Suppliers of Raw Material and/or Components Necessary for Operation

This descriptor describes the social dimension of the sustainable production factor of the Model, which states that organizations

1. implement programs to develop a network of suppliers to improve environmental behavior and
2. work in the value chain of such suppliers.

Countries with abundant natural resources can transform them into other types of capital (human, infrastructure, etc.). Thus, the production chain (to generate products from natural resources) becomes a critical factor of high impact for the economic development of a country or region and therefore the development of a local network of suppliers is more relevant at local and global levels (Guardiola, Cervantes & Rodríguez, 2018).

Gutiérrez-Rodríguez (2015), present a classification of different factors that have an impact on the success of the development of a network of local suppliers (table 2):

Table 2. Categories of success factors to develop a network of suppliers

Category	Sub category
1. Quality	1) Delivery time. 2) Skilled labor. 3) Use of adequate technology. 4) Quality certifications
2. Financing	1) Access to financing. 2) Availability of proper co-signers
3. Infrastructure	Transportation to the ports of departure or final destinations
4. Information	1) Access to information related to national/local suppliers 2) Access to information related to standards and needs required by the industry
5. Associativeness	1) Possibility to join other suppliers to take advantage of economies of scale 2) Possibility to join other suppliers to innovate
6. Volatility of prices of commodities	1) Not to depend on just one extractive enterprise 2) To broaden the product portfolio to industries different to mining and hydrocarbons
7. Public policy to develop productive chains	1) Programs and tools created by the Government along with the extractive industry ("carrot") 2) To enforce legislation that requires mining and hydrocarbon industries to contract with national and local enterprises (stick)

Source: the authors

In Vázquez & Roa (2015) there is empiric evidence that innovation is possible by creating alliances with suppliers. Therefore, there is a relation between innovation as a factor of development of an enterprise and the relation of the enterprise with its suppliers.

Another external factor that promotes innovation in enterprises is the environment. An enterprise with internal strengths but operating in an external environment does not encourage innovation, will not be successful implementing innovation since the enterprise is an open system that requires interaction (Lee, Juneseuk & Yongtae, 2012, p. 838), and the supply change is a key factor for it. That is why, for example, strategic supply comes into play, being it a systemic method based on facts, whose objective

is to optimize the supply of inputs and to improve the value offered to customers (Gutiérrez-Rodríguez, 2015). One of the activities of strategic supply that has a higher impact on enterprises is the selection and development of suppliers. There are scientific sources that recognize the key role played by suppliers in the production chain, therefore, they are important for the long-term viability of enterprises (Vásquez and Roa, 2015), thus, the development of activities to improve the situation of suppliers are beneficial for enterprises.

According to Vásquez et al (2015) having a more specialized, higher-quality supply chain aids to create a virtuous circle in enterprises. Studies have proved that close relations with higher-performance suppliers are essential for current business environments, benefiting all parties in the search for excellence.

Business Model Including Circular Economy

The path to create a better environment through environmental and sustainability management is long; going from planning to implementation with control and follow-up requires resources. Therefore, enterprises must be aware of the need to use enough tools to efficiently impact on the betterment of quality of life, the reduction of the pollution of the environment and the competitiveness through sustainability (Posada, 2014). So, active participation of management and accounting professionals is necessary to implement cleaner production and circular economy (Macarulla, 2000), since measuring the budget assigned and executed by an enterprise to a topic a good indicator to measure the enterprise's interest about it (another way is to measure the financial/economic results).

Sometimes, enterprises do not have plans related to their environment and sustainability management and so they do not identify the impact of their operations, they cannot define an environmental policy, neither establish objectives to reach it; lack of planning cause that they do not exercise an adequate control to their processes, limiting the use of indicators for follow-up, control, investment, and results (Ortiz, Izquierdo & Monroy, 2013).

The economic dimension of the sustainable production factor is characterized by the follow-up and control performed through indicators of the actions taken for prevention, control and mitigation of negative environmental impacts as well as by the budget assigned to programs for the environment and sustainability and by the evidence of the results obtained (certifications, savings). In the case of the circular economy, the only certification internationally recognized is Cradle to Cradle (McDonough, 2021).

Ten items have been identified for a business model based on circular economy (Ellen MacArthur Foundation, 2017, p. 27) (Table 3):

Communication

This descriptor defines that in the framework of the organizational culture, there must be continuous planned conversations to communicate organizational objectives or plans, using state-of-the-art technology. Culture is the set of beliefs that guide behavior and the way in which things are done in an organization (Belias and Koustelios, 2014). Hofstede (2001) states that culture is the collective mindset that distinguish members from different groups. Deshpande and Webster (1989) regard culture as a system of shared values.

According to Burke (1994), culture focuses on the significance of events that occur at the workplace and the way in which things are done. The best strategy may fail if the organization does not have the culture that allows it to take it into action.

Table 3. Description of investment items in a circular economy

INVESTMENT ITEMS IN A CIRCULAR ECONOMY		DESCRIPTION
MOVILITY	Integrated systems of mobility	Integration of public transportation systems and shared vehicles
	Design and production of circular automobiles	Design and production of zero-emissions cars with lasting materials
	Re-making of automobile parts	Implementation of processes of remaking of automobile parts in scale
FOOD	Implementation of regenerative agricultural practices	Change towards an agricultural system that regenerate the soil and the ecosystems
	Close nutrient loops	To increase the recovery of nutrients and energy coming from waste through anaerobic digestion or bio refineries
	Agriculture in urban interior home gardens	To increase the number of hydroponic, aeroponic and aquaponic gardens in urban areas
	Development of sources of next-wave proteins	Development of new and efficient sources of proteins from vegetables, bacterium, seaweed, and insects
BUILT ENVIRONMENTS	Design and production of circular buildings	Design and production of multi-use, modular, energy-saving buildings, built with non-toxic lasting materials.
	Close construction loops	To increase recycling and re manufacturing of construction materials
	Development of circular cities	To integrate circularity into urban development through innovative business models

Source. Ellen MacArthur Foundation (2017, p. 27)

The importance of a good or bad communication as key element of organizational culture for enterprises lies in the fact that it could put restrictions to organizations or could create opportunities and affect the marketing and product development (Blake and Laurence, 1989). Culture is planned and implemented by top management and kept collectively by all members of an organization, acting as a moderating variable when implementing changes (Pérez-Urbe, 2012; Mumford, Scott, Gaddis and Strange, 2002).

Organizational culture can be described as the set of basic assumptions (Schein, 1986), shared norms that help members to face problems, which lead enterprises to work smoothly. The way in which changes occur in organizations will be influenced by the fact that cultures are based on deep shared assumptions (Schein, 1992).

The organizational culture, supported on the trust in communication, is a key internal strength that can lead the organization to fail or succeed; evidence proves that it expresses the internal behavior of an organization and reflects the degree of agreement related to those assumptions from managers and (Aycan, Kanungo and Sinha, 1999).

Arrow (1971) defines trust as an essential factor, mandatory to have even the simplest ways of economic exchanges. From this point of view, trust is desirable because it increases the efficiency of exchanges, generating minor expenses in aspects related to the control that enterprises exert over commercial transactions. This definition is closely related to the concept of reliability, in which the fulfilling of commitments is of key importance to develop commercial relations.

Trust allows an ethical interaction founded on co-responsibility and the effective management supported by transparency (Díaz, Lozano and Castaño 2016). In the organizational context, trust has been studied from different perspectives and its organizational internal and external impacts have been ana-

lyzed. Hardin (1982) states that trust occurs when interactions among people provoke interest among them, so they assume themselves and act without contravening, so the incentive that gives value to relations remains and is prioritized. Interests can be from different types, economic, social, environmental, long-term benefits or what the professor calls “in capsule interest”, meaning, the interest of a person captures the interest of another, this prioritizing the motivation to strengthen and continue the relation.

To summarize, trust is a foundational element for communication. It validates that the trusted person captures the interest of the generator of trust and so he/she as an incentive that must be fulfilled by the trust entrusted in him/her (Pawirosumarto, Sarjana & Gunawan, 2017). This capture is brought by the interactions caused by the trust between two people and by the group. However, they do not guarantee the relation of trust by themselves, except when they perceive the incentives of both parties; if one of them disappoints, the other rejects him/her and so the group, losing the incentive created by actions of personal benefit. Therefore, it both parties fulfill the commitment, relations are valued, otherwise, relations fade (Fisher, 2003; Cyert & March, 1963).

Work Safety

It characterizes the environmental dimension of the factor of collaborative process, in which the enterprise has additional services of industrial health and safety and continuously monitors its workers' health.

Nowadays, enterprises must comply with laws and plans to improve their workers' labor conditions. To explain this topic, it is necessary to relate health and work, understanding this relation as the link between the individual with the job performed and the influence of such labor on his/her health (Ministerio del Trabajo, 2016).

Table 4 shows some laws that regulate work health and safety in Colombia.

Table 4. Laws related to work health and safety in Colombia

Law	Topic regulated
Law 9 issued in 1979	Sanitary regulations
Law 776 issued in 2002	Organization, administration, and benefits of the General System of Professional Risks
Law issued in 2006	Measures to prevent, correct and penalize work harassment and other types of harassment at the workplace
Law issued in 2012	Modification of the Labor Risk System and other regulations related to Health at Work

Source. The authors based on Ministerio del Trabajo (2016)

To make evident the positive impact of the plans for training and health at work, the enterprise must monthly and yearly evaluate the following (using indicators for it): 1. The Severity of accidents; 2. Frequency of accidents at the workplace; 3. Mortality rate of accidents at work; 4. Prevalence of labor sickness (same sickness in a number of workers); 5. Incidence of labor sickness (new cases); 6. Medical leaves (Naranjo, 2014).

When evidencing medical disabilities, they must be classified to have a record of the worker's situation to focus health plans according to the risks faced. A good prevention plan for health and safety at work must include a handbook that must be socialized with all workers so they can know the possible

risks they face if they do not comply with the enterprise's regulations (Ministerio de Educación Nacional de Colombia, 2020). Different enterprises have different types and levels of risks.

Every prevention plan must: (FASECOLDA, 2018):

- Show a typology of signs that describe banning, prevention, obligation, and information. Such signals must be placed in all physical spaces, including standard signs and particular signs that the enterprise considers must be included.
- Motivate the good use of equipment and materials.
- Instruct about good posture
- Promote campaigns of personal care to prevent sickness and follow up indicators of human health.
- Instruct workers about good eating and sleep habits as ways to prevent stress.
- Promote the implementation of occupational health and coexistence committees to prevent workplace and/or sexual harassment (Lanata, 2018).

Commercial Strategy

This descriptor characterizes the economic dimension of the factor new markets, in which a goal is to have over 20% of income coming from international markets.

According to Ferrer (2016), the commercial strategy is the set of actions of marketing and distribution to achieve the sales objectives established either for the enterprise as a whole or for a specific product. Thus, setting objectives and strategies must be components of the core of any business or the creation of a new product. Pérez and Rodríguez (2015) state that starting actions without developing a commercial strategy is like start a trip without destination.

The RISE Model states that over 20% of an enterprise's income must come from international markets to reduce the risk of depending on just one market, to understand the business dynamics of different countries and to increase the number of potential customers. Thus, market research of international markets is the first mandatory step to create a commercial strategy for new markets. Esteban and Fernández (2017) state that the research must include information from competitors, objectives, the geographical area and market trends. Competitors might have been in the market for long time or just starting, so it is necessary to study their profile, products and market share. McQuarrie (2015) affirm that setting a geographical area is of utter importance, being necessary to know the area where customers are.

Brace (2018) states that it is essential to understand the objectives of the commercial strategy in new markets, answering the following questions: what is the average profile of the customers and how different are from our current customers? what are their needs? How do they finance their purchases? Are they satisfied with the current offer? How can we increase their satisfaction levels? Besides, the author states that it is necessary to understand the external trends of the market, answering the following questions: Is the market growing or not? Are there new manufacturing technologies or concepts that would allow have alliances with local companies? What are the entry barriers? Such preliminary research is essential to evaluate the long-term market viability and to predict possible mid and long-term strategies.

Finally, the commercial strategy must focus on differentiating the most relevant elements of the proposal to the customers. When entering new markets, Bang, Joshi and Singh (2016) state that the first step is to present the reasons to enter to the country, the organization's profile and performance indicators in the country of origin. Besides, it is necessary to present precise and quantitative elements of the offer, the differences with competitors and to adapt to the commercial practices of the new environment.

Return On Assets (ROA)

There are two types of profitability: financial and economic. The financial is also called return on investment and shows the overall efficiency of the generation of profits compared to total assets.

The economic, also called return on equity, shows the productive power over the value of the shareholders' investment. Both are important but shareholders may lean more on financial profitability, since, to calculate economic profitability all assets are included (including those financed by third parties) while the financial profitability only considers the resources coming from shareholders (Perez-Urbe, 2012, p. 364).

The RETURN ON ASSETS (ROA) is calculated dividing OPERATING INCOME over TOTAL ASSETS. The operating income results from subtracting costs of goods sold operating costs, administrative costs and sales costs from total sales or operating income. It measures the profitability of the total investment in a period. This indicator allows to evaluate the activity of the enterprise as a whole since it considers all capital invested (Perez-Urbe, 2012, p.365).

Environment Protection and Recovery

This descriptor measures the amounts invested in actions to protect and recover the environment, considering the needs of the stakeholders. It refers specifically to the resources used and how this reflects on financial statements and performance indicators. It is important to highlight those financial statements and indicator are a structured representation of the situation and financial performance of an organization. Their objective is to provide information about the financial situation and the cash flows, useful for decision-making, besides, they show the results of the managers performance when dealing with the resources of the organization (Tamayo, 2012).

The environment is the space in which humans interact with its surroundings; it must be taken as a whole, being composed by three parts (González, 2019, parr. 23): 1) physical, composed by all physical factors and phenomenon that affect the environment such as the weather, climate, rain, etc. 2) biological: refers to live beings, flora, fauna, and even water. 3) socio economic: it includes most of the actions caused by humans such as urbanization and building in natural environments.

Activities to protect and/or recover the environment (a budget should be assigned to perform them) are shown in Table 5.

METHODOLOGY

This research was based on the application of the RISE Model between 2017 and 2020 in 86 Colombian enterprise. This research is 1) descriptive (Hernández-Sampieri, Fernández-Collado and Baptista-Lucio, 2014, p. 92) that shows the general characteristics of the sample by convenience

(Otzen, & Manterola, 2017, p.230) and 2) factor analysis that allows to know the relation or degree of association (Hernández-Sampieri, *et al.*, 2014, p. 93) that exists between the dependent variable, EBITDA, and the other 35 descriptors or independent variables of the Model. The software Statgraphics Centurion XVI was used to perform the factor analysis (using a multiple linear regression). Twenty-eight analyses were performed, the last one resulted in an adjusted equation that shows the variables that explain the EBITDA, in which managers should focus their efforts to develop activities to keep/improve this indicator.

Table 5. Activities to protect and/or recover the environment

AUTHORS	ACTIVITIES
Salas Jiménez and Quesada Carvajal (2006, p. 13).	Program for waste management: 1) Handling at source; 2) Transportation of recoverable waste to transfer facilities; 3) Loading and unloading of recoverable waste in the storage facility; 4) Classification of recoverable waste at the storage facility; 5) Storage of recoverable waste at the storage facility; 6) Load of vehicles at the storage facility; 7) Transportation of recoverable waste from the storage facility to the recycling facilities
Moreno Flores (2007, p. 5 y 6).	Improvement of living conditions of poor communities in cities to produce, grow and sell vegetables and agricultural products. It provides a source of employment not just for those directly involved but also for those workers hired and those employed in micro enterprises related. There is a variety of goods and services related to urban agriculture such as compost, herd, weed picking and selling, manure, processing of agricultural products, and sale of food in the streets and other urban spaces. The development of urban agriculture includes the use of underused spaces such as barren lands, protected areas near roads, zones banned for urbanization, and areas reserved for constructions yet to build.
Gómez Montoya (2010)	Implementation of reverse logistics, which bases its operation on a set of objectives to establish guidelines and goals to reach efficient processes using recycled materials. Some objectives of reverse logistics are: 1) To adequately plan, execute and control product flow, information and money into different processes considered part of reverse logistics to create value and reduce costs in operations. 2) To identify, design, and improve efficient processes for products managed by reverse logistics to repair them for reuse, recovery, recycle or disposal to minimize environmental impact and maximize economic benefits for the enterprise. 3) To coordinate reverse and traditional logistics processes with the supply chain, using ICTs. 4) To minimize the number of products to recover in the supply chain using systems of quality control (Six Sigma and Kaizen), and negotiation with other parties of the supply chain related to responsibilities to return products, expiration dates, and expiration of warranties, etc.
Paredes C., P. (2013, p. 73).	Implementation of cleaner processes of production to have less waste; first, this is considered an economic loss due to the bad use of resources and materials and second, such waste impact the environment and health negatively, so to reduce them prevents such impacts. Some cleaner practices are good operating practices, change of equipment, change of technology, reuse, onsite recycling, production of useful byproducts and product redesign.
Zarta Ávila (2018, p. 418).	Development of a green economy program (from strategic investments) which considers the Earth as the infrastructure necessary for life, that depends of its bio productive system, creating global benefits from the preservation and conservation of ecosystems. The green economy aims for the development of environmentally friendly technologies, with economic incentives to green markets, preserving bio productive ecosystems, and reducing pollution.

Source. The authors of the research taking information from different sources

FINDINGS

Findings are described in two aspects: 1) descriptive 2) from the multiple regression analysis

Descriptive

Eighty six percent of the enterprises analyzed are in Bogota, and 14% in other cities of Colombia (Armenia, Barranca de Upia – Meta -, Sogamoso, Bucaramanga, Cartagena, Medellín, Pitalito-Huila, Soacha, Tame-Arauca, Tocancipá and Ubaté) (Figure 1).

Sixty four percent belong to the service industry (transportation and storage: 5; information and communication; 14; finance and insurance: 3; professional, scientific and technical activities: 8; administrative and support activities: 7; public administration and defense: 2; education: 5; artistic, entertainment and recreational activities: 2; other service activities: 3; supply of electricity, gas, steam and air conditioning: 1; 24%: manufacturing, 7%: trade, and 5%: construction (Figure 3) .

EBITDA as a Key Indicator of Sustainability in Colombian Companies

Figure 2. Location of the enterprises analyzed

Source. The authors

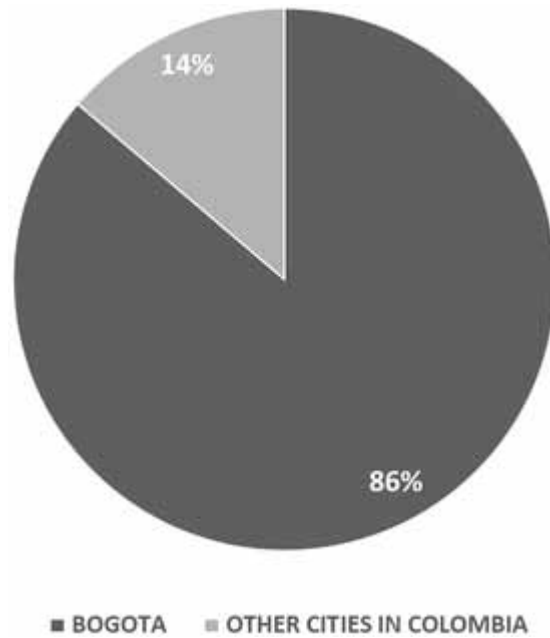
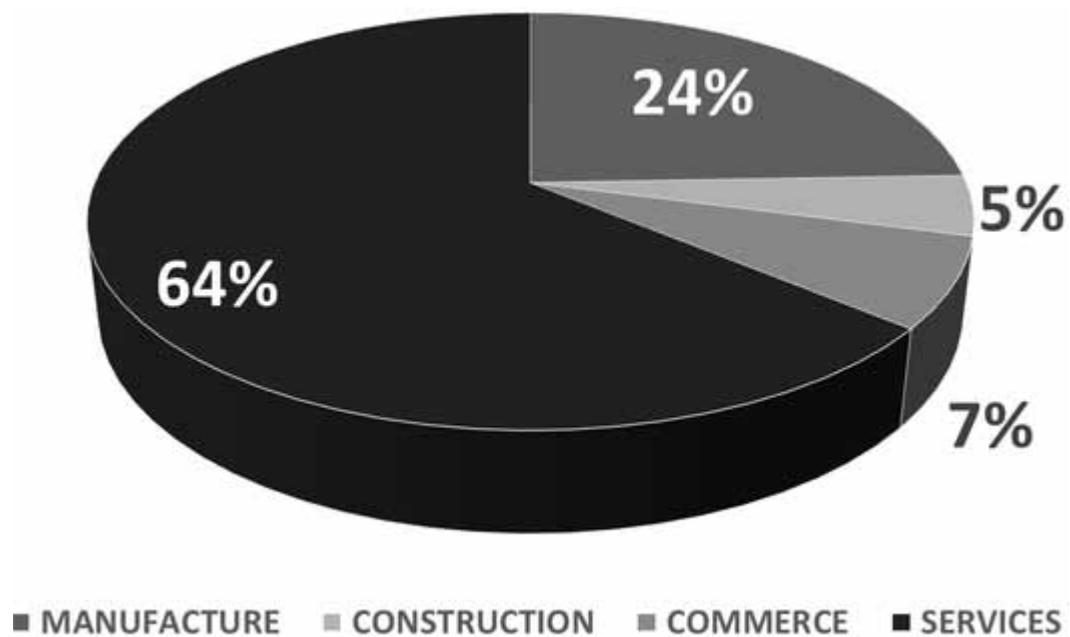


Figure 3. Enterprises analyzed by industry

Source. The authors



The classification by size is based on Law 905 issued in 2004 (Función Pública, 2004).), which classify enterprises by number of workers (Table 6).

Table 6. Enterprise size by number or workers based on Law 905 issued in 2004

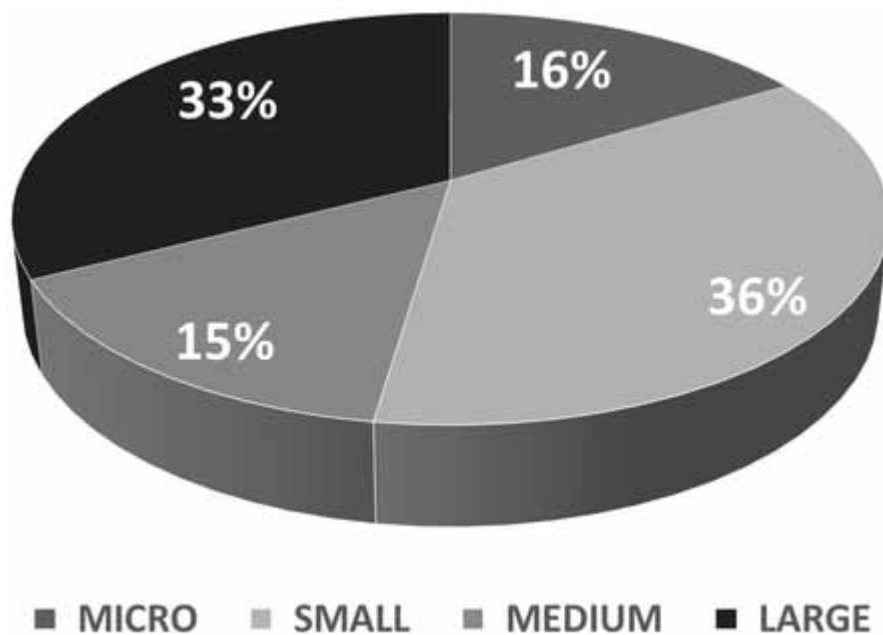
SIZE	NUMBER OF WORKERS
MICRO	Less than 10
SMALL	Between 11 and 50
MEDIUM	Between 51 and 200
BIG	Over 200

Source. The authors based on Función Pública (2004)

Thirty-six of the enterprises analyzed are small, 33% big, 16% medium and 15% micro sized. Therefore, 67% of enterprises analyzed are MSMEs and 33% are big enterprises.

Figure 4. Enterprises' size by number of workers

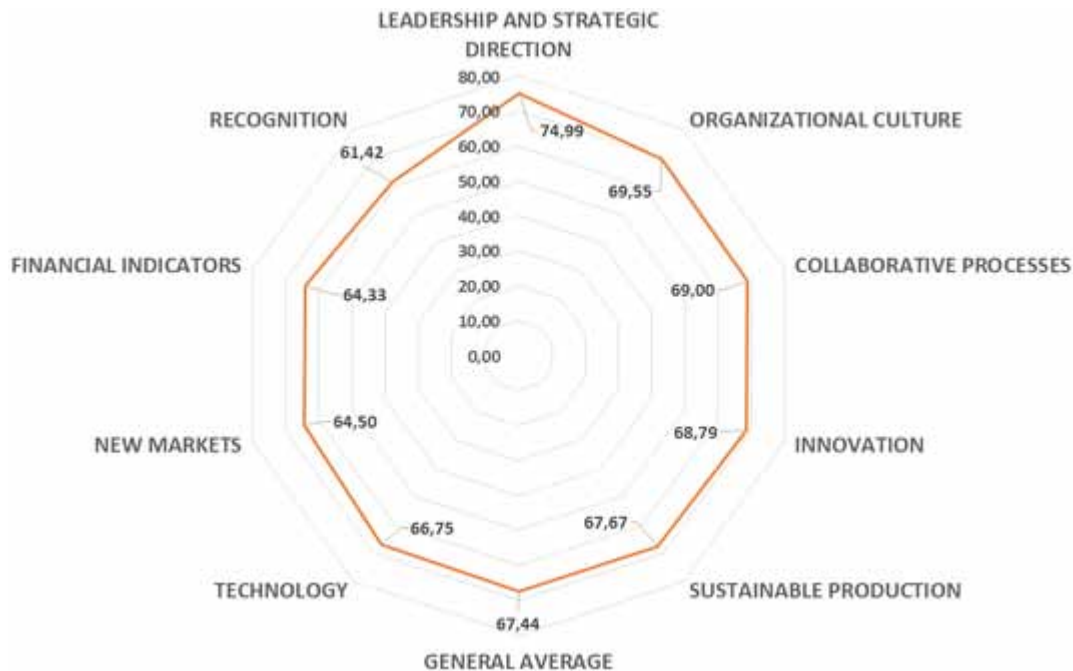
Source. The authors



Considering the whole set of enterprises analyzed, the state in which they are is Level 4 “Prominent” (between 61 and 80%), enterprises recognized in their industries and are noted by their innovation and business practices. Levels range from 61,42 to 74,99% (Figure 5).

Figure 5. Level of RISE factors in the enterprises analyzed

Source. The authors



Findings from the Multiple Regression Factor Analysis

After performing 28 statistical analyses using the Statgraphic Centuri3n XVI, data allowed to get the following equation to describe the relation between the EBITDA and seven independent variables that affect it:

$$\text{EBITDA} = 31,4698 - 0,301923 * \text{Suppliers of raw material and/or components necessary for operation} + 0,602481 * \text{Business model that includes circular economy} - 0,312107 * \text{Communication} + 0,182949 * \text{Work safety} + 0,228805 * \text{Commercial strategy} - 0,233918 * \text{ROA} + 0,399255 * \text{Environment protection and recovery}$$

The Squared R indicates that the adjusted Model explains 51.596% of the variability of the EBITDA. The result of the Adjusted Squared R, more appropriate to compare models with different numbers of independent variables, was 47.7062. The standard error shows that the standard deviation of the residual was 19.7334; such value can be used to propose limits to new observations, selecting the option Reports in the menu. The Median Absolute Error, corresponding to the average value of residuals, was 15.5543. The Durbin-Watson examines the residuals to determine if there is a significant correlation based on the order in which they are presented in the data. Since the P-value was higher than 0.05, there is no indication of a serial autocorrelation in the residuals with a confidence level of 95% (Table 7).

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Table 7. Summary of statistical results of the multiple regression analysis

DESCRIPTION	VALUES
Squared R =	51,1596%
Squared R (adjusted for g.l.) =	47,7062%
Standard Error =	19,7334
Median Absolute Error =	15,5543
Durbin-Watson =	2,02371 (P=0,5485)
Autocorrelation of residuals 1 =	-0,0310271

Source. The authors using Statgraphics Centurion XVI

To find if the Model could be simplified, it was noted that the highest P-value for independent variables was 0.037, corresponding to the Commercial Strategy of the Economic Dimension. Since the P-value was less than 0.05, it is considered statistically significant at a confidence level of 95%. Therefore, no variable was eliminated from the Model (Tables 8 and 9).

Table 8. Data from the 28th analysis

Parameter	Estimation	Standard Error	T Value	P Value
CONSTANT	31,4698	8,74362	3,59917	0,0005
Social: Supp-rawmatoperations	-0,301923	0,120085	-2,51425	0,0135
Economic-BudgetBussModel	0,602481	0,123728	4,86941	0,0000
Managerial-Communication	-0,312107	0,0951468	-3,28026	0,0014
Environmental-WorkSafety	0,182949	0,0748694	2,44358	0,0163
Economic- CommercialStrategy	0,228805	0,108206	2,11454	0,0370
Managerial-ROA	-0,233918	0,09058	-2,58245	0,0113
Environmental-EnvironProtRecov	0,399255	0,0845821	4,72033	0,0000

Source. The authors using Statgraphics Centurion XVI

Table 9. Variance analysis

Source	Sum of squares	Gl	Mean Square	F value	P value
Model	40381,8	7	5768,82	14,81	0,0000
Residual	38551,2	99	389,406		
Total (Corr.)	78933,0	106			

Source. The authors using Statgraphics Centurion XVI

CONCLUSION AND RECOMENDATIONS

This part explains in detail the independent variables that explain and/or facilitate the EBITDA, considering the characteristics of the enterprises analyzed using the RISE Model:

1. Sustainable Production (social dimension): the variable Suppliers of raw material and/or components necessary for operations (relative weight of 30.2) refers to the implementation of programs to develop a network of suppliers aimed at improving their relation with the environment, working to better up their chain value (Guardiola, *et al.*, 2018). The variable Business model including circular economy (relative weight of 31.2) of the economic dimension, refers to an organization that has an area in charge of the product life-cycle analysis and Works to redesign products to get certifications in Circular Economy (González, 2019; Programa para las Naciones Unidas para el Desarrollo [PNUD], 2019, p. 1).
2. Organizational Culture (managerial dimension): the variable Communication relates to the continuous existence of planned conversations to communicate organizational plans or objectives using state-of-the-art technology (Carro, Sarmiento and Rosano, 2017; Pérez – Uribe, 2012) (relative weight of 18.2).
3. Collaborative Processes (environmental dimension): the variable Work Safety relates to the enterprise having additional industrial health and safety services (Cadena and Pinzón, 2011) and that continuously checks its workers' health (International Labor Organization, 2008) (relative weight of 18.9).
4. New Markets (economic dimension): the variable Commercial Strategy relates to enterprises offering and/or distributing more than 20% (measured in units and currency) of their products to other continents (relative weight of 22.8).
5. Financial Indicators (environmental and economic dimensions): the variables Environment Protection and/or Recovery refers to the investment in actions to protect and recover the environment, considering the needs of stakeholders (relative weight of 39.92) and ROA (relative weight of 23.39) respectively, taken by the model in terms of its positive growth during the last four years (Copeland, Murrin & Koller, 2004).

FUTURE RESEARCH

As the RISE Model is applied to more enterprises, researchers will have more data to keep relating variables to deduce behaviors and to formulate innovation and sustainability plans suitable for each country, industry, and economic environment, while, by having a larger sample of enterprises, they will be able to obtain results from factor analysis and keep creating theory about organizational behavior of Latin American enterprises.

As a continuation of this research and as the model is implemented in different types of organizations, the results will give a perspective of the relative weighting of each factor depending on the sector where each organization is involved. From here the weights of each factor will be verified by economic sectors. At this stage of the research and application of the model, it is premature to assign prioritization percentages of the factors according to the sector and type of organization.

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KEY TERMS AND DEFINITIONS

EBITDA: Earnings Before Interest, Taxes, Depreciation, and Amortization. Financial indicator that shows the financial benefits of an enterprise before subtracting interest paid for debt, taxes paid to the government, depreciation for wearing out and amortizations on investments.

RISE: Model that shows a path for innovation and sustainability, assessing the state of these factors in organizations. This managerial model tries to improve organizational innovation.

ROA: Return on Assets, measures the Benefit generated by the assets of an enterprise (operating profit/ total assets). It provides a clear vision about the profitability that an enterprise can obtain from its assets.

Chapter 10

Fostering Corporate Sustainability Through Formalization

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ABSTRACT

The objective of this chapter is to identify policy measures to be implemented to reduce the levels of informality in Colombia. Informality is one of the main problems of the economy of Colombia. This problem does not only bring about macroeconomic distortions, but foremost, it compromises the sustainability of firms since they have less access to technology, training programs, and loans. Furthermore, informal firms have less access to government subsidies, and their workers experience higher turnover ratios. The chapter concludes that the measures to reduce informality must be focused on the following areas: tax reduction, labor market flexibility, and launching educational programs for informal firms.

INTRODUCTION

An informal economy is defined as one in which economic activity is developed without compliance with the laws and administrative rules that govern property rights, the granting of commercial licenses, work contracts, financial loans, and social security systems.

High levels of informality in a country bring about high costs that limit the ability of firms to be profitable and though be sustainable.

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Some of the costs associated with high levels of informality are:

- High government expenditure needed to provide social programs to provide for social services that would otherwise be covered by a formal system. As is widely documented, this expenditure brings about distortions to the economy such as higher interest rates, which crowds out the private sector's investment, appreciate the local currency, and brings about the need to increase taxes and public debt.
- High tax tariffs for a reduced number of formal firms and individuals. These tariffs depress the economy and foster tax evasion and the migration of companies to informality, creating therefore a vicious circle by which informality is reinforced.
- The social and economic statistics in a country with high levels of informal economy lose reliability since they do not include or have just estimate values of those enterprises/workers that do not declare income.
- Other costs relate to high levels of employee turnover. Firms that hire informal workers are not subject to the regulation that protects workers from being fired without a fair cause. Hence, employers will be more prone to dismiss workers at higher rates. Besides, by not being paid by a formal payroll, informal workers find more difficulties when trying to obtain credits at formal financial institutions.
- Furthermore, informal firms are characterized by experiencing low levels of productivity, caused by limited of access to formal financing instruments, and training programs, that would, otherwise, enable companies to obtain the knowledge and technology needed to increase their levels of productivity.

Accordingly, reducing the levels of informality must be in the top list of priorities of any country that aims at reducing its levels of poverty, and transition into a path of economic development that allows for a significant improvement of the well-being of its population.

Given the framework described above, the chapter's objective is to identify the actions that Colombia can implement to effectively reduce its levels of informality.

This identification serves to guide both the private and public policies in establishing a roadmap for solving one of the main obstacles to development faced by Colombia. Furthermore, the lessons serve as a model that can be implemented beyond the scope of the Colombian economy and therefore can be applied by other emerging countries elsewhere.

To achieve this goal, the chapter is organized in four sections. The first one begins with a literature review that present the main theories and concepts related to the phenomena of informality. Afterwards, the chapter presents a statistical outlook on the characteristics of informality around the world that finishes on a deeper look on the situation for Colombia. Then, the chapter presents measures that Colombia has taken to reduce its levels of informality. Finally, the chapter begins the discussion on the measures Colombia can take to reduce the levels of informality.

BACKGROUND

Concepts and Definitions

There is no consensus on a single definition of informality. The debate in the academic arena approaches the subject of informality in two ways: one understands it as a dual phenomenon with a segmented market, while the other as a voluntary decision taken by individuals.

The first approach is known as structuralist. According to this view, informality emerges because of an excess of the labor force not demanded by the formal sector of the economy. One of the main reasons for not demanding this labor force is that they lack the required skills needed by formal firms. As a result, the labor market of a country will be configured by two sectors: The modern with high productivity, and the traditional with low productivity. This view is supported by authors such as Hart (1973), and Lewis (1954).

The second approach is known as an institutionalist. Under this framework, an informal economy emerges because of an autonomous and free decision taken by individuals. This decision usually responds to a way to avoid high opening and functioning costs faced by formal firms. Tokman and Délano (2001) have highlighted how informality is an escape route for firms that are not willing to bear all the costs associated with being formal.

The high costs come because of institutions that cannot enforce a business environment that fosters efficiency and educate the population to behave in a way that is more in line with economic efficiency. Hence, many rules must be put into practice to secure those individuals behave properly. Loayza and Rigolini (2006) demonstrate that, in the long run, developing countries tend to impose more commercial and labor regulations on firms. Among the authors that support this view are Rosenbluth (1994), Portes (1995), De Soto (1985), Maloney (1998). Furthermore, many requirements are a source of corruption, and though constitute an attractive feature of rent-seeking societies.

While originally, the focus was about productive units that did not fulfill certain obligations (informal sector), through time, the emphasis revolved around the people and therefore, the core was employment relationships in the economic activity (informal workers). This concept came about because informal or unsatisfied employment relationships could also occur in formal enterprises. There are at least three concepts related to employment and informality: the informal sector (it was the original form of the concept), informal employment, and a shadow economy, which was conceived later (ILO, 2018a).

Furthermore, as stated by Hussmanns (2004), it is important to distinguish between employment in the informal sector and informal employment.

The International Labour Organization (ILO) adopted the following definition of informal economy: “all economic activities by workers and economic units that are – in law or in practice- not covered or insufficiently covered by formal arrangements” (ILO 2015).

On the other hand, the 15th ICLS (2000) defined informal employment as:

Employment in the informal sector as comprising all jobs in informal sector enterprises, or all persons who, during a given reference period, were employed in at least on informal sector enterprise, irrespective of their status employment and whether it was their main or a secondary job.

About the topic of informal employment, Losby, J. L., Else, J. F., Kingslow, M. E., Edgcomb, E. L., Malm, E. T., and Kao, V. (2002) make the distinction between informal employment carried out by people working for a company on one side, and the self-employment on the other. The informal employment for companies encompasses work off-the-books, paid in cash and not taxed, and under-the-table agreements, done by employees who work in a company as their primary job and for extra work. Informal employment also includes self-employed workers that operate own businesses, or do sporadic odd jobs, services, or products.

The disaggregation of the informal employment in such a detail allows a country to have a more accurate diagnosis of the severity of the problem; give that there is a difference between a full-time informal employment and an extra job developed sporadically. Moreover, a clear picture of the share of each type of informal employment allows for a better match between the policies designed and the specific characteristics of the problems that they aim to solve.

Such description was complemented in 2015 through the recommendation of the International Labor Organization related to the transition from a shadow to a formal economy (ILO, 2015), which clarifies that the informal economy, also called shadow economy, does not include illegal activities and that the expression “economic units” refer to units that a) employ labor, b) may refer to individual persons who work by their means, and c) operate as cooperatives and units of solidarity economics. Recommendation number 204 becomes a historic milestone since it is the first international norm that is dedicated exclusively to an informal economy (ILO, 2021).

For this chapter, the authors adopt the definition of informality stated by Medina and Schneider (2018). According to this, the informal, or shadow economy is understood as:

all economic activities which are hidden from official authorities for monetary, regulatory, and institutional reasons. Monetary reasons include avoiding paying taxes and all social security contributions, regulatory reasons include avoiding governmental bureaucracy or the burden of a regulatory framework, while institutional reasons include corruption law, the quality of political institutions and weak rule of law. For our study, the shadow economy reflects mostly legal economic and productive activities that, if recorded, would contribute to national GDP, therefore the definition of the shadow economy in our study tries to avoid illegal or criminal activities, do-it-yourself, or other household activities.

The previous definition allows for a blend between the structuralist and institutionalists visions, and though is adequate to analyze the condition of Latin-American countries like Colombia, which are characterized by weak institutions and coexistence of modern and traditional sectors.

For this chapter, informality is going to be analyzed from statistics and problems related to informal employment, since it revolves around the human side of informality.

Statistics on Informality

According to the ILO (2015) over 60% of workers and 80% of enterprises operated in the informal economy. Additionally, the levels of informal economy in the world have not decreased and it has even increased in many countries. When analyzing more recent years, another report from the ILO showed that over 2 billion people have informal jobs, a huge size of them working in emergent economies and developing countries; most of them do not have social protection, working rights, and decent job con-

ditions (ILO, 2018). Table 1 shows the percentage of workers who work in the informal sector of the economy in certain regions of the world.

Table 1. Percentage of informal jobs by selected regions of the world

REGION OF THE WORLD	PERCENTAGE OF INFORMAL WORKERS
Africa	85.6
Asia Pacific	68.2
Arab States	68.8
Americas	40.0
Europe and Central Asia	25.1

Source: the authors using data from ILO (2018)

As shown in Table 1, Africa is the region of the world with the highest proportion of informal workers with more than 8 out of every 10 workers being informal, while in Europe and Central Asia (the latter a region that used to belong to the Soviet Union) just 1 out of every 4 workers is so.

Worldwide, the informal sector of the economy does not show an important gender bias, since it is a major source of employment for both men (63 percent) and women (58.1 percent). Furthermore, out of the 2 billion informal workers of the world, over 740 million are women. Nevertheless, women have a higher possibility to work in the informal sector of the economy in most low and lower-middle-income countries since they are usually subject to more vulnerable conditions (ILO, 2018).

For the specific case of Latin America, an analysis of the dynamics of the different employment categories from the second half of 2020 shows that most of the creation of jobs has been boosted almost completely by the informal sector of the economy. Table 2: Percentage of Jobs created by formal and informal sectors in the second half of 2020 in selected Latin American Countries shows the contribution of each of these sectors of the economy in seven Latin American countries, including 5 of the 7 biggest economies (Brazil, Mexico, Argentina, Chile, and Peru), Costa Rica and Paraguay.

Table 2. Percentage of jobs created by formal and informal sectors in the second half of 2020 in selected Latin American Countries

COUNTRY	Percentage of Jobs created by the informal sector	Percentage of jobs created by the formal sector
Brazil	68	32
Mexico	81	19
Argentina	82	18
Chile	53	47
Peru	81	19
Costa Rica	75	25
Paraguay	91	9

Source: the authors using information from Beccaria, et al (2021, p. 40).

The previous numbers correspond to data for the second half of 2020 up until the latest available data in 2021. These data show that the informal sector of the economy has been the major contributor to the recovery of jobs after the hardest days of the pandemics. The most representative case is Paraguay where over 9 out of every 10 jobs in the last year have been created by the informal sector. Argentina, Mexico, and Peru show similar numbers with over 80% of jobs created by the informal sector. The percentage is lowest in Chile, but even there, almost 1 out of every 2 jobs created have been so by the informal sector of the economy.

These numbers show the weight, prevalence, and importance of the informal sector as an employer in Latin America.

The Covid 19 pandemic brought about an increase in the rate of unemployment worldwide. Latin America and the Caribbean have been one of the regions that have been hit more severely by the crisis, with consequences such as a decrease of the economic growth, economic activities, the bankruptcy of enterprises of all sizes, an increase of unemployment, weakening of production chains, a significant reduction of personal income, and an increase in inequality and poverty (Beccaria, et al, 2021). The advances that the region achieved in terms of increase of personal income and the reduction of poverty during the times of high prices of commodities (which benefit most countries of the region with few exceptions) were lost due to the measures taken during the pandemics.

However, the region was experiencing a decrease in its total GDP since 2017, with the pandemic just increasing such reduction. Table 3: Latin American Total GDP in current USD with the percentage of variations 2002-2020 shows the total amount of GDP in the region and the percentage of increase/decrease of such indicator in comparison to the previous year.

As Table 3 shows, during the XXI century, the region overall had experienced a growth in its economy. Even after the numbers of the pandemics, in the period 2002-2020 the region more than doubled the size of its economy at current prices. If the number is compared to 2019, the year before the pandemics, the region had increased its size 2,7 times. In the year 2002, the region had an important decrease in its size, with a fall of 11.01% compared to 2001 and from that year on the trend was to keep growing (even at two digits rates during the 2004-2008 period, and with the highest number of 23.6% in 2010). However, since 2014 the trend has reversed, and the region has seen a decrease in the size of its economy (except for the year 2017). Since 2018 the region was experiencing a slow but constant decrease in its economic size and the pandemics pushed those numbers. By the end of the year 2020, the region had moved back almost twelve years, having about the same size at current prices as it had in 2008. However, it is necessary to point out that the pandemics were an unforeseeable event, and for the year 2021 the predictions show a recuperation of economic levels close to those of 2019.

Colombian Context

Colombia's economy has not escaped the difficulties posed by the pandemic. In the year 2020, its GDP, measured in current USD, was 271.4 billion, with a per capita GDP of 5,335 USD; its GDP fell 6.8% and its per capita GDP decreased 7.8% compared to 2019 (ECLAC, 2021a). Its GDP by activity is as follows: 23.6% financial services, 20.7% personal and joint services, 13.4% trade, manufacturing 12.1, agriculture, and cattle 8.4%, 7.6% transportation, storage, and communication, 5.7% construction, 4.5% mining, and 4.0% supply of electricity, gas, and water (ECLAC, 2021a).

Table 3. Latin American total GDP in current USD with the percentage of variations 2002-2020

YEAR	TOTAL GDP (BILLIONS OF USD)	NET GAIN (LOSS) FROM PREVIOUS YEAR (BILLIONS OF USD)	PERCENTAGE OF VARIATION COMPARED TO PREVIOUS YEAR
2002	1,947,824	-241,557.3	-11.01%
2003	1,985,301.3	37,477.3	1.92%
2004	2,280,636.1	295,334.8	14.8%
2005	2,771,335.7	490,699.6	21.5%
2006	3,257,983.2	486,647.5	17.5%
2007	3,851,707.7	593,724.5	18.2%
2008	4,482,786.7	631,079	16.3%
2009	4,154,191	-328,595.7	-7.3%
2010	5,137,030.3	982,839.3	23.6%
2011	5,989,234.6	852,204.3	16.5%
2012	6,042,631.4	53,396.8	0.89%
2013	6,213,148.8	170,517.4	2.82%
2014	6,138,523.5	-74,625.3	-1.20%
2015	5,198,356.9	-940,166.6	-15.3%
2016	5,076,946.9	-121,410	-2.33%
2017	5,585,138.3	508,191.4	10.0%
2018	5,486,817.8	-98,320.5	-1.76%
2019	5,395,045.2	-91,772.6	-1.67%
2020	4,501,765.1	-893,280.1	-16.5%

Source: the author based on information taken from ECLAC (2021)

Its main export products in 2019 were: crude oil (34.4%), coal (13%), coffee, toasted and products containing coffee (6.3%), flowers and related (3.9%), products for polymerization and copolymerization (2.5%), bananas (2.5%), coal coke (2.1%), other ferroalloy (1.4%), passenger automobiles (1.1%) and parfums, cosmetics except for soap (1.1%) according to ECLAC (2021a).

Even when mining represents only 4.5% of the value added to the Colombian GDP, it is important as a source of foreign income. Colombia's main exports are not related to high-tech or innovative products. Most of its main exports are commodities or manufacturing products.

According to ECLAC (2021a), its imports are composed by consumer goods (19.4), intermediate goods (52.5%), capital goods (23.4%), and automobiles (4.8%).

The foreign investment to Colombia has had a very volatile behavior with constant ups and downs in the amounts invested from one year to the next; from 2010 to 2012 the amount invested grew from 947.3 million USD to 15.6 billion USD, the highest amount ever in a single year. By the year 2020, the amount invested was 5.92 billion USD (ECLAC, 2021a). The foreign debt as a percentage of the GDP poses a threat in mid and long terms since it has been growing constantly in the last decade; in 1990 the external debt as a percentage of GDP was 31.7%, and by the year 2008 it reached the lowest point of 19.2%, and from then on it has been growing constantly until reaching 55.6% in 2020 (ECLAC 2021a).

Regarding the informal sector of the economy, Colombia is not different from other Latin American countries, having high levels of its workforce working in the informal sector. Table 4: Percentage of total workers working in the informal sector in Colombia 2015-2021 shows the percentage of all employed population working as informal workers for the mobile quarters of June-August for the years 2015-2021. The table also includes the percentage of informal workers by gender. The table shows data for the 23 main cities and metropolitan areas of the country, collected from the Gran Encuesta Integrada de Hogares (Integrated Household Survey).

Table 4. Percentage of total workers working in the informal sector in Colombia 2015-2021

Period	Informal workers	Men	Women
June-August 2015	49.4	45.1	52.0
June-August 2016	48.5	44.8	50.5
June-August 2017	48.8	45.7	50.0
June-August 2018	48.0	45.7	48.1
June-August 2019	47.0	43.6	48.5
June-August 2020	47.2	46.0	46.8
June-August 2021	47.7	45.4	47.6

Source: the authors using information from Departamento Administrativo Nacional de Estadísticas -DANE (2021)

Overall, the percentage of informal workers in Colombia during the pandemic did not show a dramatic change compared to previous years. The percentage of informal workers changed 0.7% from 2019 (pre pandemics) to 2021. In previous years the percentage of changes ranged from -1.1% to -0.3%. However, the decreasing trend from 2015 was reversed during the pandemics. The rate of men working in the informal sector has remained on numbers close to 45% during this period and the rate for women has been going down from over 52% in 2015 to 47.6% in 2021.

Countries with higher levels of the informal economy usually have higher levels of poverty. In Colombia, the DANE (National Department for Statistics) calculates both monetary and multidimensional poverty. The percentage of the Colombian population considered poor in monetary terms was 42.5% in 2020, up from 35.7% a year earlier, and extreme poverty affected 15.1% of the population, 5.5% more than 2019 (DANE, 2021a). The multidimensional poverty affected 18.1% in 2020 up 0.5% from 2019 (DANE, 2021b).

The percentage of the working-age population employed in the informal sector went down 7.7% during the first two quarters of 2020, while the formal employment went down 4 percent during the same period. By the third quarter, Colombia registered an increase of the percentage of the working-age population employed both in the formal and informal sectors of the economy (Inter-American Development Bank - IADB, 2021).

Measures Taken in Colombia to Reduce Informality

Colombia has done efforts to reduce the size and impact of its economic sector, but the results are not as expected. There was a reduction in the percentage of informal workers in the period 2015-2020, but

results were below the numbers necessary to have a significant impact on the economy and the social situation. Thus, chambers of commerce, working along with authorities, designed and implemented plans to motivate enterprises to formalize (ILO, 2018a). Most plans were tailored towards the formal creation, reducing the paperwork and time necessary to create a formal enterprise.

The most comprehensive and ambitious effort from the Colombian Government to have high levels of formalization was Law 1429 issued on December 29th, 2010, called the Law of Formalization and Creation of Jobs. Such Law was issued during the first Juan Manuel Santos term. Such Law provided benefits to enterprises to formalize their business and to newly created formal enterprises. The Congress of Colombia (2009) defined informality in two ways: 1) that characterized by those activities that are performed by individuals, families, or communities without complaining about legal regulations, whose main objective is to earn a minimum subsistence amount, and 2) called informality with accumulation capability, which may not present low levels of productivity.

Some of the incentives established by the Government included: Progressive payment of income tax: those enterprises created after the issuance of the Law were not required to pay income tax during the first years of operations; then they will pay 25%, 50%, and 75% of such tax during the next three years and will pay 100% of the tax starting the sixth year of operations. In the case of enterprises created in the departments (political subdivision) of Amazonas, Guainía, and Vaupes, such benefit could be extended for ten years.

Those small enterprises that could not reach annual incomes equivalent to 1,000 UVT (unit of taxing value; 1,000 UVT were approximately 12,500 USD when the law was issued) paid only 50% of income tax.

Progressive payment or social security payments and payroll contributions: for which the same conditions to the payment of income tax applied. Progressivity of payments for the legal registration before chambers of commerce and their renovations: those enterprises created from the date of issuance of the Law were not required to pay such fees during their first year of operation; then they paid 50%, 75% during the second and third year of operation respectively and paid the amount in full of the fourth year of operation.

Those benefits related to the payments of legal registration and payroll contributions applied for all those enterprises created until December 31st, 2014, and the benefits related to income tax did not have a specific termination date (Ministerio de Trabajo de Colombia, 2012).

Such an effort tried to cover not just the facilitation of the creation of formal enterprises but also aimed at reducing the cost of opening them. By making it easier and cheaper to create formal enterprises the Law tried to cover what De Soto (1987) set out as the main causes of informality. Salcedo-Perez, Moscoso-Duran, and Ramírez-Salazar (2020) compared the data and showed that the Law had limited effects on reducing the informal sector when measured by the percentage of workers; thus, from December 2009 to December 2010 (when the Law came into effect) the percentage of informal workers decreased 0.5%, while in the period December 2010-December 2014 when the incentives on registration and payrolls finished, the informality decreased 3.5% while the next year it went down 0.9%.

However, and this is important for this chapter, the Departamento Nacional de Planeación -DNP (Colombian Planning Institution) (2019) cited a study from Econometría (2013) that showed that the Law increased the survival of enterprises on an average of 13 months; therefore, in this case, incentives to formalization did have an impact on the sustainability of enterprises.

DISCUSSION

Policies to Reduce Informality

In this section, the authors analyze three causes of informality in Colombia, as well as policy options to reduce it. The framework used to analyze the causes and policies is based on the conclusions obtained by the World Bank (2021) about the main causes of informality in Latin America, as well as on the results obtained by La Porta (2014).

A study developed by the World Bank (2021) identifies high taxes and the lack of labor market flexibility as the main causes of informality in Latin-American countries:

Additionally, La Porta (2014) identifies that the lack of education of firm managers as one of the main reasons why firms do not formalize. According to his studies, an uneducated manager will not know how to formalize even if the costs of formalization significantly reduce. Considering the results of the studies from the World Bank (2021) and La Porta (2014), the question that arises then is how does Colombia can attack the causes of informality in these three areas?

The following sections seek to answer these questions for each of the areas.

Taxes to Reduce Informality

According to the World Bank (2021), high taxes foster informal firms by reducing corporate profits. The way firms react is to try to offset the diminishing profits by reducing expenses, including one of the most significant costs which is personnel. This can be done by either reducing overall jobs, or by reducing formal employment.

Furthermore, if corporate taxes are sufficiently high, and, to avoid them entirely, firms might decide not to formalize at all, and therefore swap current hires from formal to informal regimes. Thus, one natural policy action to reduce informality would be to reduce tax rates. Although, it is a step on the right direction, the evidence shows that tax cuts do not necessarily cause an immediate desired result of increasing formal employment.

A recent example of these reductions is represented by the tax cuts in the U.S. implemented by the Bush and Trump administrations. According to Amadeo (2020), the 2017 tax cuts in the US that reduced the corporate tax rate from 35% to a flat rate of 21%, did not bring about an increase in formal employment. Instead, the savings from the tax cuts were sent to stacked holders who then used them to repurchase their stocks, increase their revenues, or invest overseas.

In contrast, Shuai and Chmura (2013) found out that the reduction in corporate income taxes does indeed have a positive relationship with formal job creation. To reach this conclusion, Shuai and Chmura (2013) developed a study for the United States economy in which collected state corporate taxes for all the 50 states, and employment for a period between 1990 and 2012. Afterward, the cited authors compared the job creation performance of states that lowered the income tax rate during that period with those that did not change the tax rate. Additionally, they created an econometric model, in which a fixed effect panel model was used to quantify the impacts of tax cuts on job growth.

The results showed that the states that cut corporate taxes experienced an initial slower year-to-year employment growth than states with no tax cuts (control group). After approximately five years, the states that lowered taxes, catch up with the ones in which taxes remained unchanged.

After the financial crisis of 2008, employment in tax-cutting states rebounded faster than the control group. In contrast, states with tax increases during the 1990-2012 period, also experienced lower job growth than the control group and even more than the tax-cutting states.

To analyze with more depth the relationship between tax cuts and formal job creation, Shuai and Chmura (2013) ran a panel data model with information from the fifty states plus the District of Columbia. The time frame for the study was the 1990-2012 period. The model used employment growth as the dependent variable. The explanatory variables were the tax rate and a dummy variable that takes a value of one if the states reduce their tax rate and zero otherwise.

After running the model, the authors conclude that the level of tax rate has a significant effect on the growth rate of formal employment. Moreover, the authors conclude that the dummy variable that measures the tax cut has a positive impact on employment growth in the year in which the policy is implemented. Later this effect vanishes in the subsequent years.

Similar results have been obtained in other geographies. A study conducted by Solé and Viladecans (2003), found out a negative relationship between the tax rate on the economic activity of 100 municipalities of Spain between the period 1992-1999, and the rate of increase in formal employment. A similar result is obtained on the creation of jobs and taxes levied on the ownership of land.

The results indicate that tax cuts by themselves constitute a means to increase formal employment and therefore reduce the levels of informality in a country. Nevertheless, the authors consider that this policy must be complemented with others that tie the tax cut with job creation. One way to establish a direct link between the creation of formal jobs and tax cuts; is to condition the tax cuts to firms that have first proven to effectively increase the number of formal jobs created. For example, a firm that currently employs twenty workers and pays a tax rate of thirty three percent, can pay a tax rate of twenty eight percent, if it proves that the new number of new formal jobs increased by ten.

Nonetheless, for this policy to have the desired effect, the firm must perceive that the reduction in corporate tax rates is complemented with a reduction of nonwage costs for the employment of formal employees. Otherwise, the savings from lower corporate taxes will be offset with higher costs of new hires.

Regarding nonwage costs in Colombia, a report launched in 2016 by the World Economic Forum (WEF) stated that this country suffers from excessive labor regulations and costs (WEF, 2016).

Steps in the direction of reducing labor costs have been taken by Colombia. In 2012, Colombia adopted a law aimed at reducing the hiring costs for companies. The law divided the corporate tax on profit into two components. The first one dealt with a portion of the corporate tax that feed the general budget, whereas the second one had the specific destination of financing specific programs focused on education and family welfare. The reason why this policy reduced hiring costs had to do with the fact that before this law, the funding of education and family welfare was obtained through a direct discount from the wage of the employee.

With the new legislation, the company does not have to assume such costs, since it is already assuming it with the profit on tax that it was already paying anyway before the reform. The reform was implemented in May 2013. Between 2012 and 2013, the annual unemployment rate fell from 10.4% to 9.7% and continued to decrease to 9.3% in 2017.

Nevertheless, there is a need to continue deepening in actions towards this direction in Colombia. According to Clavijo, Vera, and Cabra (2013), labor costs other than wages are one of the main causes of informality in Colombia. These costs are divided into direct and indirect. Direct non-wage costs increase the cost of hiring a new employee between 39% and 52% over his/her salary.

The important fact to consider is that the reduction in wage costs can be complemented with other benefits derived from formalizing the activity. Among the benefits are access to credits and subsidies from the government, tax credits, access to technological improvement and education programs, among others.

For example, government programs can offer special training programs for firms that decide to formalize. In Colombia, the state-owned job training agency (Servicio Nacional de Aprendizaje SENA) can meet this purpose. Additionally, firms that decide to formalize can be assisted directly by government agencies on how to access special credit lines, and on other issues such as on how to export.

Labor Market Flexibility

The World Bank (2020) identifies labor market flexibility as one of the requirements needed to reduce informality in Latin-America. A flexible labor market is one in which market forces are the main drivers behind the hiring and firing of workers, without government regulations that artificially add transaction costs linked to these actions.

Some critics argue that too much flexibility harms employees' well-being by taking away safety nets such as long-term contracts, minimum wages, social security services, extra hours remuneration, compensation for unfair dismissals, among others.

Nevertheless, it is important to consider that these measures favor already formally employed people, at the expense of higher unemployment. Whenever labor regulations increase hiring costs, the reaction of employers will be to try to ration new hires, and if possible, to dismiss current workers.

Moreover, the portion of the labor force not absorbed by the formal market will transition into informal markets. In this informal market, people will experience working conditions that are far worse than those experienced by formal workers under a flexible labor regime.

This tradeoff between employment and the well-being of those employed is one of the most difficult issues to solve in the economic arena. The right mix must be tailored to the specific condition of a country. Nevertheless, most countries can follow a set of general principles and guidelines in the subject of labor market flexibility that have proven effective in the past.

To measure the degree of flexibility in the labor market of a country, the World Bank has constructed the Ease of Hiring Index. The variables included are availability and a maximum length of a fixed-term contract for a task related to the permanent activities of a firm, the probationary period, and the ratio of the minimum wage to value-added per worker.

According to this index, presented in the Doing Business Report (2020), low and middle-income economies tend to regulate more than high and upper-middle economies. Countries such as Denmark, Namibia, and the United States do have a more flexible labor regime. A more flexible labor market means a high level of both ease of hiring and dismissal.

One way to make the labor market more flexible is by adopting a regulation that allows for the broad use of fixed-term contracts. This type of contract diminishes the risk faced by employers when hiring new personnel. This result is explained by the fact that they allow for a less costly adaptation of the hiring and dismissing process to the economic cycle. In a recession of the economy, the personnel can be reduced by not renewing contracts after they expire, instead of engaging in a costly process of dismissal. On the other hand, firms will be more willing to increase hiring processes after evidencing the first signs of a recovery, knowing that, the dismissal cost will not have such a big of an impact if the economic recovery lasts for a short period.

Among the actions that Latin American countries can undertake in this direction, are to adopt a regulation that includes the use of fixed-term contracts for permanent tasks, as well as allow for unlimited renewal of fixed contracts. According to the Doing Business Report by the World Bank (2020), one of the causes why low-income economies such as Honduras and Pakistan experience high levels of informality, is because their legislation prohibits the use of fixed contracts for permanent tasks; the same report mentions that fixed-term contracts are especially useful to increase young people's employment. With these contracts, firms will be more prone to hire youths for periods when sales increase and other seasons of more labor demand during the year. Therefore, youths are more likely to have the labor experience demanded by firms when considering hiring them for longer terms.

At the same time, the labor market can become more flexible by increasing the duration of the probationary period. A longer probationary period allows firms to hire with more confidence, by reducing the cost of dismissal in the case of an inadequate match between the employee and the firm.

Finally, the labor market can become more flexible by adopting legislation that allows employers to hire employees per hour, with all the formal requirements, instead of demanding that all the new hires have to be only full-time workers. An exclusive full time hiring regime foster a reduction in the number of formal workers.

Many emerging countries, such as Colombia, have taken steps towards allowing formal labor contracts of less than the maximum standard working time (commonly referred to as "normal hours"). According to the current norm in Colombia, workers with contracts for less than normal hours, when hired formally, are subject to the same rights as full-time workers. The social security payments are fixed according to a full-time salary standard. If the employee works for less than 21 days a month, then the social security payments can be prorated according to the weeks worked, and no contribution to health services is needed.

Although this measure is not a full flexible per hour hiring regime, it helps to encourage more employment by reducing hiring costs.

In countries like the US, part-time workers are less expensive for employers since they do not have to offer this type of employee's health insurance and retirement plans. Likewise, part-time employees are exempt from rules that fall under the fair labor standard act. Under this regulation, employers are required to pay the minimum basic wage to employees, and to pay overtime hours that exceed the typical workweek. Nevertheless, the state and federal tax deductions from the payroll are the same as full-time workers.

The authors consider that Latin-American countries still have room to reduce the cost of reducing the cost of hiring part-time workers without reducing the coverage of employees, by adopting a regime more in line with the one just described for the United States.

Education for Managers

La Porta (2014) identifies that having educated entrepreneurs is a *sine qua* nonrequirement for all the policies to increase formality to work, because even when the costs of formalization go down significantly managers do not formalize, because they would not know how to do it.

Furthermore, many times informal business owners are oblivious to the benefits of formalizing their firm. Such advantages include receiving subsidies, getting access to loans, getting lessons and instructions for improving business firms in areas such as marketing, management, finance, logistics, new technologies, research and development projects, and the like.

A study undertaken by Hausmann and Hidalgo (2011), highlights that access to networks of collective productive knowledge constitutes one of the main factors that allow for firms and individuals in a country to transition into a new stage of economic growth and development. As stated before, formalizing a business opens the door to these networks, and though, a wise use of all these benefits received will offset the costs of maintaining an informal business.

To advance towards this direction, the government can make use of the public education system to advance in two areas: first, to provide incentives to business owners to access formal education programs by implementing programs such as diminishing the cost of university enrollment to entrepreneurs, and/or, reducing taxes to firms that prove that are receiving formal education; and on the other hand, and simultaneously, the government can undertake educational campaigns aimed at educating informal business owners and managers on all the benefits that formal businesses received, and to have access to them and use them properly.

CONCLUSION AND RECOMMENDATIONS

Having effective formalization policies is necessary to guarantee social and economic sustainability in developing countries. Past formalization experiences in Colombia have not had the desired effect so it is necessary to look for new ways to motivate entrepreneurs to start and operate their business formally. Also, workers must have more incentives to join the social protection formal system. The uncertainty about retirement reforms and their effect on workers may lead workers to prefer being informal under the premise that hard retirement requisites may make it impossible to have a retirement payment by the end of their labor age.

So far, efforts to formalize enterprises have had a limited impact on such matters, and on the formalization of workers. When it comes to sustainability, recent formalization efforts showed a positive, but limited effect on enterprises, showing that providing initial benefits to formal enterprises increases their survival rate. Such efforts concentrated on registration payments, taxes, and payroll fringe benefits, something that put a strain on newly created small enterprises. So, such benefits are necessary but not enough, and it is necessary to research other aspects that may have a higher effect on enterprises to born formal and especially increase their years of operation fulfilling all formal requirements.

This becomes an invitation to analyze other ways to formalize, focusing not only on formal enterprises (the labor market demand) but also formal workers (the labor market supply). To emphasize about the creation of formal enterprises is necessary but not enough to have a higher impact on formalization processes. Workers need to find tangible benefits in becoming formal workers.

Another factor necessary to have more sustainable enterprises deal with the education of managers. More educated, informed managers can be more prone to have formal enterprises and formal workers. More educated managers have the technical knowledge that enterprises need to be more competitive in the market, so increasing the time they stay in the market. Therefore, formalization processes must go beyond laws related to creation and operation, but also towards creating an environment that facilitates and motivates both entrepreneurs and workers to operate formally.

The authors also want to emphasize the need for countries to create more competitive conditions for enterprises to motivate to have formal enterprises and workers. A country with low competitiveness will create mostly low competitive enterprises that cannot endure the costs associated to operate formally;

besides, such enterprises cannot afford to pay all social benefits formal workers have. This is a special and mandatory measure to have effective formalization policies.

The authors then state that formalization is not a one-sided process, but a multiple-side process that must involve the government, formal financial system, the business organizations, and the academy.

FUTURE RESEARCH DIRECTIONS

It is important to analyze the social challenges posed by the high number of informal workers in developing economies. Informal workers will lack the social protection necessary to have a decent living when they entered retirement age since they do not have retirement funds. The pandemics also evidenced the problems related to the lack of health coverage; most people who suffered the greatest effects from the pandemics were those more vulnerable economically, many of them informal workers. The authors consider such topics are urgent, given the current world economic conditions, the high rates of migration of young people from developing countries to developed countries, which could pose a higher danger to the retirement funds systems in developing nations.

The authors also propose to research institutional matters and the trust that citizens have in the formal system as a reason to remain in the informal sector.

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KEY TERMS AND DEFINITIONS

Economic Sustainability: To have long-term economic growth without affecting the communities socially, environmentally, or culturally.

Formalization: A process by which a company goes from being informal to fulfilling all legal requirements in terms of creation, tax compliance, and social protection of its workers.

Informal Enterprise: Also called shadow enterprise, refers to those companies which have not followed a formal process of creation and/or do not pay taxes, do not follow accounting norms, neither pay fringe benefits to their workers.

Informal Worker: A worker who works either independently or for a company (formal or informal) and does not enjoy the social protection benefits established by law.

Labor Market: Refers to the supply (by workers) and demand (by companies) of labor.

Tax Compliance: To fulfill all legal requirements expressed by national or local laws regarding declaration and payment of taxes.

Workers Social Protection: Programs and plans designed to protect workers in terms of health and retirement that must be fulfilled to consider workers as formal.

Chapter 11

Organization Theory as Applied to the Big Problems of the Marketing and Sustainability Industry

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ABSTRACT

This work has been prepared as a reflection on the current business context and the demands of both the corporate and social environments. The subject of the analysis is the practitioner's viewpoint arising from the statement of the 'seven big problems of the marketing industry' as unveiled by the American Marketing Association (AMA), to which the authors add a fundamental theme for today's world: sustainability. Subsequently, a set of classical management theories are used as an analysis formula. After contrasting them, the main aspects are set forth for each theory that to an extent contribute to the generation or aggravation of the problems. Finally, they attention to the importance of being aware of the problems and their origins but, more than that, of the commitment required by a strategy that allows for sustainable development over time.

INTRODUCTION

This study serves as a complement to the big problems of the marketing industry unveiled by the American Marketing Association (“AMA”) in 2016. It seeks to explain the relationship and demonstrate the validity of classical literature as applied to practical problems manifested by operators in the business

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world. An additional contribution of this work is the consideration of the concept of sustainability to succeed in this new era of turbulent times for management.

The main problems of the marketing industry are analyzed within the framework of organization theory literature. This provides us with a coherent vision that unites the academic and business worlds. Moreover, the authors feel that this merged approach is necessary for the harmonious development of business in difficult social and competitive contexts.

However, this work does not seek to offer a precise answer to each problem, far from it, its purpose is to immerse the reader in our current problems, discuss the validity of organization theory as a valid way of understanding the complex reality in which businesses are operating nowadays, and in light of this analysis, achieve a better understanding of the triggers that unleash these problems and thus develop effective solutions.

Although this work is based on the application of a selection of the most widely accepted organization theories, its results will hopefully reinforce both views, and thus obtain a better understanding of these situations as a whole, which should be useful for organizations' administrative personnel in the current context.

BACKGROUND

The Problems of the Marketing Industry

In February 2016, the American Marketing Association (AMA) released its first “Intellectual Agenda” that was intended to be a source of guidance and inspiration for companies and academics in the marketing area. The challenge was to discuss the topics of greatest interest and that required greater attention to continue with the development of the discipline, considering the changes in the environment. The work of Jaworski, Malcolm & Morgan (2016), where the authors present a content strategy for the institution, was featured in this launch.

Certain comments and reviews on the marketing industry issues outlined by Jaworski *et al.* (2016) are set forth below. See Table 1.

*Table 1. Marketing problems**

1	Effectively targeting high-value sources of growth.
2	The role of marketing in the firm and in the executive suite.
3	The digital transformation of the modern corporation.
4	Generating and using insight to shape marketing practice.
5	Dealing with the omni-channel world.
6	Competing in dynamic, global markets.
7	Balancing incremental and radical innovation.
8	Sustainability as a key element of the strategy.

* Elements 1-7 proposed by Jaworski *et al.* (2016); item 8 added by the authors.

1. Effectively Target High-Value Sources of Growth

This problem is a focal point for the development of marketing, since its inception, since as long as a target group is correctly selected and it has good growth projections, the profit ratio that the company will obtain will be much higher compared to the costs associated with the functions of supplying said segments. The traditional concept of *segmentation* for this function was first proposed by Smith (1956).

Why might segmentation be such an important concept today, when it was defined such a long time ago? The answer is that this concept has not always been firmly present in the marketing function. One of the reasons for this is that in certain cases its application can be complex. For example, when the product to be marketed has the characteristics of a commodity or, when periods of deep economic crisis are being experienced, the opposite is even proposed by proposing a single product for the entire market (Resnik, Turney & Mason, 1979).

The fact is that at least for the current and future context, the elevated levels of competitiveness entailed by the globalized world demand, to a certain extent, the most efficient exploitation of all available resources, and that includes the application of processes such as segmentation.

2. The Role of Marketing in the Firm and in the Executive Suite

Given the multidimensional nature of the marketing function according to the definition used by firm and proposed by Kotler (2004), which indicates that “*In addition to customer relationship management, marketing specialists must also deploy good collaborator relationship management.*” From this statement, one can infer the importance of the different units of the company in implementing the marketing function. For this reason, the study of why and how marketing people interact with people from other functional areas is of special importance (Ruekert & Walker, 1987).

Thus, the role played by the senior executives of an organization constitutes a transcendental element for the proper functioning of marketing strategies (Hunt, Wood & Chonko, 1989), not only for decision-making, but also for the execution of more specific strategies, such as segmentation (Wind, 1978).

In this sense, the power of the marketing department is essential for the superior performance of marketing activities (Feng, 2015), therefore, the power that this department holds within the company is an important aspect to consider for its satisfactory performance.

3. The Digital Transformation of the Modern Corporation

In regard to digital issues, the AMA warns that marketing people have assumed digital advances from an extremely limited perspective, considering social media, big data and communication marketing aspects in general; however, management is more focused on broader elements that affect the company, such as its competitiveness and very survival.

In this sense, one of the issues to resolve in the new context is how companies will compete in the future, how their business models will change, how the forms of communication and interaction with consumers will be altered.

4. Generating and Using Insight to Shape Marketing Practice

The increase flow of information from the hand of *big data* means that companies receive more and more information about their environment, however, it is unclear whether the information they receive, even today, is properly processed to generate profitable insights for the company. Quite possibly, companies capable of efficiently collecting, sharing, storing, transmitting and using these enormous amounts of information will have a competitive advantage.

Capitalizing on the consumer's experience and the insight of competitors and suppliers, as well as achieving the integration, processing and systematization of these elements within the company, will constitute a source of advantage in an increasingly complex scenario.

5. Dealing with the Omni-Channel World

The advances of social media, mobile media, permanent communications, the internet of things and multi-channel markets have resulted in the omni-channel concept. However, little attention has been given to this communication modality, the possibility of handling it in the same traditional way with which multi-channel media has been handled being still a possibility. Thus, the theories raised above may not fit, leaving other threats and opportunities to explore.

In this sense, work must be focused on how to know how and where consumers want to buy, what the appropriate mix of interfaces for contact with the consumer should be, how this changes from country to country, how these channels are coordinated, what role will be played by the traditional channels, etc.

6. Competing in Dynamic, Global Markets

A more competitive and changing scenario has been evident in recent years, and just as the growth of data is exponential, so is change at the level of consumers and competitors. The monitoring of consumer behavior, the continuous use of communication tools, such as the mobile phone and the Smart Watch, which keep the consumer connected at all times with direct communication among products, people and suppliers, which delivers multidirectional information in real time, forming what Jaworski *et al.* (2016) call true technological ecosystems. The question that follows this new reality is how to compete in this multidimensional reality.

These new possibilities have led to the proliferation of small companies capable of being part of these new technologies through applications and business models tailored to these products. So, how can you be alert to competitive changes? And even more relevant, how can you be prepared to predict changes in the market?

7. Balancing Incremental and Radical Innovation

This balance requires an appropriate combination between the work of the present, focused on incremental innovations, and the work of the future, focused on radical innovations. In this sense - even for many companies - the generation of innovation is still a challenge, not only in the product, but also in the organizational structure, processes and distribution channels that improve their competitive level.

Thus, the management of innovation within the company is a central challenge, where management policies must be defined, such as those called by Jaworski *et al.* (2016), as “fail fast”, and other forms of measurement and evaluation of these efforts.

8. Sustainability as a Key Element of the Strategy

Sustainability is an issue that has been relevant for several decades, however, in recent years it has become even more pertinent. In the field of administration, marketing has been the discipline whose mission has been to recognize the concept of sustainability, based on two philosophies. The first, associated with the marketing concept, is sustainability in relation to the durability of the organization over time, fulfilling its task of satisfying the needs of consumers, creating value for them and consequently establishing a beneficial relationship for both, which consequently allows the projection of the organization over time. The second is the sustainability that is part of the concept of social marketing, which adds to the first philosophy described above the contemplation, over the short and long term, of the consumer's individual and social welfare.

This element is added by the authors to the seven big problems of the marketing industry, for two reasons: firstly, because it affects the marketing function of companies directly, reducing their chances of achieving a positive image, therefore reducing the potential of their relationship marketing efforts, and secondly because this problem indirectly affects all the other marketing problems.

MAIN FOCUS OF THE CHAPTER

Interpretation and Systematization Proposal

The problems were separated into groups in order to proceed with an analysis of their relationship with organizational theories. First, each problem was interpreted in its broadest sense, resulting in the following forms of interpretation:

1) Effectively Target High-Value Sources of Growth

This was considered a competitive and highly strategic form, key elements being product strategy and value proposition, along with aspects of competition for a market, such as segmentation and positioning.

2) The Role of Marketing in the Firm and in the Executive Suite

The role of marketing in the company, together with senior management, was linked to people, involving dynamics in the executive suite, related to commitment and how the application of marketing strategies is resolved, and aspects of people, both in terms of their recruitment and their retention.

3) The Digital Transformation of the Modern Corporation

The digital transformation is focused on the management of knowledge within the organization; in this sense communication with the consumer is included.

In this reality, how the company should compete in the future; what changes will or should occur in the business model.

4) Generating and using Insight to Shape Marketing Practice

Again, the generation of insight is achieved by absorbing information from the market, both from consumers and from competitors, trying to collect the experience of consumers, among others.

5) Dealing with an Omni-Channel World

The omni-channel world was related to the information that is possible to obtain through said channel - how the company should adapt to satisfy consumers in this new reality.

6) Competing in Dynamic, Global Markets

Competition in global markets was brought into the realm of determining a competitive strategy, anticipating the strategies of competitors being one of the points to consider.

7) Balancing Incremental and Radical Innovation

The subject of innovation was also assigned to an area of strategic decisions in the organization, considering elements such as prototype design, implementation of innovation metrics, etc.

8) Sustainability as a Key Element of the Strategy

Sustainability does not only correspond to the issue of strategic decisions in the organization, however, the authors agree that this aspect should be addressed as a strategic element, in order to disseminate it throughout the organization, not only from a competitive perspective, but also as a philosophy that guides how decisions are made within the organization.

Thus, marketing problems are grouped in Table 2 and the areas of organizational problems and their related theories in Table 3.

With these simplifications, we proceeded to generate a matrix that would allow for taking these problems into consideration, grouping them according to their interrelationships in such a way as to propose an analysis. This grouping is shown in Table 2.

Application of the Agency Theory

According to the agency theory, this occurs when an agent is related to a principal through a contract, whereby the principal compensates the agent, who in turn acts on behalf of the principal (Eisenhardt, 1989). Hence, the problem areas of this theory are the potential conflict of interest and the agency costs that arise due to the separation of a company's control and its ownership, which results in different risk preferences and information asymmetry (Panda & Leepsa, 2017).

Table 2. Areas of problems in the industry

Problems	Description	Key elements	Areas
4+5+6	Generating and using insight to shape marketing practice	Product decisions	Strategic planning
		Segmentation	
		Positioning	
		Hypercompetitiveness	
		Competitive Scenario	
		Compete globally	
		Competitive strategy	
		Better capture consumer experiences and competitor insights	
		Distribution	
	Dealing with an omni-channel world	How the channels are coordinated	
	Competing in global, dynamic markets	Impact on traditional channel	
2+3+7	The role of marketing in the firm and in the executive suite	Commitment of the executive suite	Organizational strategy
		Marketing organization	
		Marketing manager role	
		Innovation management	
		Communication with consumers	
	The digital transformation of the modern corporation	Big data	
	Balancing incremental and radical innovation	Data orientation	
1+8	Effectively target high-value sources of growth	Compete in the future	Strategic vision
		Business model	
		Sustainability of value creation over time	
		Sustainable value creation philosophy	
	Sustainability as a key element of the strategy	Application of sustainable processes	

Source: Prepared in-house based on problems raised by AMA.

Strategic Planning

Considering this theory, the role of marketing in the firm and in the executive suite might not be considered particularly favorably by its managers. Of course, if the company were managed by its own owner, it could be easier to make the right decisions for the organization, however, when the owners hire third parties to take charge of said management, they will not have the same care and dedication as the owner. This situation could occur, for example, in cases where small short-term benefits are privileged that put the organization at risk, rather than large long-term benefits that ensure its permanence over time. According to the models proposed by Arrow (1985), this would correspond to the model of hidden actions that cannot be visualized by the principal.

Table 3. Areas of organizational problems and theories

Scopes	Agency Theory	Institutional Theory	Resource-Based Theory	Contingency-Structure Theory	Knowledge-Based Theory
Strategic planning	Organization managers will not necessarily seek the best for the organization.	That all companies seek the same objectives is one of the elements that generates this highly competitive situation.	Building a solid brand is essential to achieve a good positioning and neutralize the competition.	Organizations are effective if they are able to adjust to environmental conditions, e.g., adaptation to global markets.	Organizations that know how to manage knowledge will perform better than their competitors.
Organizational strategy	Leadership in the organization is put to the test with decisions, given mistrust, dishonesty and even laziness.	The executive suite of organizations will tend to normative isomorphism, given the education received, limiting innovation in the organization.	Importance of the knowledge that employees achieve in the organization, related to the product and past experiences.	The tasks of uncertainty increase along with product innovation, which leads to a reduction in formality and an increase in decentralization.	This theory assumes that knowledge is created, stored and used by individuals and not the organization itself.
Strategic vision	Coordination of channels is a major challenge, since they will tend to compete with each other without being perceived by the principal given the information asymmetries. In the presence of short-term goals, the tendency is to postpone sustainability decisions.	Business models tend to be similar. How to compete in the future becomes a task of mimicry. As long as there is no critical quantity to track, few companies will seek to operate sustainably.	In this line, efficient procedures and processes play a fundamental role, especially those that are key to capturing and taking advantage of the large amount of existing data. The generation of benefits through sustainability must be evident for companies to use it as a tool for competition.	According to this new scenario, the logic in the contingency structure would be that of an organic structure that is based on networks where knowledge of activities and information is shared with some fluidity. According to this view, companies will adapt to sustainability, to the extent that the environment (political, social and economic) adapts to that need.	Knowledge management allows for the creation of new knowledge capacities, which would in turn open the door to better performance in the new technological and competitive scenario. Sustainability must be managed in concrete and practical day-to-day terms, so that in this way they can be assimilated.

Source: Prepared in-house based on problems raised by AMA.

On the other hand, marketers seeking business for the agent may exaggerate future results (Davies & Prince, 2010), again achieving less than optimal results.

Organizational Strategy

The leadership of the organization is put to the test whenever there is a vision and mission to fulfill, based on sales revenue goals. The responsibility for this task should normally fall on the marketing management, whose manager will often have the challenging task of channeling the efforts of the entire organization to achieve its objectives. The difficulties arising in these cases range from the coverage of personal interests (Eisenhardt, 1989) from which elements such as distrust may derive. If this problem is accompanied by the AMA 1+6, the probability of success is minimal.

In the case of the search for a balance between incremental innovation and radical innovation, there will be differences in risk preferences between the agent and the principal, presenting the agency in the relationships (Eisenhardt, 1989).

Strategic Vision

Coordination of distribution channels represents a major challenge. In particular, own channels require special attention, due to how their situation will evolve as more alternative channels are used. In this sense, there will be information asymmetries that will induce the organization's own channels to seek simultaneous access to the best marketing conditions.

Again, elements such as mistrust could affect the management of these channels, for example, setting limits to product requirements at the point of sale, with the intention of not reducing the stock in another channel.

One way to correct these problems related to agency theory could be to give managers participation in actions, which would improve the quality of decision-making within the organization (Dalton, Hitt, Certo & Dalton, 2007).

A Practical View

A good example is Tate, Ellram, Bals, Hartmann & Van der Valk (2010), who studied a company's difficulties when it comes to hiring marketing services, finding that cooperation among directors rather than direct control can make a difference in terms of performance and contribute towards more satisfactory results.

Application of Institutional Theory

Institutional theory addresses the question of why all organizations in a given field tend to see and act the same way (DiMaggio & Powell, 1983). It sees organizations as enduring social phenomena that involve and arrange social spaces between and through organizations (Lammers, Garcia, Putnam & Mumby, 2014).

Strategic Planning

The highly competitive situation that exists today is accentuated by companies that tend to resemble each other and act in the same way, generating common business models. Hence, one of the problems that arises when facing and evaluating high-value sources for growth is that we follow those that, given the conditions of the organization, provide the greatest probability of success. This behavior leads many companies to pursue this same goal.

In this sense, the trend towards global markets will probably lead to the fact that given the greater exposure, more companies tend to see and act in the same way.

Organizational Strategy

Marketing work by definition involves different areas of the organization in product decisions, pricing, distribution and supply chain and promotion (McCarthy, 1978), which inevitably leads to interaction

with the different areas of the organization. Depending on the education received, executives will tend towards a behavior of normative isomorphism (DiMaggio & Powell, 1983), where there will be power differences with the other functional areas (Ruekert & Walker, 1987).

On the other hand, the normative isomorphism model will also have an impact on decisions about incremental and radical innovation, tending to favor the first to the detriment of the second, based on changes that interfere to a lesser extent with the isomorphism.

Strategic Vision

Given that business models would tend to resemble each other over time, looking for alternative ways to compete in the future becomes a task that tends to mimic a “recurring spiral,” thus, innovative business models are unlikely to emerge.

In this sense, the possibility is opened for organizations with smaller structures, in the search for stability and permanence over time, to achieve more efficient and innovative business models.

According to Oliver (1997), many recurring practices are based on habits, which are in practice not questioned by managers. Given this reality, it is possible that the situation in which highly innovative companies keep innovating based on processes that have always been developed in a certain way, generating a virtuous circle will be accentuated, while in the case of companies whose focus is not systematic innovation, routines and activities validated by habit will plunge them into a vicious circle whose inertia will be difficult to change.

Even so, DiMaggio (1988) established the concept of *institutional entrepreneurship*, which points out that companies often act creatively to change their institutional environments.

With this argument, the door is left open to include innovative elements in the business model that will lead to better performance. However, given the same concept of isomorphism, it is possible that a company will innovate in its business model, while others simply imitate said innovation.

Thus, to improve the situation related to institutional theory, it is necessary to put aside inertia and open doors to the questioning of practices that have been legitimized only by their operation in other institutions. However, one problem associated with leaving this inertia, giving way to the institutional entrepreneur, is the risk assumed in trying new methods.

A Practical View

Hillebrand, Nijholt & Nijssen (2011) offer an example that considers the scope of institutional theory, where they show how the adoption of a Customer Relationship Management (CRM) perspective for the mimetic proposal results in a poor contribution to marketing results.

Application of the Resource-Based Theory

The resource-based theory analyzes the differences in the performance of organizations from the point of view of the resources they possess (Peteraf & Barney, 2003). The use of resource-based theory in marketing research has increased greatly over the decades, signaling its relevance in the analysis and explanation of competitive advantage and performance (Kozlenkova, Samaha & Palmatier, 2014).

Strategic Planning

To effectively target high-value sources for growth, a value proposition must be generated according to it or the segments to be addressed. Building a solid brand represents an intangible resource (Aaker, 2009; Wernerfelt, 1984), which is a fundamental part of this proposal, in order to achieve a good positioning, which in turn serves as a neutralizer for potential competitors.

Thus, a well-designed brand that has a well-defined brand personality (Aaker, 1997) with the potential to be projected globally would constitute a resource with the potential for leverage and a great opportunity to generate a global positioning, which would translate into a high-value source of growth and participation in other markets.

Organizational Strategy

The company's executives have the task of contributing to the general objectives of the organization. One of the key elements in this mission is to maintain and capitalize on the knowledge "resource" (Wernerfelt, 1984), acquired by the organization's employees, from the organization of activities related to processes and procedures, to the most specific elements related to the product and past competitive experiences.

Furthermore, in addition to retaining the good elements of marketing and in general contributing to the latter, care must be taken to attract and retain people with unique skills and abilities to promote good marketing in the company.

Strategic Vision

In this line, the "efficient procedures and processes" (Wernerfelt, 1984) resources play a fundamental role, especially those that are key to capturing and taking advantage of the large amount of data. In the medium term, these procedures must be adapted to the new reality, however, the original procedures that function in big data and analysis will be fundamental to capture the differences that occur in communications and behaviors and in particular, in the understanding of consumer experiences. In other words, companies that are on a better footing in these processes will be in a better position to exploit the advantages, given the new scenarios.

In relation to this resource-based theory, it is key to achieve core competencies that are a source of sustainable competitive advantages over time, allowing outstanding performance in the market. For this to happen, organizations must strive to make these strengths valuable, rare, difficult to imitate and irreplaceable (Barney, 1991).

A Practical View

Zerbini, Golfetto & Gibbert (2007) offer a practical perspective, since they conducted three applied case studies of the manufacturing, automotive components and IT systems industries, finding a common set of competency-based marketing tools relating to suppliers' consistency vis-à-vis the client's business processes that induce purchases, exercising a positive influence on business performance.

Application of Contingency Structure Theory

The contingency structure theory embodies no single superior organizational structure, but the best structure will depend on the context confronting the organization (Blau, 1970). In other words, the contingency theory indicates that each organization must analyze its contingent characteristics and based on this, choose the best tools and take the measures required to improve performance (Jokipii, 2010).

Strategic Planning

According to this theory, organizations will be more effective if they are able to adjust to environmental conditions. In this sense, competing in dynamic markets is a great challenge when having to adapt to a global environment.

According to the strategies proposed by Miles & Snow (1978), the one targeted by this marketing problem is that of the *prospector*, who locates and exploits new products and market opportunities. This strategy is the one that makes the most sense, since it adapts proactively to its environment, unlike the other proposed strategies of defending, analyzing and reactivating.

Organizational Strategy

According to this theory, the organization will be more effective when managers adjust to the characteristics of the organization, and this, in turn, adjusts to its environment (Donaldson, 2001). This idea would support the fact that regardless of who takes the leadership among the executives in relation to marketing aspects, its effectiveness will be conditioned by the characteristics of the organization (and in turn its adjustment to its environment).

According to Donaldson (2001), the tasks of uncertainty increase together with product innovation, which leads to a reduction in formality and an increase in decentralization. Accordingly, in order to favor a balance between incremental innovations and radical innovations, and in general to promote innovation, some conditions of decentralization and a decrease in formality must be met.

Strategic Vision

According to this new scenario, the logical contingency structure would be that of an organic structure (Burns & Stalker, 1961), which is based on networks where knowledge of activities and information is shared with certain fluidity.

Moreover, adaptation to the environment would be fundamental, in particular the relationship with consumers, markets, competitors and distribution channels. If the organization achieved this adaptation, it would be necessary for the people and in particular, the executive to adjust to the company.

An element that could support the organization from the perspective of this theory is to review and evaluate the effectiveness of the organizational structure, and thus modify the structure to better respond to market demands if necessary.

A Practical View

Lucas & Gresham (1985) put forward an interesting case where, based on the theory of contingency in the organizational structure, they propose formulas to avoid the problems arising from interorganizational systems of distribution channels, by analyzing the complexities, difficulties and challenges of each type of distribution channel.

Application of Knowledge-Based Theory

The knowledge-based theory is based on the fact that the organization's success or failure depends on how it manages knowledge. Through its workers, the company stores knowledge, skills and abilities that assure its survival, growth and eventual success (Håkanson, 2010). The theory also focuses on the ability to generate and apply knowledge to solve problems (Nickerson & Zenger, 2004). Thus, the key points for performance based on this theory are the coordination and integration of knowledge (Kogut & Zander, 1992).

Strategic Planning

Knowledge - and even more so, the ability to manage it, are key elements for generating an adequate value proposition, as well as making the right decisions in relation to the value proposition to be offered. Organizations with the ability to manage knowledge, at diverse levels, find it, absorb it and exploit it, will perform better than their competitors (Martín-de-Castro, Delgado-Verde, López-Sáez & Navas-López, 2011). In this way, knowledge management would constitute a potential source of competitive advantage.

Organizational Strategy

This theory proposes that knowledge is managed and stored within the organization by individuals, which suggests the importance of basic definitions of marketing issues for the company itself, as well as its organization and processes.

Learning plays a fundamental role in embracing the lessons derived from the errors of the organization (Garvin, Edmondson & Gino, 2008). Thus, in order to innovate and have an efficient innovative culture, the management of this knowledge is essential (Marsick & Watkins, 2003).

Strategic Vision

Knowledge management encourages the creation of new knowledge capacities, which in turn entails better performance in the new technological and competitive scenario (Håkanson, 2010).

At this point, considering the value of the knowledge achieved in an organization, means that the possibility of protecting said knowledge is desirable. According to Liebeskind (1996), companies that can protect their knowledge will perform better than those that cannot.

A Practical View

Chadam & Pastuszak (2005) present the case of Poland, where the subsystems of knowledge management operate within the marketing function in a group of companies. A clearly superior financial performance is achieved in those organizations that consider the application of the aforementioned theoretical principles.

CONCLUSION

In the development of this study, we reviewed the seven problems of the marketing industry proposed by the *American Marketing Association*, and certain organizational theories were applied, in particular, the theories of agency, institutional, resource-based, contingency structure and knowledge-based.

The review was limited to the grouping of proposed problems and to some theories in particular, in order to narrow down the review, trying to generate the corresponding associations.

To date, few companies have taken the concept of sustainability seriously and systematically into consideration, probably due to a lack of long-term vision or even negligence. However, the global economic and social context is drawing attention to this issue, generating pressures that will gradually become unsustainable for those organizations that are not able to internalize the changes necessary to adapt to these turbulent contexts.

It is important to note that this does not only have to do with the implementation of the idea of more sustainable management, but also with a way to achieve improved competitiveness. By simply considering the ideas discussed in this paper and applying revised theories to their daily organizational activities, managers will usually help their companies to perform better (Zerbini *et al.*, 2007; Hillebrand *et al.*, 2011; Tate *et al.*, 2010). This upgrading is a relevant condition for an organization's durability and sustainability. Needless to say, its correct implementation will involve the understanding and inclusion of the principles of sustainability.

In general terms, it could be suggested that many of the problems proposed by the AMA have been addressed with different approaches by the different theories, however, in future reviews it would be advisable to propose a series of concrete measures, as best practices, to redirect the actions of companies regarding their global marketing management and to assign the importance that the concept of sustainability deserves for the economic and social development of humanity.

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Chapter 12

Importance of ICT for Perspective and Strategy in Education

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ABSTRACT

ICT-enhanced educational tools and approaches offer a new range of options and opportunities to improve the efficiency of teaching and learning to boost individual student performance and thus, in many cases, avoid the challenge of exclusion and poverty related to skills deficit. The authors suggest that digital games, online applications, tablet use, MOOCs, and micro courses can boost student exposure to specific course material, thus assisting in the acquisition of knowledge, skills, and attitudes.

INTRODUCTION

ICT-enhanced educational tools and approaches offer a new range of options and opportunities to improve the efficiency of teaching and learning, to boost individual student performance, and thus, in many cases, avoid the challenge of exclusion, social and poverty related to skills deficit. Contributing authors suggest that how digital games, online applications, tablet use, MOOCs, and micro courses can boost students' exposure to specific course material, thus assisting in the acquisition of knowledge, skills, and attitudes (Visvizi et al., 2020).

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BACKGROUND

Following the emergence of information and communication technologies (ICT), distance education evolved, in the sense that the technological revolution brought with it new ways of teaching and learning. Consequently, the term “virtual education” originated (Yong & Bedoya, 2016). This term refers to distance education mediated by ICT (Fernández & Vallejo, 2014).

Three great generations of innovation that led to the evolution of distance education are recognized. The first generation was based on correspondence teaching and emerged in the late nineteenth and early twentieth centuries with the advent of the printing press, where communication between teachers and students was through the postal service. The second generation corresponds to the influence of telecommunications on teaching and originated in the 1970s with the creation of the Open University in the United Kingdom, which incorporated the use of audio-visual resources such as radio, television, and telephone in the education to provide an opportunity to those students who did not have the possibility to attend the facilities of the universities. Finally, the third generation occurred in the eighties with the integration of telematics into education, that is, with the use of computers and telecommunications (Garcia, 1999). With the latter, online education was born, which began to develop with the support of the Internet, allowing teachers and students to interact without having to be present in the same space and time (Organista & McAnally-Salas, 2007).

On the other hand, the educational experience of the Open University in the use of technologies in teaching caused that several countries in Europe were introduced to online education with the use of new technologies from the seventies. Likewise, with the arrival of the World Wide Web (www), online courses taught by some North American universities began to become known. As a result of the expansion of virtual education in Europe and North America, Latin America was influenced by online higher education. This globalizing effect has encouraged Latin America to virtualize distance education. In Peru, several universities included the distance modality in their service, however, there is no university exclusively created with a distance education modality (Fernández & Vallejo, 2014).

USE OF ICTs IN EDUCATION

Technologies are being incorporated into people’s daily lives at an accelerated and functional rate for this new modern lifestyle, causing a great change in the environments in which people move and improving productivity and quality of teaching (Quiroga et al., 2019). Also, the incorporation of ICT in the educational context is seen as an opportunity to expand the range of resources, teaching strategies and communication modalities to improve, optimize and achieve educational work (Garassini & Padrón, 2004).

Access to ICT in education resources, programs and materials can provide a richer learning environment and a more dynamic experience. Using high-quality digital content enhances learning and you can use simulations and animations to illustrate concepts and principles that would otherwise be very difficult for students to understand (Morrissey, 2008).

According to Díaz (2014), ICTs have disrupted the process of training students at different levels, granting new and better strategies for teaching and learning the different subjects. Likewise, ICTs are seen as mass media that allow a message to be spread almost instantaneously and with a large data storage capacity (De la Rosa, 2011). However, its application is not simple, depending on the different

educational levels it varies according to the characteristics of the students and the skills they intend to achieve (Gómez, 2014).

The integration of ICT in education has been a process, where its role goes far beyond the technological tools that an educational environment can have, the didactic construction and the way in which meaningful learning can be built with a technology of different origin, we would be talking about the pedagogical system of technology in education (Díaz-Barron, 2013). It should be noted that ICTs have evolved over time, becoming educational instruments, with the ability to improve the educational quality of the student, in addition to revolutionizing the way of obtaining, managing, and interpreting information (Aguilar, 2012). These technological instruments facilitated learning, from the calculator, television, and tape recorder, among others.

These technological resources became educational resources, therefore, improving learning implies technology with information (Granados, 2015). However, ICTs are not only an instrument, but are also considered an aid in the generation of a new educational space, a new social space, and a new educational modality, which operates with the use of non-physical, but electronic educational resources that they generate new abilities and skills in people (Echevarría, 2001). In addition, it is worth mentioning that ICTs have generated new training modalities such as Blended Learning (Bonk, 2009). The latter is an integration of traditional learning experiences with online learning (e-learning), which supports the understanding, interaction, and participation of students (Turpo & Hurtado, 2019).

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A new social space and a new educational modality, which operates with the use of non-physical but electronic educational resources that generate new abilities and skills in people (Echevarría, 2001). In addition, it is worth mentioning that ICTs have generated new training modalities such as Blended Learning (Bonk, 2009). The latter is an integration of traditional learning experiences with online learning (e-learning), which supports the understanding, interaction and participation of students (Turpo & Hurtado, 2011).

Advantages and Disadvantages of ICTs in the Education System

Online education is a modality that has made the possibilities of training and education more flexible, giving an opportunity to those people who have difficulties regarding time and distance, therefore, online education is seen as a study modality that offers possibilities development to the population (Farcas, 2010).

In other words, ICTs broaden and increase the possibilities of storing knowledge, facilitating its accessibility, optimizing exchanges between actors in the educational process and other actors in society, allowing to overcome the barriers of space and time (Delgado et al., 2009). There are many advantages that ICT offers us, since information can be accessed at any time, enhancing the initiative of those who use it, developing individual skills, offering the possibility of learning at their own pace and it is also possible to have an interaction without geographical barriers (Quiroga et al., 2019).

Ferro, Martínez and Otero (2009) affirm that the use of ICT motivates students and captures their attention, and thus becomes one of the learning engines. Likewise, according to Quiroga et al., (2019) ICTs become allies of quality learning, thanks to the motivation and involvement that surrounds people in meaningful experiences in accordance with their real needs.

The use of ICT in learning allows access to resources and experts that lead to a more active and creative learning encounter for students and teachers. Furthermore, it should be noted that ICTs are effective in addressing certain learning difficulties related to social inclusion and equal educational opportunities (Morrissey, 2008). ICTs are linked to the concept of social inclusion because they provide digital tools that allow the creation of new teaching-learning environments and social participation scenarios, in which the population can adopt a reflection before a society with needs established in paradigms of social discrimination and social exclusion (Florez et al., 2019).

Stringer (2020) mentions that academic and social development is likely to decline during online learning for many students. This is because the change from face-to-face school to distance learning is affecting many young people. He points to a specific case of one of his 16-year-old patients, who was losing interest in going to college after graduating from high school. Pérez mentions that what happens to his patient is that he is not motivated. This is supported by previous research showing that the school environment is critical to fostering academic motivation and social development, and many students rely on schools for mental health care. However, he mentions that virtual education also has positive effects.

On the other hand, in a context of the health crisis of COVID-19, UNESCO (2020) pointed out that this would have negative impacts on school education such as the interruption of learning and unequal access to digital learning platforms. Likewise, Martin (2021) mentions that this situation caused changes in education, since they went from a face-to-face methodology to a virtual teaching one. Where, ICT and TAC tools became indispensable protagonists for the education of minors, including the youngest. It should be noted that this study was directed to a school population of Early Childhood Education (2nd cycle) and Primary Education in the city of Madrid, Spain.

The effects of a virtual education observed in this last study are as follows. In the first place, online schooling during the pandemic caused many students to lose track of the information provided by teachers since maintaining attention to the computer is much more complicated than doing it in class paying attention to the teacher. Second, children do not have environments that allow them to socialize or carry out the daily activities that they used to do. Third, the children adopted new skill developments, such as: technological, responsibility, adaptation, independence and autonomous work. However, they also stopped developing individual skills such as sustained attention, teamwork.

Similarly, García and Weiss (2020) point out that the COVID-19 pandemic is hampering the functioning of American education. This affected everyone, but especially children, although to different degrees depending on different factors. When moving from face-to-face to virtual education, children not only lacked daily access to school, but also lost out on group activities, team sports, and recreational options like swimming pools and play areas. Furthermore, when schools suddenly switch to remote learning, without meeting the conditions for its effectiveness, it causes a massive increase in stress and disruption for children and their families. It is also worth mentioning that there is a digital divide that causes these children to probably lose more time in substantial learning.

EVOLUTION OF ONLINE EDUCATION IN LATIN AMERICA

Present and Future Latin American Teaching and Learning in Virtual Environments related to University Education

In Latin America, information technologies have not only exposed the failures of the educational system, but at the same time they are shown as a solution to develop a digital culture with its horizontality, transparency, collaboration, construction collective, and others (Fainholc, 2016).

The incorporation of ICT in education in Latin America has been heterogeneous, slow, and forced to achieve technological literacy in the region. Indeed, the development of distance education programs lacks structure and shows entry barriers. Many teachers have not been trained in basic digital teaching techniques for their professional and academic development. Factors such as lack of time, attitudinal change and low expectations regarding ICTs are alleged, due to the published results of little weight of those in the improvement of learning (Fainholc, 2016)

University institutions in Latin America have not considered the new job profiles required by the labor market, within them digital skills, which are often applicable for almost all general, social and educational tasks. Although mobile phones are allies for their educational use and production of local proposals, Latin American educational institutions still lack the necessary infrastructure and even more so in rural areas (Fainholc, 2016).

Cuban Experience on the Training of Latin American Teachers in Technologies for Education

In countries such as Chile, Uruguay, Mexico, and Brazil, it has been concluded that teachers and students use ICT more efficiently to access and present more information. But the most constructive and innovative uses associated with complex learning, problem solving, original knowledge generation, or collaborative work are rare. The new demands of the teaching profession demand that teachers be precisely those responsible for the technological literacy of their students and the mastery of a diversity of skills required in the context of the demands of the knowledge society (Avellano et al., 2014).

If in Latin America technology is to be seen as part of a solution, to stimulate and transform education, it is necessary to bridge the digital divide and have an approach that highlights the learning experience, as well as the consolidation of trust of teachers, giving importance to the identification of problems and their solutions (Buckingham, 2008).

Virtual Education: Factors influencing its Expansion in Latin America

There are various reasons that have led to the promotion of distance education in Latin America, but it has been the technological advance of ICT that has given a spectacular boost to virtual education and an almost unpredictable transit, and with-it education has had to offer educational services and learning tools adapted to the new conditions. It must be recognized that in Latin American countries there are still connectivity difficulties so that interested parties can access virtual education, which is a factor inherent to the technological environment of each region and country, increasing the respective digital divide (Varas et al., 2020).

To the extent that rural students have opportunities to enter virtual education, and this allows them to acquire skills and greater development opportunities in urban cities, it is possible that a new migration process to cities. As has happened since the twentieth century, when people with limited work skills migrated to large cities in Latin America (Varas et al., 2020).

Virtual Education in Latin America and the Caribbean

A new society in the making requires a constant renewal of knowledge and a greater speed and fluidity of educational processes, to respond to very dynamic demands of the labour market. The globalization of knowledge has been made possible by the knowledge management paradigms, new technologies and new technological means, which have emerged because of the accelerated development of information technology and telematics.

Silvio (2020) affirms that the development of virtual education in Latin America has a relatively low adoption and development rate, due to various factors: deficient information technology and telematics infrastructure, which is far from being at the level of advanced countries, lack of investment and the resistance of many academics to adopt the new paradigms.

The Report of the United Nations Development Program (UNDP, 2008) recognizes that, in terms of equipment, Chile has clearly reduced the gap with developed countries. But he warns that the country must make an additional effort to disseminate these technologies, to get closer to the level of those countries. This information is supported by finding Chile as the best positioned country among those to belong to the OECD in the implementation of e-learning education.

While they emphasize the achievements and the narrowed gap; however, the report argues that access to ICT does not by itself eliminate differences in learning outcomes. That is why he emphasizes that, since there is already the opportunity to know and use these tools, it is necessary to move towards a “second floor”, where clear pedagogical senses are required, an environment of learning habits and teachers who use computers for didactic purposes.

This is also recognized by the “Links” program, which in its new Bicentennial plan “Technologies for a Quality Education” seeks that schools and high schools make significant progress in the relevant use of ICT in educational processes. At this stage, the plan indicates, the increase in infrastructure is accompanied by a new vision where the school thinks comprehensively about the use of technologies in all educational spaces. Thus, based on the great progress that has been made in these years, new challenges arise today. As the UNDP points out, it is not enough to introduce infrastructure, it is also necessary to incorporate “criteria, meanings and support”.

About technology in Ecuadorian education, the Peru’s Ministry of Education has created the Comprehensive System of Technologies for the School and the Community (SITEC, 2015) that designs and executes technological programs and projects to improve digital learning in the country and to democratize the use of technologies. As part of the provision of technological equipment, SITEC delivers computers, projectors, digital whiteboards, and audio systems to both Basic General Education and High School institutions with a more targeted strategy.

PROSPECTIVE IN EDUCATION AGAINST ICTs

In principle, the growth in the availability of educational technological resources, the initiative of teacher training in their incorporation and the support of public institutions in reducing infrastructure gaps is observed.

Considering a key organization of political, economic, social, and academic interests, it would be expected that education after 2020 would not be the same again. However, even though technologies have made possible the scope of educational projects, it is suspected that it will continue to be limited, the most severe difficulty is caused by the absence of connectivity infrastructure and with it a strategic plan of scope for its achievement in competitiveness educational.

According to the influential English publication, made by The Economist (2021), in an analysis carried out by experts in “The future that awaits us”, schools and universities will be transformed into a hybrid scheme forever. The statements generate expectations about the return to presence in basic education, but the projection continues to be different in developing countries. In Peru, the 2030 Agenda expects to obtain complementary results to technological education to achieve human development and the promotion of skills to improve productivity levels. Greater participation in adaptive technology such as computer rooms, delivery of technological resources (computers and laptops), is planned and foreseen. incursion into the academic plan with multimedia resources and participation of students in complementary media made available by the State as open signal educational programs. The incursion of ICT in education would provide as many opportunities for access to knowledge for secondary students as familiarization with the technological environment for primary students.

Finally, despite the current restricted panorama, the global and regional context provides challenges that if not worked quickly on them could affect the human capital and labour supply of the following generations.

METODOLOGY AND FINDINGS. Analysis of the Peruvian Case

In Peru, educational policies on the use of ICTs are not enough to achieve a transformation in education. One of the many barriers is the poor implementation of educational centers, technological deficiencies, outdated teachers, where these barriers are more accentuated in rural areas. In the last educational census of 2017, in Peru there are 8 students per computer in primary and 6 in secondary, this research denotes a large technological gap since resources are scarce. Around 1500 to 2500 soles per month are invested in education in the region of Peru is 459.00 soles (AGENCI, 2021).

This gap became more evident after Peru declared itself in a state of emergency due to Covid 19. The education sector was one of the most affected, due to its abrupt change from a face-to-face modality to a virtual one (Office of the Comptroller General of the Republic, 2021).

Bustamante (2020) mentions that distance education is a modality that has been transformed to adapt to the environment and technology. On the other hand, he stressed that before the outbreak of covid 19 there were two crises that forced the creation of distance education portals, however, as of today, they are deactivated. The current health emergency has led us to adapt to a remote education modality, where the online component is one of the most important. As a result of this, The Ministry of Education launched the program “I learn at home” where a survey carried out in 2020 shows that there is a high degree of satisfaction with its contents, especially those transmitted on television. It should be added

that Bustamante (2020) recommends that the strategy of the “I learn at home” program should now be thought of as permanent.

However, a more recent report from the Office of the Comptroller General of the Republic (2021) mentions the opposite of what Bustamante pointed out. In this report, the results of the virtual school monitoring of the I learn at home strategy are analysed. It should be noted that the sources of information used by the report come from the virtual school surveillance, information from the Ministry of Education and control reports issued by the CGR.

The virtual school oversight of the “I learn at home” strategy was in charge of the Citizen Participation Sub-management, which was carried out in the period from August 2020 to January 2021. This was carried out by 222 thousand 859 people (among teachers, parents of family and high school students). As a result, the following was obtained. In the first place, regarding the achievement of academic objectives, 60.5% of high school students stated that the classes are not enough for their learning. Second, 38.4% of the parents who participated rated their children’s learning as “good”, 57.5% rated it as “fair” and 4.1% as “bad”. In other words, most parents consider that their children did not learn with the strategy launched by MINEDU (In spanish, Ministerio de Educación). Finally, according to the results of the “*veeduría*”.

On the other hand, it should be noted that more than half of the teachers who participated indicated that secondary school students did not reach the expected level of learning. This can be justified with the information provided by the MINEDU, where they indicate that more than a third of students did not reach the minimum satisfactory grade in 2020.

The report ends by noting that the results obtained in the “*veeduría*” reveal that among the weakest aspects of the “I learn at home” strategy, the student’s learning stands out. However, they highlight that one of the causes of the deficiency of having achieved a better learning, is due to the difficulties of access to the “I learn at home” classes, the absence of electronic equipment and the lack of connectivity. On the other hand, it should be noted that the report recommended that mechanisms be developed to monitor student learning so that actions can be taken.

There are more specific investigations in which they seek to determine the relationship between the “I learn at home” strategy and the learning of students in the initial, primary, and secondary grades in Peru during the 2020 period. As a first investigation, there is that of Corcino (2020), in which it aims to determine the relationship between the strategy “I learn at home” and the achievement of the learning of the students of the initial level of the initial educational institution 304 in the Huacaybamba province, Huánuco department, during the 2020 period. In the present study, the sample considered was 39 students of 5 years of age. It should be noted that these children had access to internet, television, radio services and their parents had regular telephony and WhatsApp, which allowed them to carry out their distance classes with total normality.

For data collection, Corcino (2020) evaluated the achievement of expected learning in 5-year-old boys and girls from the perspective of parents using a questionnaire. The variables that he used in his study were two; i learn at home and apprenticeships. Where, the variable I learn at home contained 3 dimensions and 21 indicators. While the learning variable contained 3 dimensions and 27 indicators. The study obtained the following results. In the first place, it was obtained that 43.6% of 5-year-old students were actively involved in the learning process; while 56.4% did not. Second, it was evidenced that 61.1% of the students managed to develop reasoning, creativity and critical thinking; in relation to 35.9% who did not. Third, it was evidenced that 51.3% of the initial level students failed to develop timely and adequate feedback on learning; while 48.7% did. Finally, the findings showed that 59% considered that the expected learning had been achieved, while 41% indicated the opposite. In summary, this study

found that if there is a slight correlation between the “I learn at home” strategy and the achievement of the learning of the students of the initial level of the institution, however, there are still shortcomings in the strategy that is they must improve. while 41% indicated the opposite. In summary, this study found that if there is a slight correlation between the “I learn at home” strategy and the achievement of the learning of the students of the initial level of the institution, however, there are still shortcomings in the strategy that is they must improve. while 41% indicated the opposite. In summary, this study found that if there is a slight correlation between the “I learn at home” strategy and the achievement of the learning of the students of the initial level of the institution, however, there are still shortcomings in the strategy that is they must improve.

As second research is that of Onton (2021), where he conducted a study on feedback and its relationship with the learning of “I learn at home” in children of the Initial Educational Institution 1183 Unión Anta in the department Cusco during the period of 2020. In the present study, the sample considered was 41 parents of the students enrolled in 2020. It should be noted that the variables used in this study were feedback and I learn at home. As a result, it was found that there is a strong positive relationship between feedback and the “I learn at home” program in students of the initial educational institution 1183 Unión, Anta, Cusco 2021. On the other hand, it is also pointed out that the distance and distance education strategy communication channels have a regular rating.

As a third investigation is that of Rebaza (2021), who carried out a study where he wanted to determine the influence of the Strategy “I learn at Home TV” in the learning activities of students of the Educational Institution “Ciro Alegría Bazán” during the period 2020. In the present study, the sample considered was 87 students in the fifth grade of primary school. It should be noted that the independent variable used in this study was the “I learn at home TV” strategy and the dependent variable was learning activities. The study obtained the following results. In the first place, regarding the “I learn at home TV” strategy, it is mentioned that more than half of the students indicated that the program is not very appropriate. Second, regarding learning activities, it was evidenced that 51. 7% showed a bad level at the time of understanding them and only 6.8% have a good level. Finally, the findings showed that there is influence of the Strategy “I learn at Home TV” in the learning activities of students of said educational institution. However, 59% achieved the learning objectives, while 41% did not. In summary, this study found that, if there is an influence between the variables, however, the “I learn at home” strategy still has some problems in the evaluation process. while 41% do not. In summary, this study found that, if there is an influence between the variables, however, the “I learn at home” strategy still has some problems in the evaluation process. while 41% do not. In summary, this study found that, if there is an influence between the variables, however, the “I learn at home” strategy still has some problems in the evaluation process.

The latest research is that of Cuenca (2020), who conducted a study on the use of television as a strategy for learning at home and the autonomous learning of students in the 3rd year of secondary school of the educational institution “Simón Bolívar” in the district. de mache, department of Trujillo, in the period of 2020. In the present study, the sample considered was 30 third-grade high school students. It should be noted that the variables used in this study were TV as an “I learn at home” strategy and autonomous learning. The study obtained the following results. In the first place, 6.7% use TV as a strategy I learn at home, while 80% use it as a strategy. Second, regarding the autonomous learning of students, it was obtained that 43.3% have a high level and that 56. 7% obtained a very high level. Finally, the findings showed that the use of TV is an important resource in the teaching of students, generating autonomous learning in them.

Alarcón (2020) carried out qualitative research in which he intended to analyse and evaluate the radio and television programs of the “I learn at home” strategy in the face of the emergency due to the Covid-19 pandemic. The central actors of this investigation were 50 people: between 14 directors, 15 teachers, 12 parents and 9 students. The research specifies as an important population of school age calculated at 8,057,600 million. In the public sector, 62.3% of the schools are rural, most of which have a poor infrastructure, where there is the presence of conditions of poverty and extreme poverty, as well as a lack and deficit of quality public services.

As a result, the following was obtained. In the first place, the directors, of the initial, secondary, and alternative basic education levels, the majority consider that the implemented strategy has been timely and adequate to face the current situation and helped to be able to give continuity to the education of the students. However, the primary level directors point out that the reality of the students has not been considered and therefore many shows access and connection limitations and cannot develop the strategy. Second, regarding the opinion of parents and students, a first group mentions that they agree with the strategy and think it is correct and adequate. However, a second group points out that there is no total understanding, since they are not didactic or fully compatible with the medium used. Third, for directors, radio and television messages have a general, inadequate, and decontextualized content. They consider that the presenters should be replaced by teachers from each area. Lastly, the interviewed actors from special basic education and alternative basic education generally feel that they have been marginalized at both levels within the strategy, as they mention that resources and programs have focused on regular basic education. For example, for alternative basic education, resources are not being allocated to the three levels (initial, intermediate, and advanced), but only the first two are covered, which correspond to regular elementary school. In addition, the classes offered by radio for alternative basic education are perceived as boring, demotivating, and even incomprehensible due to the rapid flow of information. Something similar happens in basic special, where due to the disability of the students, the resources available on radio and television would not be attractive or interesting or ultimately efficient. Therefore, given these results, a change of course is urgently needed in the structure of the “Learning at Home” strategy, different for each reality (Alarcón, 2020).

Another qualitative research carried out by Anaya and others (2021) where they aimed to study the factors that accentuate the digital gaps in rural schools in Peru in the context of the COVID-19 pandemic. They mention that the role of teachers has been essential in the implementation of the “I learn at home” strategy, since they were responsible for communicating with parents. As results the following was obtained. First, it was evidenced that the pandemic widened the structural gaps that already existed between rural and urban schools. This is because in rural areas the government has not made large investments in education. Second, they pointed out that taking evaluations is very complicated and feedback is almost non-existent. This generally happens in rural areas, where in many cases students accumulate topics that they do not understand, which, throughout the year, generates delay or even abandonment. All this translates into a delay in learning caused by the pandemic, in addition to a clear absence of solid digital inclusion policies. Consequently, there is an increase in dropout rates from the school system, especially in rural areas. Finally, an increase in digital gaps means in the long term that there is a reduction in competitiveness in the labour market between people in urban and rural areas. This is due to an absence of equal opportunities for all Peruvian students. In addition, it should be noted that for the former Minister of Education, Martín Vegas “in rural areas, neither radio, television, nor the digital strategy have worked sufficiently to generate a teaching-learning process” (Takehara, 2020, para. 3).

CONCLUSION

There is a slight correlation between the “I learn at home” strategy and the achievement of learning by students at the initial level of the institution, however, there are still shortcomings in the strategy that should be improved.

The distance educational strategy and communication channels present a regular rating; while the virtual learning environment has a poor rating.

For there to be a correct use of information technologies, students must know how to handle them, prior training is required. However, this area was not properly developed in public schools. Therefore, parents had to assume this role at the beginning of the pandemic.

Likewise, equipping with computer resources is not cheap, it required an economic investment by the families, since, at the beginning of the pandemics, this was not a resource of primary use. Although it may seem that Internet access is common today, the truth is that not all families can afford it (Chero and Camones, 2010).

The “I learn at home” strategy still has some problems in the evaluation process. TV is an important resource in the teaching of students, generating autonomous learning in them.

The “I learn at home” program allowed the Ministry of Education provide a rapid response to close the gap in educational supply and demand created by the health alert.

In virtual education, the student has the facility to choose at what time to study and for how long, creating flexible and appropriate study schedules for each course participant.

RECOMMENDATIONS

It is proposed to design an evaluation mechanism for the re-entry of students to classes. Standardize evaluation criteria for each level of education.

Create a digital platform for access by public school students, where they can review and complementary classes.

Online education is not only restricted to a platform where information and recorded classes can be shared, it also requires live class tools that allow interaction between teacher and student.

NEW INVESTIGATIONS

Carry out quantitative econometric research. Likewise, carried out across sectional or experimental investigations.

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KEY TERMS AND DEFINITIONS

Information and Communication Technologies (ICTs): Is a broader term for Information Technology (IT), which refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, middleware, videoconferencing, social networking, and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form.

MOOCs: Online courses available to anyone with a computer and Internet connection.

Chapter 13

Cultural and Creative Industries in a VUCA World: Learnings Between Business, Economics, and Arts

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ABSTRACT

Through business economics, it is possible to analyze the volatile, uncertain, complex, and ambiguous situations surrounding an organization to propose managerial solutions that combat risks and uncertainty. Without a doubt, the answers are already there for decision-making in this type of environment, whereby this chapter adds a proposal for managers to consider facing those situations by reviewing recommendations derived from a creative state of mind. By observing learnings from the artistic world, there's an option to enrich methodologies for enlisting probabilities, solving a problem, and detecting possible benefits within a misty path. Implementing arts interventions as part of a strategic core program process are enriched with utopians that solve issues with unexpected results.

INTRODUCTION

Business or Managerial Economics, uses Economic Science's theory and methodology to contribute to organizational strategies by helping business directors choose daily options to maximize efficiency and profitability. Those decisions could be either under risk or under uncertainty; the difference is that in a risky condition a manager can enlist probabilities to each variable, while in an uncertain scenario, there are random benefits to confront a misty situation (Thomas & Maurice, 2016; Perloff & Brander, 2020). So, with no clarity in a misty prism: **How to enlist probabilities to solve a problem and how to detect possible benefits to address a misty path?**

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This type of path is similar to a V.U.C.A environment. This acronym of Volatility, Uncertainty, Complexity and Ambiguity, can be adapted for organizational strategies to outline the vertiginous elements around the Change Management theories (Barber, 1992; Bennett & Lemoine, 2014) and, Business Economics' authors are outlining that nowadays enhancing imagination, creativity, social value and innovation are key drivers to face a V.U.C.A reality in order to sustain a progressive and healthy company (Pulido, 2017; Sala-Fumas, 2007).

Today, Managers and their collaborators need to think of imagination as a tool that brings the reasoned analysis to a higher synthesis, and depending on the quality of the inventiveness, the problems either will get the same results or a new outstanding different solution. Hence, now, creativity is no longer a fascinating marginal phenomenon; it's an engine for society transformation (Sardar, Z., cited in Mortuori & Donelly, 2019).

To explore how companies could behave in this scenario and understand how a creative and social way of thinking might influence solving these situations, this chapter analyzes the type of world who is full of imagination: the creative and artistic organizations. These initiatives belong to the Cultural sector which has the particularity that they have dealt with uncertainty and risk management for ever. The Cultural Industries' companies or projects, face sustainable problems constantly as they tackle with turbulent, empiric and complex markets almost impossible to forecast (Grefe, 2006) and have been always wondering how to be sustainable and contribute to a brand new Creative Economy (Howkins, (2007 [2002]; Throsby, 2016). If these industries have survived and growth based on the human talent and not that much from the market, we can wonder about why does not observe how they face the VUCA environment.

So the following chapter's aim is to learn from the experiences of the cultural organizations when solving their VUCA problems and the specific objective is to open a wide range of possibilities within the arts & business relationship in order to fulfill new ways to approach the daily managerial needs.

The chapter's structure develops a background of the VUCA elements, followed by two chapter's units regarding what is Cultural Industries and their VUCA's perspectives and how Arts can be included inside management business days.

For now, let's start this journey to discover a proposal for managers to consider adding new elements to their traditional methodologies that might help when solving change management strategies.

BACKGROUND

It is clear we can't predict the future but it is possible to map it. When talking about risks, Perloff & Brander (2020) said there are statistical laws to forecaster probabilities even a subjective one to bet in favor of a convenient answer. Conversely, when talking about uncertainty, even if mathematically there is a chance to quantify an uncertain situation, "uncertainty is unquantifiable" (p.463). This happens when evaluating possible outcomes that have not even been imagined yet, so when facing more than the numbers, the requirement is an attitude to diversify and organize options. In this way, those managerial decisions are based on gaining wealth even though the return is not what has been expected. This behavior is similar to what Thomas & Maurice (2016) said about that in an uncertain scenario, managers should search random benefits that protect profit in the day-to-day business decisions.

In summary, risk and uncertainty needs a different attitude and expectation. It is important to take for granted that we know the probabilities we can calculate but there is an empty space in knowing

possibilities that we haven't notice they could happen yet. So in between risk and uncertainty there's a random space and the task is to lookout for new possible benefits inside of it.

The Era of Uncertainty

Millar, Groth & Mahon (2018) examined several papers with activities a manager can do when dealing a disrupted changing environment. They concluded that to start solving it, there are changes in the employees current life patterns that add fuel and burn problems. So in this scenario it is important to research this century society in which these behaviors could take place in order to search for VUCA's solutions.

A Liquid Society

The sociologist Zygmunt Bauman (2007) contextualize that we are in the Era of Uncertainty, living in a new "liquid society". As there are no solid institutions anymore, we cannot expect repetition of routines and patterns in behaviors, we are in organizations that are decomposing rapidly and melting it's shape for not recovering it again. It is possible to move from solid to liquid, and from liquid to solid, but human will then have to:

1. Build new shapes and references to have new playgrounds.
2. Reach early victories as there's a collapse in a long-term planning. Thinking is changing to short episodes with no more vertical results anymore, instead lateral oriented goals with multiple medium-term rewards.
3. Develop the virtue of no conformity to the actual rules as historical predictions doesn't warranty the recipe. When developing flexibility in a permeable society, it opens the space to the Utopia Concept.

The Utopia Concept

Paraphrasing Bauman (2007), utopia is an image of another unknown universe, so thanks to the utopians of the past, today we have inventions. As this current liquid society is searching for progress, the starting point is to dream not following the rules and to reborn when reaching the limit (pp.98-101). Even utopians are considered "fanciful, fantastic, fictional, chimerical, air-built, impractical, unrealistic, unreasonable and irrational" (p.102), they have the force enough to do what needs to be done.

The current liquid society needs utopians. Those unrealistic characters who, regarding the question about how to enlist probabilities to solve risks and how to detect possible benefits to address a misty path to solve uncertainty, could set sail toward a fantastic, chimerical, impractical or irrational idea. This could trace a route map instead of trying to predict a future.

In the Era of Uncertainty, it is not only a matter of just being creative, it is a task to manage the Utopia concept in order to be progressive. So to strength teams to surf onto a liquid society it is relevant to set processes that helps people think outside a solid structure. Those plans have built a team that has the capacity to re-born and the spirit of a chimerical maker; this team has to be train to inject new unexpected references to the traditional systems, establish lateral results with early victories routes and boost the virtue of disagreement about the rules.

In this current Era, the attitude of a utopian team maker, can drive the organization through a VUCA world, which implies that business comprehension has evolved to new ways for developing progress.

The V.U.C.A Concept and the Liquid Society

Paraphrasing Halek & Stroblt (2016), “knowledge creating uniqueness becomes the key for competitive advantages, resilience and sustainable vitality” (p.59). The authors agree that to tackle a VUCA world, imagination serves as a tool that empowers a rational analysis to a higher synthesis, going beyond statistics, forecasting, historical trends and focusing in breaking down the substances to have learnings from them. Then among other authors, they agree that managers should implement an imaginative learning tool to survive in vuca’s situations.

Today, organizations based on collaborative approach, must implement learning procedures going further the data administration. They create team wisdom to transfer knowledge between inner and external circles creating a 360-degree flow that avoids centralizing information and involving stakeholders (Halek & Stroblt). In this way, it is proposed that a VUCA scenario needs a learning way of thinking to help teams make decisions.

Following Bennett & Lemoine (2014) the key point when facing VUCA is to avoid being paralyzed and have quick responses. They argue to start addressing the situation by answering how much information the leader has about the situation and how well and wise a team can predict the results of his decisions. The following breakdown establishes the guidelines to overcome each one of the VUCA elements when observing them as a wise learning system:

Volatility

Is an unexpected situation or an unstable one. The main challenge when facing it is that there is no way to know the duration of a situation.

It is possible to understand it by collecting information. Then the main action is to build a learning system of devoted and multiple resources, overbuy talent which is expensive, so to face volatility there’s an investment to do before the event or unexpected situation occurs.

Uncertainty

Is a situation that lacks of information, but the event’s basic cause & effect are known. The main challenge to is face structural changes in a blindly moment or under the effect provoked by a new product that revolutionizes a solid society or market.

This works best in conjunction with other individuals or networks that can add, analyze, interpret, share learnings to reduce the ongoing blindness.

Complexity

Is a situation that has lots of interconnected parts and variables that are not easy to process. The main challenge is the volume as it can produce an overwhelming event.

The situation might have information or predictions, but even if they are available they demand several tasks and details in operational, sociological and psychological aspects. So to address it, the best

choice is breaking down the substances to restructure it going deep with specialists that already have learnings about details.

Ambiguity

Is a situation totally unclear with no causal relations or precedents. The main challenge is to face the unknowns that no one have known before.

This requires to experiment by generating hypotheses and testing. When designing laboratories it might be easier to share learnings faster and wider.

As the aim is to analyze how the creative sector sorts the VUCA elements in the current liquid society in order to search for learnings, and as the literature review is not extended about VUCA inside the cultural organizations, except for some examples about artists and collaborators joint together in the Unilever Catalyst Project for a leadership re-education program and also in the MBA Babson's students (Chong, 2010, p.73), the next unit starts describing the main particularities of the Cultural and Creative Industry [CCI], follow by the exploration of attitudes about each of the four elements described by Bennett & Lemoine.

So, the idea is to understand how a Cultural Manager, as a Director of a museum, a theater, an orchestra, a library, among others, or a creator, a designer, an artist, an inventor, a publicist, an architecture, a designer, could deal with situations such as follows:

Element V: take into account that nothing more volatile than feelings and the results of this is an unexpected market. As creators produce by their inner force and not guided by marketing, how creativeness looks for multiple sources of information when there is no need of a market studies to follow.

Element U: uncertainty has a known cause effect so it's necessary to build sturdiness networking, so this supposed to search how creativeness organizations build true cohesion, collaboration and cooperation.

Element C: regarding complexity, how they work surrounded by specialists, how to deconstruct an ethereal idea, that includes historical, psychological, anthropological, philosophical variables that makes complex ideas come to reality.

Element A: as ambiguity has two sides of the coin, how they make experiments, prototypes, how is the process of going further in a design methodology to include everyone's ideas.

UNIT 1. VUCA INSIDE THE CREATIVE AND CULTURAL INDUSTRIES

CCI is the field of creation, reproduction, commercialization and distribution of goods and services characterized with cultural and social values. The difference with any other type of industry is that while protecting the creator's copyright, the principal challenge is the protection and inclusion of all kinds of diverse expressions while generating inheritance and identity for the next generations (UNESCO, 2005).

Participating Sectors

CCI's include three sub divisions based on the creative objective. The first one refers to heritage commitment and human expressions through arts, including cultural equipment such as museums, cultural tourism, libraries, galleries or theaters related to visual and fine arts, music, performing, literature and

crafts; the second one, includes functional creations with industrial processes such as design, architecture, jewelry, fashion and film and also the media advertising, TV and Radio; and the third one, is about research & development that produces software, computer games, electronic publishing and other technological innovations. What they have in common is that all of them are susceptible of being protected by the Intellectual Property rights [IP] (UNCTAD & PNUD, 2010, p.35; OMPI, 2016).

Managerial Basics

CCI is the engine of the new Creative Economy [CE]. CE still don't have a unique definition as it is a concept in evolution, it's based on trading intellectual property with an artistic and scientific labour workforce based on human talent. Today, is seen as a dynamic sector that provides wealth for countries and is among the most rapidly growing industries in the global economy; indeed, during the world financial crisis in 2008, its average growth rate was about 7%, and afterwards, it doubled its international market size. Also, this economy contributes 3% of the global GDP, generates 2,250 USD billion and offers 30 million employees worldwide (UNCTAD, 2018; UNESCO, 2021).

About its Formula

There are two variables: the volume of the intellectual property income * the price of each product (Howkins, (2007 [2002], p.34). Incomes are based either on a high price per unit or a high frequency of royalties. The key market point is to understand that it's not a matter of raising high prices, it's an issue about accelerating multiple products with inventory rotation.

About its Market

Even though some of the sectors are industrialized, the key distinction is to not allow culture industrialization and to avoid the raise of new creative expressions only to fulfil a dealer's profitable business expectation (Girard, 1982). CCIs have to strengthen their value chain to reach their consumers but, without losing their nature. Also it's impossible to adapt the artwork to gain popularity to grow a market, indeed its disrespectful to alter the artist's Philosopher's Stone (Colbert & Cuadrado, 2003).

Besides, Pierre Bourdieu pointed out that there's unbalance between offer and demand, as creators' production is infinite due to the "art for art's sake" mind but consumers are influenced by the taste, which belongs to an innate, educational and early cultural habit and privilege consumers (Bustamante, 2014).

About its Sustainability

This is the main issue to be solved. It goes further an effective business model; it has to be with policies and clear rules. It's important to understand that cultural companies are not against profitability, it is just that their main objective is to privilege the social benefit, their altruistic character or an artistic result. Even the main power is their resilience, the whole sector must drive to solve a Cultural Sustainable Development big issue (Throsby, 2016).

Current Importance

2021 is declared as the Year of Creative Economy for Sustainable Development due to its importance in supporting SDG's. In fact, Governments are considering CE as a guideline into their politics and national agendas, bringing investment in creativity as have never seen before (UN, 2019).

Regarding the pandemic Covid 19, worldwide experts agree that people started to consume cultural products more than ever but most cultural producers were not prepared enough for such a digital market possibilities (BID, 2020).

So CCI's still grows its economic formula upon world wide crisis and unequal markets. Based on creativity talent rather than the security of an external market, they still fulfill new ways to approach their managerial needs.

Volatility at CCI's

Volatility has a relationship with the speed of changes and with the capacity to evaporate. Take into account that as feelings are volatile, and the cultural consuming is based on emotional reactions, the results of this is an unexpected ethereal market. Regarding volatility, the CCI's:

Move fast without changing the product as an art piece's essence is the key philosophy stone.

To ensure that expressions and feelings would be best produced and best received, it is not supposed to ask and artists to change the art piece to fit a market or to manipulate a consumer. Above all sectors, performance, visual, literature and other fine arts or inheritances expressions are the most difficult ones to forecast audiences' behaviors, even when offering free products. So they have to focus a market approach not based on changing the product, but based on moving fast to modify its packaging content; this at the same time allows channel distribution experiences and individual pricing strategies.

Example. The audiovisual sector is an example of the necessity to move agile around feelings. Renting movies Vs. Online video platforms Vs. condition the cinema room in spaciousness and comfort services. Those new models of home streaming have been developed dizzily and are finding ways to personalized content and package exclusive interactions with the director and actors. Other example of pricing experience are the performance Theaters that charge the ticket upon the intensity of the feelings the observer considers it fair to pay.

Gaze information flying like an agile eagle. Besides agility, the artist observes details no one is looking or paying attention to. It is said that the antidote to face volatility is to be an agile leader to open opportunities for others (Jordaan, 2019, pp.61-65). So as artists have adaptiveness and respond to new circumstances, CCI's organizations have a perceptive eagle eye. This help them observe detailed information and gather the largest amount of data from the same situation, moving fast and including everyone's point of view.

Work for the sake of art. CCI's always have lived an unstable situation about the living conditions of artists and workers as they are self-employment and have business' informality (Throsby 2016; BID, 2020). Despite this, artists and many other cultural managers can work endless for the love of art. It is a theme of passion combined with wanting to excel their own ability and finding an individual masterstroke.

Learnings:

- Go deep to the essence of the product and its values asking your selves how my audience might change if I set it for free.
- It is not necessary to change the product, its more useful to personalize its content possibilities.
- Insure the survival of the team. Show and help them to find their own master stroke inside their job careers to overcome themselves. As cultural professionals, can work eternally for the sake or art, any team can get in love with a project when developing abilities.
- Just contemplation of activities is health. Assign several people to observe details, since many eagle eyes see more than just the ones of a single leader. By promoting the big picture panoramic view, there are more chances to gather volatile information.

Uncertainty at CCIs

Unforeseen situations can bring doubts, insecurity and fear. Regarding uncertainty, the CCI's reflects that:

It's usual to create upon errors. Artists don't create just for a result so they consider an error a natural step, even hesitation is part of it, concerns are diminished, but not necessarily disappeared. They can spend their whole life creating one single piece of art.

CCIs are used to work in collectiveness. Even most of the creator's processes are standing alone to find the personal muse, Cultural Agents and Artists, per se, are used to work in networking and associations to survive inside the creative ecosystem. It's true that the value chain of the industry needs more interaction and coordination between actors and institutions, buy as they have a cooperative mind, they are continuously expanding a broader view of opportunities and fulfilling alliances.

There are still verbal agreements. Specially in small organizations, which are the majority, it is not normal to write legal documents or contracts. It is true, this pops up problems but it's a symbolic way to stablish a high level of trust and integrity between the artist and the intermediary. In fact, a cultural agent is used to deal with artists emotions, which brings unexpected situations every day, so the risk to non-compliance is high, but despite this, they still believe in a sort of gentlemen's agreement.

Pricing and Quality increases uncertainty. From Bourdieu's studies, for cultural creations it's difficult to compare price with "aesthetic, enjoyment and pleasure" vs. a social exchange and value. Indeed, a cultural product price doesn't reflect the highly production costs which can ensure quality. This sets that the user's uncertainty about pricing is absolute and besides, as there are art critics, editors and commercial agents whose role is to be a "symbolic bankers", the customer depends in their validation and valuation of the worth, rather than the price (Bustamante, 2014).

Learnings:

- Do not be alone when dealing with fears. Work in collaborative partnerships, even including similar clusters with competitors.
- Admit errors as part of the process and the results. As Marchesi E. (2016) points out, in a VUCA environment, it is possible to "twice born".
- Stablish an early victories motivational program.
- Sustainability needs to change a mindset from "silo mentalities to openness", allowing employees voice in making decisions (Jordann, 2019, p.72), so develop trustworthiness inside the team to reach a culture of collaboration, co-creation, cooperation and follow other non-hierarchical leader's voices.

- As uncertainty can be transfer from producers to users, there must be a panel of experts to establish a valuable and set the worth of the product.

Complexity at CCIs

Business context sets multiple reactions but in the case of CCI's, besides solving a business model, they depend totally upon the private and public ecosystem as a facilitator of value chain sustainability. Theirs complex variables are:

Markets are turbulent and empirical with no need to follow trends. The CE market must grow when increasing transactional frequency in copyrights and royalties. Besides, markets must face a complex eco system which needs to control two opposite variables, the creative and the economical ones and taking care of the market law, balancing supply and demand.

Example. The Visual Arts Market is the example of a complex arena where offer and demand are the same. Gallerist represent the offer inside an art fair, and at the same time they demand a secondary market. Museums represent the not commercial offer, but are at the same time the demand for acquisitions. In this scenario and summing up the art critics and other experts, the market is totally unpredictable as it depends on variables going further the pricing, the name of the artist, the name of the dealers and even other collectors' influences. Agents in this market are used to work isolated, but they highly need each other; and the result of the market depends on the cause-effect reaction of each one of their relations, and this don't allow to fulfill a market law predictable balance.

Anthropological variables are part of a complex cultural processes. The CCI's worries about democratizing cultural access even though they do not count with enough governmental policies to ensure it. Cultural organizations stablished socio-cultural intervention processes by taking care of their spiritual variables.

Example. In the Crafts sector, there has been a development in direct sales without intermediaries, with automation and new knowledge for the artisan, sometimes, but not always, improving their fair-trade commerce. All these variables affect the commercial value chain, creating deep cultural process affectations into the roots of the communities and hence, the loss of legacy. This mistake in a cultural process can abolish a traditional practice for ever.

A cultural manager with a hybrid profile. The director of a cultural company or a nonprofit organization, deals with a skill's problem: if they come from humanities or artistic backgrounds, they are forced to present numerical and economical results, and if they come from a business background, they have to understand how to create cultural value and measure them; either way it's difficult to measure indirect economic and social impact but the issue is that both minds are valuable and needed (Marchesi, 2016). This two states of mind inside the same character have proved it is an efficient mixture (SAEE, n.d).

Learnings:

- Empower sector's experts and critics to mobilize the ecosystem and create new market rules.
- Subdivide problems into personal, spiritual, anthropological, practical processes and conflicts; this can help the team to solve paradigm fears.
- When facing government absence, do not to stop. It's the co-responsibility of producers to be more inclusive by creating more access in the market.
- As shown by cultural managers, it's possible to coexist with two states of mind, but it requires the will of training and practicing something that it's opposite. So traditional manag-

ers can find value in processes that might not be profitable and can reconvert them into an effective core result.

Ambiguity at CCIs

Ambivalence is difficult when trying to interpret the same issue but in some other way. There will be multiple factors to consider in several ways. Also there's a chance to have different results, even the process was applied accurately and repeatedly. CCI's reflects that:

As a paradox, all managerial tools do not necessarily work in the cultural industry but there's a need of them, they must be adapted and in consensus. To face ambiguity it's important to say that even a democratic leadership constantly promotes autonomy and empathy, also slows down effectiveness as it takes time to build consensus and have dialogues with all parties. But even time is an issue, is not a rule to take time. Transformational insights can be done quickly depending on the truly will of making a breakthrough, rather than just wanting to make small changes. One of the intrinsic characteristics of cultural expressions, is that they suddenly change the status quo of the observer, this is because of the feelings generated by an art piece and also because it could be a personal impact in such a profound magnitude, that generates the quick need to seek new solutions. So to deal with this type of VUCA situations the recommendation is to analyze how an artistic cultural expression fits inside a day-to-day management process.

Example. Today culture don't count anymore with governmental fellowships. This paternalistic attitude that has been running for centuries, is an ambiguous aspect as of course, it's helpful, but gives the sector a lack of accountability. As a cultural manager is not just an administrator that applies business management to an organization, this profile needs to develop a high sense of a greater responsibility based on mutual trusts with the state, their publics in order to attract partners, investors and donors and invite them to find mutual solutions to fulfil the community and stakeholders.

Entertainment Vs. Arts, Digital Vs. Analog never ending discussion. CCIs struggled with a paradigm about shifting to digital production and consumption; which implies a need to adapt the format of the goods to respond to changes in demand. It is not only a problem about technology, it's a matter of increasing a digital gap showing that there is not enough legal and fiscal regulation around all territories in a country. But even if this could be solved, there's still a discussion about dealing with arts as opposite to entertainment; two different aspects that today, digital access helps to diminished their borderline in order to help market grow and get a balance in between supply and demand. CCI's drives a fine line with leisure, entertainment and gaming that allows consumers to understand and repeat the cultural content in a didactic way, but it is not allowed inside must of the cultural sub sectors.

Example. The Design and Architecture sector are creating hybrid cultural spaces and creative urban districts where the public and the private policies started to merge. Those spaces, physical, impermanent or virtual, are redefining the city, the integration of the inhabitants of a residential or peripheral abandoned neighborhood. Besides are suitable spaces who welcome a flow of people from multidisciplinary professions, who are willing to create laboratory processes to sum everybody's ideas and to merge entertainment with leisure with culture and analog or digital consumption. There are creative spaces where to exhibit arts and they have test ways to help them co-exist.

Creator's works can be read from different angles, and all of them are valid and sum to a final answer. They are use to resignify ideas and objects, so that there are new readings about the same concept. This exercise invites people's opinions.

Example. Inside the creative industries there are designers, who are used to applied methodologies such as Design Thinking to learn how to prototype and test the functional procedures and projects. This accompanied by techniques such as Visual Thinking or drawing, can help understand in a sensitive, visual, emotional way, the roadmap to concrete an idea into a project. As a design thinker, testing, open codes and prototypes are a daily task to insert arts and creativeness with cross industries; so storytelling and content development of the procedures are documented as in a research studies. Also, when applying Design Thinking, all opinions can fit and there's a chance to add and not reject ideas, reaching co-creation processes within participatory initiatives and gamification.

Learnings:

- Choose icons, ideas, concepts behind a product and resignify it. This will an inclusive strategy to listen to all participants' points of views.
- Ask and draw questions about one highlighted topic, the more answers you collect, the more richness information will appear to prototype.
- Establish lab procedures to experiment, not only I+D, but every type of process, idea.
- Do not stop using storytelling and gamification. Extend the experiences not only for consumer engagement, but for didactics inside your team.
- A manager though, could have the responsibility to exercise mainly two type of leaderships, the participative and the transformational ones. This means to strive to make others grow, to make them indispensable for reaching aims and to maintain an overwhelming inspiration.

UNIT 2. ARTS INSIDE MANAGER'S BUSINESS DAYS

There are several experts' opinions about how art can interact with business managerial economics. This unit narrows more about the activity of viewing, creating or enjoying arts inside the management problems in the VUCA world.

The first issue to clear out is the importance to respect that art has no useful function and that the idea is not to instrumentalized arts and also recalls the importance to go further the "decorative" function of it. Even though to fill a space or agenda with arts is pleasant, this is not the aim, so the following units scrolls a range of possibilities about visual, musical, performing, artisans and literature arts, to set up a cultural program of activities and established a transformational scenario inside a managerial strategy.

Art Interventions for Brain Development

Management has a rational side but also a creative side. Kurt Mayer (2010), argues the thesis that managers need to stimulate the potential that gives the artistic side. He explored that an artist knows how to run a play to its highest levels, brings grey areas to the surface, is deeply rooted to his and others emotions and leads the ambiguity as it is part of the artistic process, but managers don't. Mayer also argues that as 95% of the thinking is non-conscious, drawing a clear artistic image is more useful than a digital or analogue text communication.

This doesn't mean that the manager has to become Picasso. What it means is to invite a manager to raise his sense of emotional level; either to work with artists for a specific team engagement projects or, to present images to trigger discussions.

Either ways both options will disturb the office, but the idea is to let a manager or a team get out quickly from their comfort zone. If they engage with art at least once in a daily basis, they can experience, or might be easier for them to succeed in each of the VUCA elements:

V element. Detect volatile changes based on following the details. Exercises in appreciation of arts, helps brains to have a visual reading of any type of situation. Exploring a piece of visual art for the second, third and so on time, develops mind retention to volatile details.

U element. Artworks do not have an A to B route or manual instructions to enjoy or understand them. Get used to this attitude, reduces the uncertain feeling. Instead of always need to control the starting point, artistic exercises help to throw a thread where to start exploring their own route.

C element. Deal with contemporary, provocative art, no matter if it's music, dance or a painting, is challenging per se, and helps train emotions when facing a complex situation. Most of the times, art is not understandable, so the exercise of breaking the first barrier of rejecting the unknown, is the path to stay in front of a map of complex variables to solve, and asking questions that might not have specific answers, but open new discussions. Moving forward the first impression, brings teams to start feeling comfortable in front of unfamiliar arenas.

A element. An art piece has multiple interpretations and all of them are valid. To avoid hanging on to ambiguity, the first thing to do is to release the desire of wanting to have the main reason in a situation. Appreciation and consumptions of arts trains in listening to different opinions and understanding that there may be a third, fourth interpretation, and that together they can create another definition.

Artist's Interventions to Increase Participation

Based on the learnings of the past unit, to deal with ambiguity derives in a participatory and transformational leadership, this means to impact into community with democratization. As the ambiguity is part of the artistic process, Mayer (2010) understood that it derives to a leadership of possibilities.

In this sense, the Artist inside the managerial agenda, supposes that is the open door to find out every type of possibilities. Retaking (Bauman, 2007 & Mortuori & Donelly, 2019), business comprehension has evolved when finding new ways of developing progress, when taking reasoned analysis to a higher state of mind and when including utopian ideas, the leadership based on possibilities, can be a managerial strategy.

Perhaps, managers will remain skeptical but they have in their favor a Liquid Society that demands non static solutions and asks for participation and a closest identification to their territory, in this case, the companies or projects that they inhabit. The question now goes further, it is not only how to detonate and motivate participation through an art piece; it is how to take Arts as a core topic inside the organization and add value from it, and a how to be respectful upon differences between arts and economics.

Experts have analyzed and there is a flourished trending way of management consultants' organizations that have started to structured methodologies to intercept and reduce the gap between arts and companies, bringing with it that both sides generate mutual value.

Some cases driven has demonstrated that after an artistic intervention, employees are more emotional, sensitive to understand vendors and feel more comfortable with ambiguity; also as part of their experience they suggest that inside the MBA's educational programs there's a lack of soft skills development in students, even though rational is a must to be teach in this classes, but in the actual VUCA society, it is a plus to develop other non rational skills (The Artian, in section Works and Blog).

Also there is evidence of the creation of an improbable-ecosystem with new methodologies where artists are inserted into multidisciplinary relational experiences, they lend aside the traditional way of doing art, and start working in communion with managers and other professional networkings as a formula to innovate through hybridization (Conexiones improbables, n.d, in section Comunidad and Noticias).

Openly, nowadays there are proposals towards training artists for facilitating innovation procedures by leading artistic interventions inside companies or institutions. Is seen that this requires specific qualities from the artist that have to be trained and also, it needs to demystify the idea of leaving the artist in his purest state. Among the skills to be developed in the artist are Organizational Theories, Team Building, Communication skills, Organizational procedures, conflict management, co-creation and even social innovation but the most important one, non-hostile attitude towards business (Lehikoimen, 2021). Beyond developing this art and business relation to foster an artistic mindset and pursue originality, in one hand, team groups receive unforeseeable, unpredictability results which is the great assets of this type of interventions, also the artistic interventions can help the team speak about the unspeakable and experiment that achieving a goal itself, is not finding a holy grail (p.9). This gives a sense of freedom and self-inspiration that opens the space for capacity team building as everybody is making their own effort.

Art Based Initiatives for Transformation

As seen in the section before, the involvement of arts inside organizations brings relevant issues to consider; is a both protectionist policy either for the employees and for the artists and arts by itself. This co-responsibilities are part of the 21st- century organizations who are willing to develop new thinking methods for a wealthy future.

Remembering VUCA, in a purely volatile scenario, when there is no uncertain, complex and ambiguous data, there are lots of fast, but predictable changes. In some other cases when things are purely complex but predictable, data is hard to understand and, if they are purely ambiguous, data is hard to discern. So in any of this options, there's a need to understand, move and choose quickly, a need to improve a business model.

Following Giovanni Schiuma (2009), to re-think a business model helped by Arts-Based Initiatives [ABIs], it is important to recognize its polyvalent nature as even they are seen as key factor to influence in finding and creating value and that results are based on the way in which ABIs are managed. As ABI's show the instrumental use of artistic skills, of processes and experiences to foster learning, this will take time, but it doesn't depend just on the duration, it also will depend on the intensity of the artistic intervention.

Schiuma's Arts Value Matrix determines the type of results from each one of cultural activities. The variables are a function of impact related to people changes Vs. impact in benefits linked to an organizational infrastructure development. The matrix measures weather those impacts are high, medium or low. The associated description of each variable can be summarized as:

- Entertainment: gives adrenaline and pleasure.
- Galvanising: involve people in a provocative and meaningful experience.
- Inspirational: questions self-awareness, critical thinking and self-assessment.
- Sponsorship: mutual goals to display interest and gain attention.
- Environment: beautify a workplace and gain intangible identity and icons.
- Training and personal development: didactics to develop personal capacities.

- Investment: aesthetic dimension in the corporate language and product designs.
- Bonding: relational capital and a common ground for conversations and co-inspirations as social boundaries collapsed through arts.
- Transformation: using metaphors and deep inner breakthroughs, change to a new consciousness of self behaviors and of the ones in the reality around them.

So variables such as Entertainment, Galvanising and Inspirational, don't affect fundamentally as they disappear after an immediately artistic the experience. Conversely, variables such as Investment, Bonding and Transformation gathers self-reflection and evaluation as the cultural activity and triggered people to understand themselves and their relation to the world, in a suddenly different way.

The other ones are in the middle, there are variables like Sponsorship, Environment and Training & Development, in which the artistic activity had influenced on participants attitudes by not only stimulating feelings, but by touching inner roots to energized minds for a long period of time, which brings changes in personal behaviors.

A high-level impact, would develop transformational agents inside the organization. This is realized when new components are introduced in products, in culture and planning vectors. A medium level impact facilitates renewal, reinvention and redesigns that can be gradually done and are not created from a zero basis. And a low level of impact maintains or raise a positive scenario with no changes at all.

Quoting Nuccio Ordine (2013) in his Manifesto The Usefulness of the Useless: "humanistic knowledge, culture and teaching constitute the ideal amniotic fluid in which the ideas of democracy, freedom, justice, secularism, equality, the right to criticism, tolerance, solidarity and the common good, can experiment a vigorous development". Through arts inside a manager business day, it is possible to lead human specific dimensions, to think the organization as an amniotic liquid full of passion, hope, aspirations and those emotions that add tension to the current uncertain business panoramic landscape.

Experts and management consultants agreed that this can be a competitive advantage in pro of an organization that can retain human talent that is committed to act as a transformation agent inside their teams. As Shiuma explains, there are different levels where a manager can participate, but independently from them, every level pops up with a team energized and inspired to create organizational symbols.

So to include either Aesthetics Art interventions, or direct Artist's interventions or a wide program of Art based activities in a daily basis as part of a core program, will be a management strategy able to construct a cultural value inside the company. To co-create icons and experiences that can represent the identity and the semantic image of an organization in order to focus and explain every type of situation inside or outside to the company stakeholders, allows teams to fulfill their own identities and motivates in finding their own masterstroke. In this way, people can consider their jobs for the sake of delivering value to others.

SOLUTIONS AND RECOMENDATIONS

In accordance with Halek & Stroblt (2016), Vuca World is not about a well-known recipe with rules for success as the game rules have changed, it is a responsibility about creating a learning system procedure to build a playground for opportunities, to place team wisdom and knowledge as key for competitive advantage thus the team will be resilience and have vitality for sustainability. This complements on what Zardar said about taking learnings to a higher synthesis, thus this is a demonstration that business

management has evolved to new ways for developing progress. As “Uncertainty is Unquantifiable” (Perloff & Brander, 2020), to establish a self-learning procedure implies that business comprehension has evolved and can include procedures that before, were considered a truly utopia.

A chimerical, impractical or irrational idea, today fits into a learning management system. As demonstrated in the cultural manager way, every angle and perspective is valid to shape the problem and surf the liquid society. So, the homework is to encourage the team to communicate all possible multiple dimensions into a established knowledge procedure. This is the first decision a manager could make.

A new society that needs, as artists and cultural workers do, to build new references, to look for short terms common goals, to be provocative, to challenge rules, to hit the bottom of difficulties, to re-born and to be a creator, but also a maker.

In this Era of Uncertainty and Liquid Society, in order to be progressive, it is more than being creative in a team work session. It's about winning early victories in circular flows. Results are not lateral, neither vertical, are based in the transfer of knowledge, this, according to Halek & Stroblt, could be called: The circular flow of a team wisdom, and it is not possible without a type of participatory and transformational leadership.

That's why at the end, this chapter is not the result of a laundry list regarding the management operational, strategist or tactic activities for leading VUCA challenges, thus there's a lot of this statements already written, and managers already know them and have applied them. The main solution is a vision of a quicksand playground to be lead.

An amniotic liquid (Ordine, 2013) that proposes a way of raising learning methodologies to build a quick sand playground where the team can propose, taste and validate a pool of possibilities; not only for their own departments, but also among a circular crossing teams, including stakeholders.

Regarding the guiding question about ¿how to enlist probabilities to solve a problem and how to detect possible benefits to address a misty path?, the previous analysis based on a new collaborative approach, which is highly used inside the CCI's organizations, determined that there's a highlight and the validation of the learning speed of each one of the teams. In this way the information will be there, for agile decisions and will deconstruct complex situations more easily if:

- Information and harvestings must transcend the boundaries of the departments and expand it in the nearby teams and within other ones with whom there's no contact at all.
- The key is to consider to change the mind to replace the hierarchical process and the centralization of information by building and transferring wisdom, including external authorities and interest groups.
- Build a peaceful climate to get prepared. As arts and culture changes emotional and behavioral status quo, consider arts appreciation in a daily basis to do it.

This chapter pretended to propose the manager to stop for a while before defining the business strategy implementation and observe that there are other aspects that he/she might include to open a creative learning procedure inside the team. So, from the observation made to the cultural industry there's a list to be suggested:

- Draw an intersection between those things that really matter with things that you can really control. Include the aspects that matters even they are not profitable.
- Include either cognitive and phycological elements when proposing a Vuca challenge.

- Resignify icons, ideas, concepts, objects inside the culture of your team. Things that were in a certain way must be read in a different meaning. If that's the case, be an iconoclastic to start from zero.
- Always work with poles, creativity can flourish in both sides and positives aspects can balance negatives ones, depending on the angle from where they see it: Personal & Impersonal attitudes, General & Specific arguments, Permanent & Temporary, and so on.
- Select and include ephemeral procedures, they are born to be vanished creating high impact in the team. Not having a pattern is also valid when solving a specific situation.
- Include ABIs' in a daily basis as part of the strategy and be an observer of the different type of impacts around your team. Use it either you need to entertain, decorate, transform, train, co-inspire or provoke.

As those recommendations are based on the idea that a manager is open to face VUCA challenges in an agile and democratic way, this is the second decision that the management team has to make. If the answer is yes, let's try it!. As a Liquid society changes every day, to taste it will be less risky than the risky environment itself.

The recommendation is to open an experiment and invest in information sources and specialists. Afterwards, the manager might feel is adding a revolution inside an already unstable reality, but the learnings from the cultural industries have shown that those elements are part of the growing process they have done to run unstable organizations dealing with utopic people and crazy ideas, in fact, these are per se, part of the process itself. So finally, but as an starting point, the recommendation is to combat VUCA challenges by leading ambiguity as a normal part of the same managerial process, and remember that the idea is not to reject the provocative ideas, that, as the contemporary art, are understandable at the very first beginning but then there's a new world to be discovered.

What for? For building resilient teams who face uncertainty. A team that is able to put itself in the other's shoes and that can create transparency in a mutual process; in this way the company can create strong actors that also shake others to get involved, as Shiuma (2009) said, to galvanise people in a provocative and meaningful experience.

FUTURE RESEARCH DIRECTIONS

When adding a VUCA reality to Managerial Economics, researchers agreed to apply a large list of quantitative skills, modelling information, financial, marketing strategy and leadership tactics inside a legislative, regulatory and environment; all this aspect that are already proven. Even there is literature review compiling the need to have a creative attitude to solve the VUCA challenges, there's still a gap in the academic research about quantitative and qualitative studies to explore art inside non artistic environments. Also, about what happens to a manager if he/she practices an artistic expression and what happens to a team when applying ABI's for improving their resilient capacity.

From a Business perspective, management can't be isolated from the humanistic point of view. Thus there still a gap for business to explore inside this amniotic liquid (Ordine, 2013). Researches can catalyze emotions and human energies within teams results, as well as making business a closer scenario for employees and external people such as artists, as stakeholders and customers. Also studies about

managers dealing with transformational agents who are resilient and overcome hierarchical structures in order to build a collective wisdom, is a pending task to be observed.

And of course, there has to be a balance when looking the situation from the other side. The CCI's have lots of management gaps still to solve and track a path towards sustainability; it's a lot to exchange lessons from the managerial economics view that opens a wide range of future studies for the cultural sector. Research about crossing variables in between management and cultural management, are still a pending duty.

CONCLUSION

The current liquid society needs utopians who embrace resilience. It is not only a matter of just being creative, it is a task to manage the Utopia concept in order to be progressive. Indeed, the Arts Based Initiatives facilitate to accept and utopian attitude without seeing it's chimerical non efficient side, as they can bond VUCA elements with new perspectives. Learnings when being open to arts and cultural mindsets, showed that it is possible to develop a team brain, to involve participation inside and outside the teams and to facilitate a status quo transformation; all three are important elements to strengthen resilience when looking for sustainability in difficult times. Regarding the guiding question about ¿how to enlist probabilities to solve a problem and how to detect possible benefits to address a misty path? The answer is to lead by participatory and transformational guidance involving teams to manage a Wisdom Learning Core Procedure driven by Art Based Initiatives. The antithetical relation between arts & business exploring the artistic interventions with different impact levels, has shown that it is possible to lead volatility, uncertainty, complexity and ambiguity by capturing value from the emotions, errors, pivots, beta tests, exchanges and resilient behaviors. The more utopians are invited to participate in this core program, the more chances to surf in a liquid society. They would trigger conversations about all the things that we already know, the ones that we know we don't know, and a whole universe of things we still don't even know.

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KEY TERMS AND DEFINITIONS

Artistic Intervention: In a broad sense, it refers to a methodology that apply arts and artistical procedures to design a specific activity to interact with a space, the spectators, other artists, other artworks and to obtain a response from the public, even though this audiences belong to a corporate organizational environment.

Creative Economy: Still an evolving concept which describe the economical behavior of a range of activities that have their origin in individual creative talent and who are the interface between culture, arts, design, sciences, technology, and innovation. Supported by the intellectual property exploitation, it has the potential to generate employment, contribute incomes to the GDP and raise international trade.

Cultural and Creative Industries: It is the structure that supports the chain value of those sectors who research, train, produce, reproduce, circularize, commercialize, promote, exhibit, and distribute goods, services and activities derived by contents from the heritage origins and the artistic and creative expressions. Diametrically opposed, brings together art and aesthetics with commerce and entertainment, while promoting cultural development, social inclusion and protecting the diverse creative expressions in a territory.

Cultural Diversity: It refers about the multiple ways a culture or a society express themselves, creating the plurality of the common heritage of humanity.

Cultural Heritage: It refers to the tangible, intangible and natural worldwide property that humans had inherited from the past generations as a signal of historical identity. Along with artistic expressions, there are international cultural policies developed for preservation, restoration, conservation, and promotion of it.

Cultural Manager: Is a professional that articulates arts, heritage and culture with society, the government, and the private sector with the aim of promoting and protecting the cultural diversity. Is responsible for policies, programs and projects that deliver cultural expressions to communities and spectators and also if it's the case, they can conduct a creative organization or business.

Liquid Society: Is a denomination to the phenomenon caused by the globalization from a philosophical and sociological angle which shapes an amorphous mass in which transitory situations are considered rather than the permanent ones, the immediate upon the long-term states and the possibility to permeate into every scenario to circumscribe new realities.

Managerial Economics: Is a branch of Economics Science that apply micro and macro-economic principles to the managerial decision-making process, dealing with the organizational internal problems and proposing solutions for the wealth of business and their communities.

VUCA Environment: Is the acronym of a volatile, uncertain, complex, and ambiguous environment that surrounds today's business world. It describes the situation of a recent managerial term that summarizes the situation in which businesses surfing today and that sets an alert to be in an awareness and solving behavior.

Chapter 14

Negotiating Across Cultures: Insights for the 21st Century

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ABSTRACT

The 21st century accentuated the globalization, regardless of some cases apparently returning to the previous regionalization paradigm. In both cases, human communication has been and will be key to overcome the major challenges ahead. Within the global context, communication is increasingly cross-cultural, which brings additional challenges related to misunderstandings and the potential to escalate conflicts, sometimes ending up at crises. Therefore, communication and negotiation across cultures has never been as relevant as now, and the purpose of this chapter is to provide a fundamental knowledge base to cross-cultural negotiation, taking into account the main culture models from the last 50 years. It will be based on several relevant culture models, taken from multiple lines of research from reference authors in the field of culture models, negotiation, leadership, and decision making.

INTRODUCTION

Living is deciding, and negotiation may be regarded as a joint decision-making process involving two or more parties. Diplomacy can be understood as “pursuing war by other means”. In the same sense, negotiation, also a central concept to diplomacy, can be understood as the pursuit of goals and desirable

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outcomes by means other than the open conflict. The word is closely related with business, in the sense of being busy, doing diligence in order to overcome a problem. The concept however, is quite eclectic in the sense that it entails contributions from a considerable number of fields and a considerable body of knowledge that have been accumulating over centuries, which may be regarded as a blend of art and science.

A taxonomy of different concepts related to negotiation is provided, as negotiation types can be classified as simple or complex, integrative or distributive, single variable or multivariable, two parties or multiple parties, among other parameters. The negotiators themselves can also be classified into one of different profiles accordingly. Hence this text provides a comprehensive description of the main relevant concepts a negotiator shall have into account. Moreover, businesses should invest in developing negotiation as an organization capability for the twenty-first century (Ertel, 1999).

If negotiation in the strict sense is already a demanding endeavour, if in addition one considers situations of negotiations involving people from different cultures, then the whole set-up becomes even more complicated. Such complication originates from distinct ways of communication (e.g., low context *versus* high context cultures), the way people understand the concept of time in different geographies, or the level of hierarchy and power relations within societies to mention a few dimensions.

Besides this introduction, this chapter is composed of five main sections. In the second section a fundamental introduction to the main concepts concerning negotiation is provided. In the third section the relevant concepts in what culture and culture models concern are described. The fourth section provides some examples of the impacts culture may have on negotiation as a joint decision-making process, for sake of discussion. Finally, a concluding section summarizes the main points.

NEGOTIATION: A FUNDAMENTAL BACKGROUND

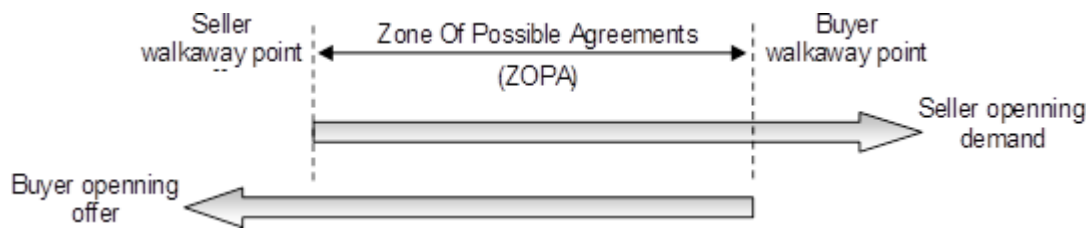
To address such an eclectic subject, some fundamental concepts are in order. The starting point concerns the answer to the question: “what is negotiation?”. If one takes the etymology of the word from the Latin *negotium*, it is related with carrying on business, occupation, an endeavour that is entailed by difficulty, trouble, pain or labour. It is the negation of the Latin word *otium*, which means ease or leisure, and therefore negotiation can be understood as the negation of the leisure (*otium*), which also means putting effort to attain intended goals. Negotiation is also a concept close to bargaining, however, negotiation is a much broader concept, as besides tactics it involves strategic thinking, and a care for human interrelation, psychology and personal communication.

Negotiation, as many aspects of life and systems have may be approached as a process composed of different stages (Fisher & Ertel, 1995). Hence some main identifiable stages are: (1) the planning stage, (2) the ‘at the table’ stage, and (3) the closing stage. Such classification is however incomplete, as one could also add a preplanning stage where a negotiator decides if it is worth negotiating or not, together perhaps with some set-up measures, that may, for instance, include lobbying to arrange pre-negotiation alliances (Lax & Sebenius, 2003). And suffice to say that after the negotiation has closed or the deal has been done, there is a need for follow-up in order to ensure the objectives are materializing, something that may involve “post-negotiation’ negotiation” (Mendenhalt, 1996; Craver, 2012).

Negotiations may involve two parties or multiple parties. The later makes them substantially more complex. Considering one of the simplest negotiation types - a two parties’ negotiation, involving a seller and a buyer - a simpler graphical representation of the frame applicable to such negotiation could

be understood as a continuum where the interests of two negotiators would somehow be superimposed or paralleled when a single negotiation variable is at play (Figure 1).

Figure 1. Negotiated outcomes must occur inside the ZOPA bandwidth.



From the figure 1 some central concepts deserve a description. The seller's opening demand represents the opening position or maximum strength a seller starts asking for his product, service or solution in the context of a seller-buyer negotiation. On the other extreme the same seller has a walkaway point, which is the least acceptable price or compensation he accepts for what he or she is selling. In a similar way and in opposite fashion, the buyer also has his or her opening offer, which represents the buyer maximum opening strength, i.e., a low offer to start the discussion, during the bargaining stage. The same buyer also has a buyer walkaway point, which is the most he is willing to concede or pay in order to close the deal. The continuum between the two mentioned walkaway points defines the zone where agreements are possible and therefore is referred to as the *Zone Of Possible Agreements (ZOPA)*, and is a central concept in any negotiation.

It is worth noting that both the seller and buyer walkaway points are defined by their respective *Best Alternative To a Negotiated Agreement (BATNA)*, a concept first defined by Fisher, Ury, & Patton (2011). This concept, BATNA, is however somehow imprecise, as the best alternative to a negotiated agreement might be another negotiated agreement elsewhere (potentially with a third party). Therefore, perhaps instead of BATNA it should be referred to as the *Solution Away From the Table (SAFT)* to be more comprehensive. Either BATNA or SAFT, these are the concepts that help define the walkaway points for either the seller or the buyer in the illustrated negotiation situation.

This is obviously a simplistic approach to such a complex subject, as there are many negotiation contexts besides the simpler seller-buyer ones. There are negotiations within and across families; bilateral or multilateral negotiations among organizations or even involving countries, intraorganizational negotiations involving employers, or hiring managers or even job candidates, among many other typologies.

The model represented in Figure 1, however illustrative is too simplistic as most negotiations are not single variable, but involve negotiation over multiple variables, where trade-offs shall be done, preferably as close as possible to the *Pareto Frontier*, expressing optimal gains for the negotiating parties. The following subsection will describe some negotiation types together with the relevant associated concepts.

Negotiation Types: Simple and Complex

The negotiation situation illustrated in the previous section can be referred as a simple negotiation situation, as it involves only one negotiation variable or parameter, and two negotiating parties. When,

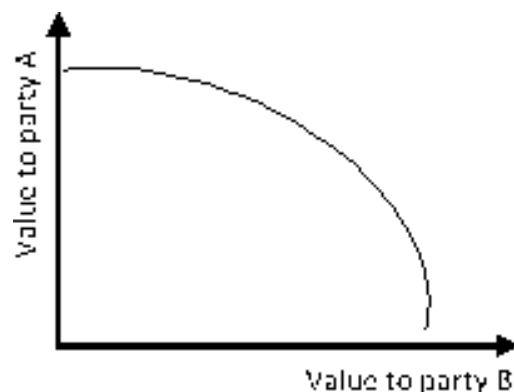
however, both parties are negotiating over a set of parameters or variables one is in the realm of complex negotiations. This does not have to be a bad paradigm, as in single variable negotiations one ends up in a *zero-sum game*, where what one party gains the other loses (Dixit & Nalebuff, 1991). When several variables are at play, it is possible to create value for both parties, or “enlarge the pie” as it is commonly referred to in the field. Brett (2014) categorically illustrates such a situation concerning a negotiation situation that involved different goals associated with the buying of some pumpkins for making Halloween funny pumpkin faces. The seller wasn’t interested in selling all the pumpkins with the argument that she needed to keep some to have seeds to produce more pumpkins in the following year, while the buyer wanted to buy all the pumpkins. By making use of questioning the seller’s interest (beyond price) surfaced and the buyer offered herself to return all the seeds, as she did not need them for achieving her goal, making the agreement possible, and resulting on a win-win outcome. This is a first illustration that oftentimes the best negotiation outcomes demand creativity to search for initially unforeseen solutions.

Therefore, a first classification would divide negotiations between *competitive* and *cooperative*. Competitive negotiations are also referred to as distributive, as the main focus is in distributing the existing value, while cooperative negotiations, also referred as integrative negotiations, provide a higher level of integration in order to produce better solutions where both-win is possible, and most often allow the enlargement of the available value before it is distributed.

Pareto Frontier

Integrative or cooperative modes of negotiation typically involve several negotiation variables, which in the case of two parties and one negotiating variable would lead to a two-dimension *Pareto frontier*, also known as the *possibilities possibility frontier* (Figure 2). A Pareto frontier is a curve that represents optimal outcomes from a negotiation, and where usually what one party gains does not have to be at the expense of the other party, hence the win-win outcomes (Lax & Sebenius, 1986). It is also called the *maximum efficiency frontier*, and relates to the maximum joint gains for the parties involved. Pareto frontier represents the curve on which no additional value is being left on the table, regardless of which party captures the biggest share of it. Therefore, the closer the negotiating parties are from the Pareto frontier the better the chances for ending at a win-win outcome, even if one side takes more value than the other from the deal.

Figure 2. Pareto frontier. [Adapted from Lax & Sebenius (1986)].



Negotiation Strategy and the Utility Theory

The Pareto frontier concept is graphically simple, as it translates the *utility* for each negotiating party. When, however there more than one negotiating variable decision getting the best decision clear becomes more difficult. Strategy has many facets, but from the pragmatic point of view an approach from the *Utility Theory* may be of help (Shell, 2000). Utility theory argues that rationally, one is always trying to choose the most useful or “util” solution for himself or herself. Therefore, in a multi-objective negotiation one may compromise some less important objectives in order for the outcome to be optimal, even if it is not maximized from the point of view of each of the negotiation variables, a concept that is better illustrated by means of an example.

Let us suppose a buyer is looking to negotiate the acquisition of a small yacht for his weekends, for which two variables are at play – price and warranty. Moreover, within this hypothetical example price may range from 10.000 to US\$20.000, and warranty between one and six months. Such ranges suggest that there will be a considerable number of combinations, for which the buyer (and the seller) shall have it clear in making decisions during the ‘at the table’ stage of the negotiation. For example, what shall the buyer prefer? US\$12.500- and two-months warranty, or US\$17.500- and four-months warranty?

Such apparently difficult problem may be sorted out by reducing it to a smaller number of simpler problems. To do so, it is useful to convert both or any variables into *utils*, which help quantify the involved party’s preferences regardless of the variable. Therefore, a first step would be to distribute weights to the negotiating variables (price and warranty in this example), suggested in Table 1.

Table 1. Assigning weights to the negotiation variables

Variable	Weight
Price	8
Warranty	2
Total	10

As a second step, each variable shall be assessed independently, by making use of a scoring range, which shall be equal for all involved variables. For example, a range between 0 and 100, where score 100 corresponds to the preferred value and zero to the least preferred value, with intermediate distributions. In this example one could consider the following distributions (Table 2 & Table 3).

Table 2. Points distribution for variable “Price”

Price (US\$)	Price assessment as points
10.000	100
12.500	85
15.000	60
17.500	20
20.000	0

Table 3. Points distribution for variable “Warranty”

Warranty (Months)	Warranty assessment as points
1	0
2	30
3	55
4	75
5	90
6	100

Taking the previous two steps, it is possible then to evaluate all the possible alternatives by considering the following expression (equation (1)):

$$\text{Alternative Scoring} = (\text{Weight}_{\text{variable1}} \times \text{Assessment}_{\text{variable1}}) + (\text{Weight}_{\text{variable2}} \times \text{Assessment}_{\text{variable2}}) \quad (1)$$

Which when replacing *variable1* for Price and *variable2* for Warranty, translates into:

$$\text{Alternative scoring} = (8 \times \text{Assessment}_{\text{Price}}) + (2 \times \text{Assessment}_{\text{Warranty}})$$

Which produces the following alternatives scoring (Table 4):

Table 4. Matrix of alternatives scoring

Price Warranty	10.000	12.500	15.000	17.500	20.000
1 months	800	680	480	160	0
2 months	860	740	540	220	60
3 months	910	790	590	270	110
4 months	950	830	630	310	150
5 months	980	860	660	340	180
6 months	1000	880	680	360	200

It is important to bear in mind that table 4 represents “utility” points and not monetary values, when deciding which pair of values to choose during the negotiation give and take. With the help of these calculations the whole set of negotiation alternatives becomes clear. For instance, buying the yacht by US\$12.500 with two-months of warranty scores 740 points, which is preferable to an agreement with a price of US\$17.500 and four-months warranty, which scores just 310 points.

If more than two negotiation variables are at play then the mathematical expression would become (equation (2)):

$$\text{Alternative scoring} = \sum_{i=1}^n W_i \times V_i \quad (2)$$

Where W_i is the weight of variable i and V_i its respective value.

There are more elaborate approaches or algorithms to deal with multi-criteria decision making, however the model described is already a good step in supporting negotiations involving multiple negotiation parameters. Clemen & Reilly (2013) discuss several multicriteria decision making approaches. Besides the different negotiation types and decision-making supporting tools, the specific negotiator's profile is also relevant for the whole process to produce the desirable outcomes.

Negotiation Profiles

Not all negotiators are the same, and some profiles are more effective than others in negotiating win-win outcomes, while at the same time ensuring long term relationships. A set of distinct profiles can be identified and some authors have suggested different classification frameworks. Luchi (2003) by making use of an analogy calls attention over the following negotiator's profiles: (1) *Bulldogs*, (2) *Foxes*, and (3) *Deers*.

A *Bulldog* negotiator style is typically the chosen style by hard-nose negotiators, where every negotiation is faced as a battle, where one wins or dies, and where such negotiator is just satisfied when he wins all over the other party. This is the hard and intransigent person, potentially even *bullying* or threatening the other party. As constructive dialogue and consensus is typically not used, such negotiations are inadequate when long term relationships are critical (Field, 2003).

The *Fox* negotiator style is one that also focuses on the maximization of his or her gains, however makes use of more subtle communication than the *Bulldog* style. While a *Bulldog* style uses confrontation, a *Fox* profile uses manipulation and ambiguity to his or her advantage.

The *Deer* negotiator style is somehow a "negative" style, as it is characterised by excessive accommodation during the negotiation process. This situation corresponds to someone who is afraid of negotiating, avoids confrontation, and typically concedes more than would be needed to reach an agreement. When negotiating with this profile one shall obviously make sure he will comply with the negotiated agreement, as that is not necessarily a given with such profile.

Taking these three negotiator profiles, what are then an effective negotiator style? An effective negotiator is someone who believes that constructive dialogue is the way to ensure win-win outcomes. Effective negotiators workout to ensure an adequate negotiation climate, where openness and effective communication abound. They don't spend time with hard confrontation or showing too emotional. This is the negotiator profile that believes in flexibility and accepts adequate concessions to reach an agreement. It is the negotiator profile that effectively manages the tension between empathy and assertiveness (Mnookin, Peppet, & Tulumelo, 1996; Sebenius, 2002). Any one of the above profiles exist in any culture, however in some cultures, some styles are more common than in others. Moreover, it is normal for negotiation processes to involve more than one person on each side. In complex negotiations it is common to have negotiation teams and sometimes more than two parties.

Multiparty and Team Negotiation

Multiparty negotiation increases negotiation complexity because: (1) more goals from different participating parties must be satisfied, (2) there are more negotiation profiles involved (3) there is the potential for coalitions and alliances which may block some alternatives. Moreover, in multiparty negotiations, it is not uncommon for negotiations to be done by teams. However not exclusive, team negotiations are the norm in multiparty negotiations most of the time, be it when the parties are companies or even countries. Therefore, it is legitimate to question what characterises team negotiations?

Team negotiations, as per the name covers teams from the involved parties. Each team member has usually an assigned role. As such individual roles are usually not known upfront it is important to try to understand and clarify which role each team member is playing. For instance, body language may provide some clues during procurement negotiations, especially if negotiations are done on a glass table, where unconsciously the *speaker*, usually sitting at the middle among his team members may have his or her feet pointing to the true decision maker, who as per experience tends to sit two places on the right of the *speaker* (however, this is not an exact science). Procurement negotiators are quite knowledgeable about such features, which helps them negotiate more effectively. Moreover, the emotions expressed by the parties may provide some clues in what concerns each individual role. Something obviously difficult to detect in the case of some specific cultures which appear not to express much emotions, as would be for instance cultures like the Japanese, as they tend to hide their emotions quite effectively. One is hardly able to guess if a Japanese is excited, happy or sad, as they tend to show the same face expression regardless.

Teams may become more effective in negotiation when compared with sole negotiators, because teams can gather more information, broaden the available knowledge base, and create more alternative scenarios for conducting negotiations. Additionally, some team members may assist the main negotiator in terms of keeping the objectivity of a clear set of goals during the distressed moments of the negotiation process. For such endeavour it may help to consider at least the following traits:

- Supporting one's arguments with documentation, technical or otherwise
- Avoid using excessive hype or unfounded claims
- Ensuring one's words and actions are coherent
- Bringing in technology experts to support one's own position, for some situations.

One common distribution of roles includes the three categories: (1) *Leader*, (2) *Clarifier*, and (3) *Accountant & Strategist*. The negotiation *Leader* has the main role during the negotiation, even if he has a constituency and as such is not the end decision maker. He is responsible to set up the right climate from the beginning, the opening statement, asking questions and exploration, testing the other party, presenting bids and arguments, making concessions and deal close. The *Clarifier* has typically a second speaking role, summarizing and reformulating what has been said, asking reality-testing questions, testing credibility, smoothing relations and promoting agreement, help the leader when under tension, further develop the themes launched by the leader, but he should not negotiate. The clarifier profile shall also help influence and persuade the other party (Conger, 2000). Finally, the *Accountant & Strategist* role corresponds to someone less predominant regarding speaking. He or she calculates figures, checks consequences of the leader's offers and of the other party offers as well, check time and controls the strategy never losing sight of the intended negotiation objectives. Of course, teams should

match in number on both sides, therefore, with exception for the leader's role, there may be more than one clarifier for example.

When hosting a negotiation meeting, some insights may be of help, as for instance the disposition at the negotiation table. For example, a round table tend to convey a less confrontation endeavour, something which may actually help in building a good mood during the 'at the table' stage and contribute for better negotiation outcomes.

A Note on Negotiation Tactics

Among several possible categorizations, negotiation is a political process and sometimes it is better to establish a negotiating team in order to reach better agreements, while avoiding deadlocks. However, such negotiation team' members shall have a clear understanding about who within the team will be speaking, what, and when; when to disclose information and what are the roles of each one in such negotiation teams, always taking care of possible misleading (Shell, 1991; Gosselin, 2007).

One party may make use tactics, which are designed to throw the other party off balance and divert their thoughts away from the substantive negotiation issues and set of goals. When facing adversary tactics, the first step in order to counter them, is to recognize them, and then act accordingly (Table 5). Recognition of the opponent's different tactics is not an easy task to accomplish, and demands specific training and practice (Parker, 2003). Sometimes, however, just naming the tactic is quite effective for the neutralization of its intended effect, as it raises at least some confidence on the side against which the tactic was intended.

Table 5. Some typical negotiation tactics and potential responses. [Adapted from Águia, Correia, & Frias (2021)]

Tactic	Response
Intimidation	Ignore it, as a general rule
Lying	Ask for supporting evidence
Deadlines	Ignore them
Ultimatums	Ignore them
Threats	Challenge them
Bluffs	Call them to avoid being victimized

A note on tactics would not be complete without addressing the subject of opening a negotiation, and more specifically the critical question of "who shall open the negotiation first?". For many years it was argued that one should let the other party opening the negotiation (Galinsky, 2004). Last decades research on decision making, however, suggests that it may actually be better to open a negotiation, especially if one did an adequate negotiation preparation and planning, and has good enough information concerning the subject or subjects under dispute. Such argument is backed by the "anchoring effect", a situation where the first figure laid down will trigger a bias in the other party's mind which *ceteris paribus* may make him or her adjust their opening demands, and sometimes affect their concession pattern in favour of the opener (Hammond, Keeney, & Raiffa, 1998). Hence, the advice would be: in case of a proper

preparation and planning one should always be the one making the first offer. Only in case one could not prepare objectively or there is a lack of information, may one let the other party open first. This is however a trapping situation in the case of long-term negotiations, as trust among the parties may be affected and difficult to repair.

Malhotra & Bazerman (2008) tell a story which involves Albert Einstein and the contacts he did with the Institute for Advanced Studies at Princeton, New Jersey, in the 1930s concerning his hiring by such prestigious institution. When Einstein was asked for how much would he ask for as a salary, he answered the head of the institute that he would accept \$3,000 annually unless they thought he could have a living with less. As a reply, the responsible person from such prestigious institute answered that they would be happy to hire him and pay him \$15,000 per year. What happened in this case? Why didn't the Institute accept Einstein lower offer? It happens that if they would take advantage of Einstein lack of adequate information, they would risk a break in trust later on, just to witness such a brilliant physicist leaving for another employer, because the figure advanced by Einstein was well below the market standards.

Summarizing, one shall be aware of the main tactics that can be used, but probably shall be wise enough in order to avoid using them if trust is to be protected, especially important for long term relationships, be it in business or in life in general. Nevertheless, sometimes using tactics may help overcome a stalemate (Simpson, 2003; Sander, 2004).

ADDING ANOTHER LAYER OF COMPLEXITY - CULTURE

Culture has been described by some author as a sort of "lens". In the same way one wearing glasses see the world in a specific way, the same is true of culture. A culture is not wrong or right on its own. It is just different. And such shall be taken into account, specifically when in presence of negotiations involving people from different cultures. Intercultural negotiation does not have to take place when visiting different geographical regions. A Chinese person dialling from Shanghai may be communicating with someone in Denmark or any other country, and the potential for misunderstanding is there. Culture differences is not adequately described by cardinal points on the globe. Classifying cultures in terms of cardinal points – West *versus* East, or Northern *versus* Southern hemisphere – is not enough. Moreover, cultures have subcultures within the same region or country. Hence it is risky to generalise too much. However, the subject should instead be approached carefully when facing people from different cultures, and for such reason it is better to have some reference framework, than none, when approaching distinct cultures.

Culture Models

Every culture has its specific features. For example, when doing business with the Swedes it is common to be invited for a sauna. Regardless of how uncomfortable or even awkward that may feel, it may be impolite to refuse to be naked with a group of people in order to assure the close of a deal. Another example that could be mentioned would be the case of doing business in Korea, where socializing and singing Karaoke in a restaurant precedes and may be essential to close a deal. Or the case when doing business with Russians where it is not uncommon to have to engage in a considerable number of preliminary meetings before dealing with business issues, which may typically involve several rounds of vodka drinking, something that if refused may trigger suspicious feelings towards closing the deal. Such are cultural traditions and for most Western businesspeople such features may be a bit uncomfortable, but

Negotiating Across Cultures

for some other cultures such is part of the process, where one has to be known socially before business deals can be developed and closed.

As with any other subject, one uses models for decision support, hence, culture models are critical in approaching business across different cultures. Some culture models have been proposed, some of which are described below. The first framework was developed by Geert Hofstede, and the second one by Jeanne Brett (Hofstede, 2010; Brett, 2014). Despite some critics, Hofstede model is still a reference framework as a culture model, which has been updated during the last two decades. Hofstede suggested that culture is a sort of software of the mind, and proposed a model based on several relevant dimensions, known as *Hofstede Cultural Dimensions Theory* (Hofstede, 2010):

- Power Distance
- Collectivism *versus* Individualism
- Uncertainty Avoidance
- Masculinity *versus* Femininity
- Short-term *versus* Long-term orientation
- Restraint *versus* Indulgence

This theory helps in understanding different cultures and provide for optimal approaches when interfacing with a specific culture, taking into account these six dimensions, which demand some explanation.

Power Distance refers to how a culture accepts power differences and the distribution of such differences within institutions (family, business organizations or society at large). According to Galbraith (1983), the concept of power itself has a number of dimensions, but within the scope of this model is shall be understood in the broad sense. Some of the countries scoring high in power distance are Russia, Thailand and India, while examples of countries with low power distance could be Denmark, Netherlands or Israel.

The *Collectivism / Individualism* dimension is concerned with how individuals of a society define themselves; specifically, how closely independent members of a society considers themselves as individuals (“I”) versus as part of a collective (“We”). Greece is an example of a low collectivistic culture, while examples of high collectivistic cultures are Sweden, China, Singapore and Korea.

The *Uncertainty Avoidance* dimension refers to the extent to which a society is comfortable with uncertainty, and indirectly risk, or tries to control it. There is evidence that geographies, and cultures, that have been exposed to natural catastrophes throughout the centuries are associated with risk aversion, hence scoring high on uncertainty avoidance, something that may be reflected on their laws and something to take into account when doing business and negotiating with such cultures. Some examples of low uncertainty avoidance are Greece, Venezuela and Bolivia, while high uncertainty examples could be Germany, Austria and Switzerland. When negotiating with individuals of such cultures it is worth paying attention to planning and time.

Short-term/Long-term orientation. This cultural dimension is related with whether a culture (or nation) takes a short term or long-term perspective of live and business as a consequence. While not exclusive, many Far East cultures tend to fall into long term orientation, with China and Japan being prime examples.

The *Masculinity/Femininity* dimension is not associated to gender, but instead it expresses the extent to which a culture and society values competition and success. A high score on masculinity means a culture values success and competition while a low score is more typical of a femininity culture, which

places more value on taking care for others and quality of life. US could be an example of a masculinity culture while some Nordic countries an example of femininity cultures.

Finally, the *Restraint / Indulgence* dimension is related to the extent a society accepts these dimensions. *Restraint* is characteristic of a society that suppresses gratification and is based on strict social norms. Conversely *Indulgence* is typical of a society that allows relatively free gratification of basic and natural human drives, which may be related to dynamics of enjoying life and having fun.

From her side, Brett (2014) conceived a culture model which divides cultures into three main categories or prototypes: (1) *dignity* cultures, (2) *face* cultures, and (3) *honour* cultures.

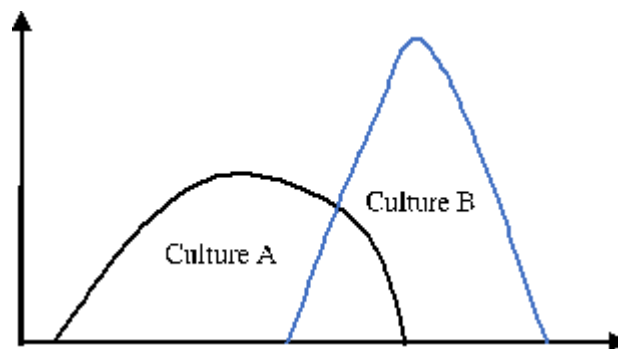
Dignity cultures are typical of Western Europe and North America, characterized by being relatively egalitarian in terms of power and hierarchy across society, low sensitivity when responding to insults, direct, rational and unemotional and have an analytic mindset. Obviously with a varied set of values.

Face cultures, whose stereotype could be East Asia is characterised by some marked hierarchical acceptance, while stable with medium stability. Such cultures typically defer to superiors for decision making and even punishment, where trust is more of an in-group feature, while distrusting out-groups. It is also characterised by a holistic mindset, something to take into account in cross-cultural negotiation.

Finally, *honour cultures*, which are more characteristic of geographies such as Middle East, Africa and Latin America may be described as socially and hierarchically dynamic, with some confrontational style where emotions are expressed. Distrust seems to be common both towards out-groups, and sometimes in-groups. In terms of dominant mindset such cultures are characterised by having both analytical and holistic mindsets.

It shall be reinforced that when intercultural communication takes place between cultures, that should not be seen as a question of “either/or” but instead as a guidance, because different cultures (A and B) may have some degree of superposition (Figure 3).

Figure 3. Two different cultures may have some common ground.



The amplitude in the figure 3 conveys the meaning of how disciplined or tolerant a culture is, while the wide or spread of the curve suggests the tolerance or spectrum within the respective culture.

Communication Challenges Across Culture

Communication across cultures is a broad subject with many nuances, which are quite relevant for negotiating across cultures. Therefore, only a couple of illustrative examples are presented. As English are the *de facto* business language, it is central to cross-cultural negotiation. Therefore, it is worth looking into the way in which the English communicate. Some English-speaking countries, other than the English nationals may feel uncomfortable or at least puzzled with some hidden messages conveyed within sentences which one may think he or she understands. Tables similar to Table 6 abound in the web and elsewhere, which illustrates that the first meaning one may think he or she understands just because he/she understands English may be wrong (Independent, 2015).

Table 6. Hidden meanings behind English language usage. [Adapted from Independent (2015)]

What the British say	What the British mean	What others understand
I hear what you say	I disagree and do not want to discuss it further	He accepts my point of view
With the greatest respect ...	I think you are an idiot	He is listening to me
That's not bad	That's good	That's poor
That is a very brave proposal	You are insane	He thinks I have courage
Quite good	A bit disappointing	Quite good
I would suggest ...	Do it or be prepared to justify yourself	Think about the idea, but do what you like
Oh, incidentally / by the way	The primary purpose of our discussion is ...	That is not very important
I was a bit disappointed that	I am annoyed that	It doesn't really matter
Very interesting	That is clearly nonsense	They are impressed
I'll bear it in mind	I've forgotten it already	They will probably do it
I'm sure it's my fault	It's your fault	Why do they think it was their fault?
You must come for dinner	It's not an invitation. I'm just being polite	I will get an invitation soon
I almost agree	I don't agree at all	He's not far from agreement
I only have a few minor comments	Please re-write completely	He has found a few typos
Could we consider some other options?	I don't like your idea	They have not yet decided

These examples show, however, that the English are very effective in the way they communicate, and capitalise in such use of the English language when in sales or other negotiation situations. Having written this, English communication and culture is not wrong, but is just different and for the businessman and negotiator facing such culture it is worth paying attention to such details to end up at win-win outcomes when negotiating, or at least not conceding too much.

Communication also forces one to pay attention to the meaning of words across cultures. It is well known the sales fiasco of the Nissan "Pajero" model in Spanish speaking countries. If the marketing manager responsible for such product knew the meaning of "Pajero" in Spanish speaking countries he or she would be aware that driving such a vehicle with a "Pajero" display on the back of the vehicle would

make most of such people uncomfortable, to say the least. So, communication is a very delicate subject when communicating across cultures.

Different Perceptions of Time

Perception of time and deadlines are different across different cultures, with many western cultures having a perception that “time is money” and jumping immediately into business discussion, while far east cultures are more relaxed and before the conditions to enable business discussions are in place, time is not a problem (Meyer, 2015). Therefore at the eyes of many western cultures, time seems to take a whole new dimension where nothing seems to move in what business concerns. Pant (2016) provides further illustration of these concept of time being a relative one depending on the culture. For most western cultures time is seen as “linear” with a specific beginning and end, where businesses structure their activities by setting up milestones and deadlines, and failing to meet them may be seen as sign of incompetence. Conversely, for some eastern cultures time is more of “circular” endless concept, where everything is relative, and the stress is put on doing the things within harmony as opposed to meet a deadline.

Moreover, some cultures are more oriented to the future, while other are more attached to the past. This feature can even be spotted by the use, or not, of verbs future tense in normal conversations. Typical examples of future oriented cultures would be the United States of América and Japan, while a typical example of a past oriented culture would be India.

Another characteristic when dealing with time across cultures is the concept of *chronemics*, which categorizes cultures as *monochronic* or *polychronic*. Within monochronic cultures things are done one at a time, while within polychronic cultures several things are carried out in parallel more often. Examples of typical monochronic cultures could be Germany, United States of America, Britain, Switzerland, Canada, Scandinavian countries, but also Japan and Korea. As for polychronic cultures typical examples would be many Latin America, African or Middle East countries. A third category is however identifiable – that of cultures that fall in between the two extremes and where some southern European countries can be mapped for example.

ILUSTRATIVE CASES AND RECOMMENDATIONS

Negotiation is already a complex enough process, but when it involves parties with different cultural backgrounds it becomes even more complex as these may not even understand each other correctly – sometimes offending without intention. This section presents some insights to complement what was described so far for such an eclectic subject. A few situations are presented in the section to illustrate how cultural differences may doom even fine tuned organizations and businesses.

Lewis (2014) provides an interesting example concerning negotiating with Japanese that illustrates some interesting cultural features. Japanese take communication with others quite seriously. Hence, they prepare thoroughly. In this example, he went together with a colleague (who happened to have an Arab country cultural background), to negotiate the lease of some office in Japan. After some difficulty in securing the appointment with president of the company the owned the building, who happened to be some a seventy-year-old man. This Japanese gentleman used an interpreter and spoke for half an hour, explaining the history, who was the architect who designed it, the reputation and merits of such prestigious building, after which he terminated his remarks with the rental price. Having been presented

with a price within the range but perhaps leaning a bit on the high side, the colleague who had an Arab culture background quickly offered half of the asking price. Upon hearing that the president and his interpreter stood up quickly, smiled, leaned in compliment and left. Lewis and his Arab colleague never heard of these Japanese again. This case suggests that the Japanese negotiate in very different ways from the Arab cultures, being polite and never letting anyone lose face, sometimes even reluctant to say no. A mismatch like the one just described has as a consequence that such Japanese gentlemen will never be available again. He or she will always be ill, attending a funeral or on vacation.

Another example from the same author concerns a British salesman developing business in Finland. Finns are known for their extended silence during a conversation, suggesting that foreigners speak “too fast”. In the example this salesman was selling IT packages in Finland, and while he was with his Finn client, after presenting the features and benefits of his product, and presented the price, some £1,000, an endless like silence followed. As the client didn’t speak and uncomfortable build up, he promptly offered to reduce the price down to £900. As the Finn remained silent, he just offered another reduction and priced the product at £850 saying that such price was really the lower price he could sell the product for. Then the Finn spoke and said “OK, that’s a wonderful price”. But what really happened was that the British talked too fast for a Finn speaking pace, and this client who was already happy with the £1,000 price couldn’t even find the right words to express his agreement in time, ending up accepting the salesman’s unilateral price concessions. The lesson from this example relates to the fact that different cultures have different speaking patterns and one should take that into account in the context of intercultural negotiations.

Finally, a third example involved a senior manager in a global company while leading a multinational team in the UK, comprising people from 25 different countries. One of the most competent engineers, a PhD educated Chinese national, when normally asked if everything was understood at the end of some project progress meeting, used to always answer “yes”. However, with time elapsing projects didn’t seem to run smoothly, until such professional was questioned about what was going on. With time it became clear that Chinese from China mainland either avoid saying “no” as they don’t want to let their respected manager become aware that they didn’t understand the instructions in the first place. Most often “yes” simply means “yes, I’m hearing”. As is understandable, such communication and understanding did not let the manager sleep well at night, which obviously demanded a progressive development of the mentioned engineer in order to communicate more explicitly and aligned with the general understanding of what would be expected within a global company, especially doing most business across western geographies.

Summarizing, the following set of recommendations may be useful for the practitioner and academic alike in preparing for intercultural communication, negotiation and management.

1. One should familiarise himself or herself with some traits and history of the culture he or she will face at the table
2. One should adapt the way one expresses disagreement when facing different cultures
3. Learn how the other culture builds trust
4. Avoid yes or no questions. Some cultures communicate more in terms of open questions
5. One should clarify upfront how such culture scores on the several cultural dimensions of the presented models
6. It is advisable to understand of the three culture stereotypes – dignity, face or honour cultures – is most likely applicable to the culture with which one will be negotiating

Above all and as part of preparation for intercultural negotiations, one shall be conscious that regardless of cultural stereotypes and models, there is always space for variation. Culture models are useful and a good guidance, however, such models should not be taken as exact science.

CONCLUSION

Negotiation, a particular case of decision making is perhaps the most relevant skill one should develop in life. As the world gets increasingly globalized, an additional layer of complexity impacts negotiation and businesses everywhere. Such layer of complexity is related to the meeting of different cultural backgrounds which is often the source of misunderstandings related to the way every distinct culture understands the world. This is a matter of mental models, which develop during people's lives and are closely related to the culture they are immersed in as child and then adults. From etiquette and communication patterns, up to different perceptions of time, all may trigger misunderstandings and derail negotiations which at the end may jeopardise business deals, preventing value creation for society as a whole.

As suggested by Sterman (2000, p.846), all models are wrong (in the sense of being incomplete), because they gather just a partially view of reality. Nevertheless, a model's worth is provided by its usefulness, and using a multi-model approach provides the bases for better decision making (Page, 2018). Therefore, it is worth becoming familiar with distinct culture models instead of sticking to just one, as by simultaneously using different ones, better decision making, interfacing and optimal cultural management will be achieved. As the twentieth-first century advances the subject of negotiating across cultures become more important and practitioners and academics everywhere should prepare for it in order for future businesses to perform better than they have been in the past, creating and distributing value across society.

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KEY TERMS AND DEFINITIONS

BATNA: Best Alternative to a Negotiated Agreement. The term would better describe its meaning if it was renamed as solution away from the table, because the “best alternative to the considered negotiated agreement” might be another negotiated agreement.

Collaborative or Integrative Negotiations: One of the two main types of negotiation. Usually characterized by a true attempt to reach a win-win situation for both parties in a negotiation.

Die-Hard Bargainers: People to whom every negotiation is a battle.

Distributive Negotiations: This is one of the two main types of negotiation and typically characterized by competitive approaches, where long-term relationships are not a concern.

Framing: How one understands and tries to describe a situation. The way one party frames a proposal or solution will affect the way the other party will behave.

Negotiation: A process involving planning and discussion aimed at reaching an agreement.

Positions: What the parties to a negotiation will be asking for. A bad initial positional may become a very expensive mistake.

Procurement: Concentrates on the strategic process of product or service sourcing, which typically involves researching, negotiation and planning. procurement is not the same as just purchasing.

Tactics: This refers to the specific methods, and sometimes processes, to implement a strategy.

Trade Off: To substitute or bargain one issue for another. A move typically found in many selling vs. purchasing actions.

Reservation Price: A concept similar to the walkaway point, i.e., that point in a negotiation range that when reached the negotiator abandons the negotiation. In this case, reservation price relates to the actual price involved in the potential purchasing.

Scenario: An initial set of conditions and timeline of significant events imposed on trainees to achieve exercise objectives.

Strategy: Defined typically as a planned sequence on how one intends to approach a negotiation.

Walkaway Point: A concept similar to the reservation price, however it may consider variables other than price, as would be the case of the reservation price concept, which is a particular case of the walkaway point concept.

Win-Win: Win-win refers to a negotiation outcome where both parties are better-off with the negotiated agreement, than without it. Some author may refer to it as “both-win” outcomes.

ZOPA: The acronym for “Zone of Possible Agreement”, which defines the ranges along which an agreement may be closed. Each party walkaway point defines the boundaries of the ZOPA. The ZONE gives a graphical visualization of the superposition between both parties’ negotiation ranges.

Chapter 15

Smart Tools for Tracing Organizational Competitive Behavior on Fast Decision Making

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ABSTRACT

Competitiveness is essential for an organization's success in both the public and private sectors. Using three well-known mathematical methodologies, this work has centered its analysis on factors that affect primarily organizational competitiveness viewed through three different scales (global, local, and businesses). Using these methods, researchers and decision-makers gain insight to perform a qualitative analysis over key metrics of each level looking for improvements in business competitive performance and elucidate the importance of intangible assets like strategy. The authors identified that although each tool can only let us know some aspects about system agents, after combining the three tools as a toolbox, it might be used in volatile and rapidly evolving settings when strategic approaches concentrate on accurate resource allocation that demands a lot of time.

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INTRODUCTION

There is a growing interest in learning how management teams make quick strategic judgments in high-speed environments (Das, 2019; Elbanna et al., 2013). Proactive companies act before future demand to make a difference in the environment and to aggressively pursue excellent business opportunities against competitors (Eshima & Anderson, 2017; Wales et al., 2020). The latter situation produces considerable instability for enterprises in a transition economy, generating uncertainty and making it unfeasible for companies to forecast future market demand and the business climate (Luu & Ngo, 2019). Consequently, in an unpredictable and frequently changing context, strategic approaches that rely on both distinction and low financial risk may run counter to classic strategic frameworks (Slater & Olson, 2001).

Entrepreneurial-oriented firms exhibit innovative and proactive business behaviors that explore possibilities with unforeseen outcomes (Covin et al., 2006; Luu & Ngo, 2019). The relationships between entrepreneurial orientation strategies and performance can take more complicated paths than the straightforward and favorable ones (Luu & Ngo, 2019), prompting the development of new techniques that capture the underlying nonlinear nature of these situations.

Arbaugh et al. (2002) and Soininen et al. (2012) observe that entrepreneurially oriented companies grow more quickly than those that are not, but they suggest that defining how a company becomes entrepreneurial is difficult to determine. Therefore, to address this challenge, the author have combined various analytic techniques beyond the typical central tendency measurements with the purpose of linking growth and entrepreneurship, requiring that companies identify (1) changes in market expectation (Fombrun & Wally, 1989), (2) acquisition of additional resources, and (3) knowledge of how to employ these resources. These novel resource combinations improve their ability to adapt and uncover new business prospects that allow for the establishment of new businesses (Eshima & Anderson, 2017).

How do businesses respond effectively to a turbulent environment? It is an issue that has sparked the curiosity of both experts and strategic professionals, especially in light of the outbreak of the current COVID-19 pandemic (Wenzel et al., 2021). According to Wenzel et al. (2021), more research is needed to analyze the development of strategies in uncertain conditions during times of crisis, as well as to comprehend the temporal dynamics in the crisis response process. This means that one response may be superior to another at certain times, pointing to a window of opportunity in which the strategic performances are more or less successful. An organization's competitive performance is a multidimensional concept in strategic management that intrigues both scholars and managers, since it can include variables that are not highly associated (Combs et al., 2005; Rust et al., 2004). This high dimensionality on decision-making suggests the use of more than one analytical technique at same time, at least to handle reductions in both performance and dimensionality.

The analytical information extracted from the data reveals the behavior of a system, providing decision points and assessment that can be used prospectively or reactively, depending on the strategic orientation and the organization's responsiveness to the findings. However, Le Cam (1986) points out that summarized data reduces the information that comes from the data correlation, and a variety of techniques must be used to explore the raw data to exploit avoided correlation possibilities.

To enhance the traceability of strategies that help obtain information, make rapid decisions, and reveal clues about hidden dynamics of a complex social system (Moallemi et al., 2020; Troisi et al., 2020), the authors of this paper used a quantitative approach that combines analytical tools. The quantitative approach has an explanatory scope and a non-experimental design. To explore the above, the authors used databases such as (1) the World Competitiveness Ranking, (2) the National Planning Department of

Colombia, (3) the Colombian Open Data Platform, and (4) data from the Superintendence of Companies in Colombia to understand how variables help to compare agents and infer underlying complex dynamics. To support this scope, the contingency theory approach suggests that, under turbulent conditions, it is necessary to analyze more than one point of view, such as correlating various analytical techniques and data sources.

In this chapter, the authors apply three complementary techniques: one at the corporate level to reveal the underlying dynamics, a second at the country level to compare performance, and a third at the global level to reduce and analyze the importance of variables and correlations associated with a competitiveness proxy.

BACKGROUND

Firm Performance and Competitive Advantage

The term “competitive advantage” is widespread in economics and strategic management; however, although the term itself remains undefined and controversial (Leiblein, 2011), the most common studies find “competitive advantage” to mean superior economic performance in a situation of equilibrium, consistent with the concept of a short-term market view. The studies about competitive advantage were firmly anchored in historical analysis, where the complex critical phenomenon (Chernov & Sornette, 2020; Sornette & Johansen, 1997) depends on the active presence of a firm’s inner factors, such as the CEO or its executives. Therefore, strategic issues are analyzed under the assumption that identifying what successful firms do would make a difference, meaning that better leadership would lead to better results than those of one’s competitors (Cockburn et al., 2000).

Porter (1981) goes further by arguing that the structure of the market creates barriers to entry in the industry and further influences the long-term profitability of the company. Analyzing five significant structural forces—threats from potential entrants, supplier power, purchasing power, substitute products, and internal competition—Porter argues that a firm can exploit its competitive advantage by positioning itself in an optimal market and then maintaining this advantage under a stable worldview (D’Aveni et al., 2010).

The competitive advantage of a firm is determined by two primary forces: an endogenous force based on resources and capabilities and an external force based on the market position. According to the resource-based view (RBV) of the firm (Sellitto et al., 2019), the gains that are perceived by innovators and that occur between the introduction of an innovation and its successful dissemination are an example of a firm’s dynamic capacity to renew advantages over time (Lütjen et al., 2019).

It is well known that the complex dynamics behind competitiveness are far from equilibrium dynamics (Sellitto et al., 2019). Using return on investment (ROI) as a measure of firm performance, Jacobsen (1992) concludes that profit levels converge from 1970 to 1983 but do not persist. Using an original method, Wiggins and Ruy (2002) also found that only a rare minority of firms improve their performance and that the duration of sustainability is shorter.

At the regional level, the concept of regional competitiveness capacity (RCC) combines the notion of comparative advantage, Porter’s concept of competitive advantage, and inefficiency. Underlying the comparative blessings of every nation, area, or town are elements that include the endowments of

resources, surroundings, and technical knowledge. Conventionally, comparative benefit operates at the extent of the nationwide financial system.

Temporary and Sustainable Competitive Advantage

Porter's five forces model and the RBV are based on a stable worldview (D'Aveni et al., 2010). However, a growing amount of research indicates that previously stable settings are becoming unpredictable, primarily due to rapid technological and market demand changes (Andreovski & Ferrier, 2019).

The competitive advantage may be lost if creative destruction processes occur in markets that are characterized by shocks and technical discontinuities (Schumpeter, 2010). Such aggressive and hypercompetitive settings may disrupt the equilibrium between industry participants, eroding the better performance of the beneficial firm.

Today, accelerated competitive intensity in several industries has weakened each of the traditional sources of competitive advantage (Dagnino et al., 2021). Researchers are seeking to resolve this problem while capturing and creating opportunities and initiatives by generating a temporary competitive advantage (TCA; D'Aveni et al., 2010). This is done by designing and implementing a tactical procedure for each competitive movement to be undertaken. Therefore, TCA is characterized by a faster convergence of the company's profit to the average value of the sustainable competitive advantage (SCA) of the industry.

RBV management is a type of management style that is founded on (1) imperfect information regarding the economic competitive structure, (2) the relationship between company resource availability and the scarcity of company resources, and (3) the development of TCA (D'Aveni et al., 2010).

According to Andersén et al. (2016), the RBV uses the heterogeneity of a company's resources and capabilities to shape its productivity. Then, TCA will be available either through an emphasis on innovation and industry imitation or by organizing resources and capabilities to recognize and harness innovative opportunities.

These perspectives characterize TCA resource management and highlight its leading role in selecting and implementing choices that improve the way companies can use a given set of resources (Dagnino et al., 2021).

Management at Firm Level

Under the assumption that dynamic capabilities are a useful way for companies to address technology and call for uncertainty, Dagnino et al. (2021) propose three levels of dynamic capabilities (DCs). The first set of DCs relates to scanning, perceiving, finding, and exploring processes across markets and technology. The evaluation of current and emerging capabilities, as well as investments in technologies that enable marketplace recognition, make up the second set of capabilities. The third set of DCs (asset expansion, consolidation, protection, and reconfiguration) covers the recombination of resources and operational capabilities, adapting them to the company's development, market, and technological changes.

Domain controllers related to knowledge protection and reconfiguration increase organizational flexibility to make strategic decisions and consolidate resources as quickly as possible in uncertain competition with limited time to build a portfolio of resources and knowledge (Conboy et al., 2020; Dagnino et al., 2021). In addition to improving their operating efficiency, firms can absorb environmental shocks by being proactive, building greater slack resources, and anticipating demand. Furthermore, they can

enact technological changes to ensure an aggressive approach to local and worldwide competitors (Williams et al., 2017).

Regarding resource-based management of TCA at the enterprise level, we finally point out the competition traps and the coevolution of knowledge and skills. In addition to external forces, we note the coevolution between internal organizational forces and the predecessors of the TCA.

Management of Interfirm Level

Intercompany relationships allow firms to gain access to the production experience of their partners. Companies can acquire tacit knowledge as a result of building social capital with their clients or external partners; by tapping into these intercompany relationships, a strategic resource is created through access to a significant amount of knowledge and associated interfirm networks (Della Peruta et al., 2018). This can affect the strategic devices that support firms in managing the opportunity exploitation process. These benefits influence interfirm longevity and the company's aptitude to achieve TCA.

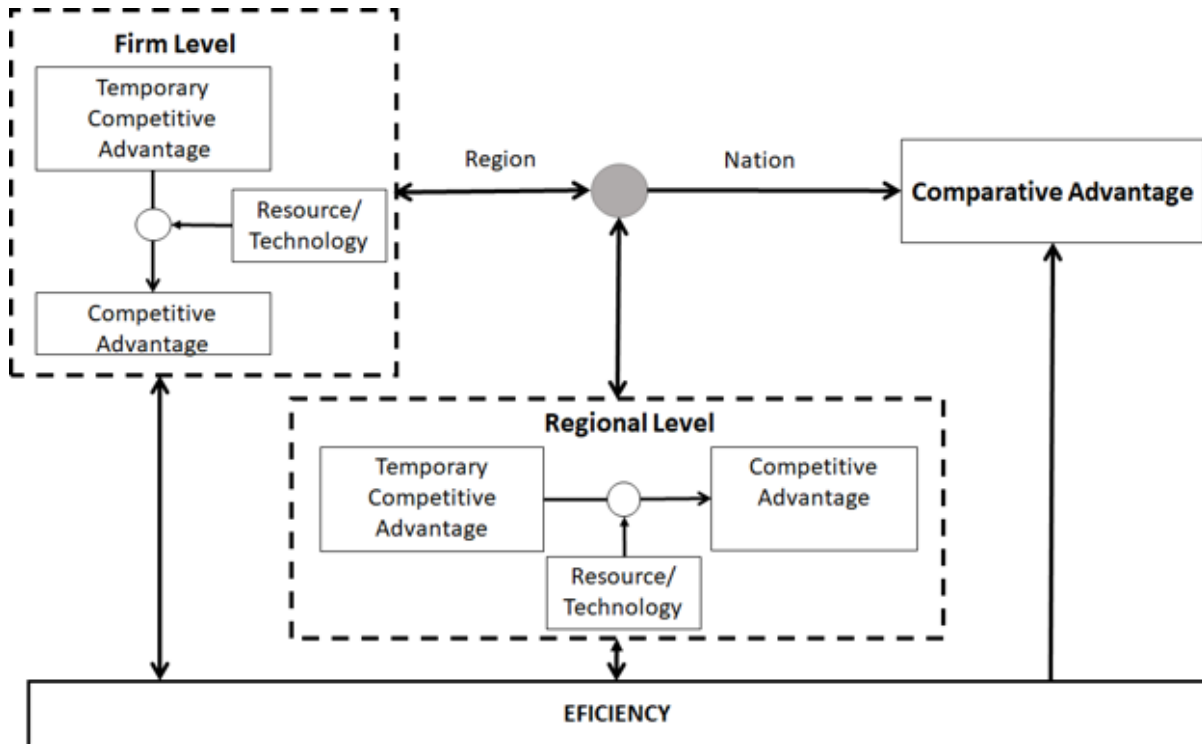
Highlights

The literature review points out the following outputs:

- Competitiveness results from a complex dynamic that is normally measured through merged data (income statements, balance sheet, installed capacity, and other quantitative measurements), suppressing qualitative aspects such as strategy, economic environment, and planning processes, immersed in the component moderator in the relationships depicted in Figure 1.
- Business development is intertwined with the strategic and decision-making processes. Many strategic planning models use mathematical support to gather information and create holistic approaches to build short-, medium-, and long-term strategic plans that are focused on improving risk management and business sustainability.
- The construction of a competitive advantage can be done through sources such as differentiators, specialization, or reactivity regarding the environment, thus generating transitory advantages that are usually intensive in resource use and focused on short-term objectives.
- Efficiency is a multidimensional measure focused on short-term time lapses. The performance of the long-term strategy depends on the flexibility and adaptability to address further opportunities beyond efficiency.
- Socioeconomic dynamics are complex phenomena, which does not mean that they cannot be analyzed. This can be done in the same way that agglomerated or grouped data screen the correlations and, therefore, potential causes that motivate the search for new approaches to making inferences about them.
- Each grouping scale presents its own dynamics (micro, meso, and macro systems), affecting the flow of information and its asymmetry associated with the approach presented by the RBV model.

Figure 1. Different levels in a conceptual model about competitiveness

Source: (Author, 2021)



COMPETITIVENESS COMPLEXITY

Competitiveness measurements—-independent of global, local, or business level measurements—are based on merged data that are collected under a variety of metrics, where input and output variables are determined to define some type of efficiency or performance of the observed system (Cristelli et al., 2013; Tacchella et al., 2013).

Merged data indicate only an instant picture of complex and time-dependent dynamics that involve resources and capabilities to create the compiled result, hiding the complexity of processes from indicators and metrics. Therefore, it is not a simple task to reveal such phenomena after agglomerating, ranking, or generating indicators (Hidalgo & Hausmann, 2009; Karplus et al., 2021).

Many of these complex interactions involve intangible assets such as strategy, use of resources, trade policies, and economic changes, among others. These aspects affect the competitive development of organizations and, unfortunately, they remain buried under the consolidation and ranking process (Cristelli et al., 2013).

If a competitiveness measurement is made from models that consider both information theory and Shannon's entropy (Sellitto et al., 2019; Tacchella et al., 2013), it is possible to explain the existence of these intangible assets, their impact, and the presence of planning processes for short-, medium-, and long-term strategies that take advantage of endowment capabilities by all agents that interact with the economic environment (Bayrak et al., 2021). Thus, from a quantitative approach, the main objective is to gain information by means of analytic techniques to reduce uncertainty before making a decision.

To build an analytical framework that combines quantitative and qualitative information, we suggest the following techniques to embrace at least three different points of view: a long-tail distribution analysis (LDA) that allows one to infer the underlying dynamics given the shape of the distribution; a data envelopment analysis (DEA) technique that compares performance through efficiency from multiple inputs and outputs; and principal component analysis (PCA), a technique that permits analysis of variable importance and correlations. These techniques might allow explanations for at least part of the complex dynamics behind the merged data.

Therefore, these analytical tools are proposed by the authors as basic tools to determine the boundaries of a system, as well as indicating the existence of short-, medium-, and long-term planning processes for the construction and implementation of strategic processes. Additionally, some advantages of choosing these three tools are:

- Low computational cost,
- Ease of programming,
- High-speed data processing,
- Plotting of the results to determine trends and patterns, according to the number of dimensions analyzed, and
- An application to time series analysis.

In the following sections, the mathematical foundations of the three tools are presented. Additionally, we reveal some remarkable results found from the analysis of merged data from different levels of grouping (global, local, and business).

Analytical Tools

Long-Tail Distribution Analysis (LDA)

LDA is an analytical method, founded under a complex paradigm, that uses histograms to summarize and represent the dynamic information embedded in variables (Andriani & McKelvey, 2009).

The traditional statistical analysis focused on the central tendency measurements dismisses the inner dynamic complexity. However, from a complex point of view, the goal is to extract the overall behavior of the system, describing the shape of the distribution and relating its shape to other well-known behaviors (Elberse, 2008).

An LDA begins its analytical process by constructing the distribution of a variable of interest and then identifying whether the general shape of the empirical distribution fits with one of the well-known distribution shapes (i.e., normal distribution, exponential distribution, potential distribution, and Pareto distribution, among others) or at least with a combination of them. After this process, the next step is to interpret the output according to the following aspects:

- A normal distribution is a typical distribution in random systems that follow a high level of standardization or a repetitive process, such as machines that act by design and not by a purpose; for example, agents acting by opportunity, by chance, or by a short-term plan follow a normal-like distribution.

- The exponential distribution describes a system that does not exhibit cumulative advantage or memory; for example, agents acting naïvely follow an exponential-like distribution.
- The Pareto distribution describes a system that exhibits cumulative advantages, memory, or learning process; for example, agents acting according to a long-term plan follow a Pareto-like distribution (Yu et al., 2020).

It is possible to relate all known distributions with properties, but these three distributions are the common ones. Thereafter, a socioeconomic variable distribution can be analyzed using the general properties of the known distributions. This technique will generate useful insights to guide a deeper analysis that will require a statistical validation of the distribution form.

The LDA process requires the empirical distribution construction and the plot of this distribution to perform a shape analysis. This process aims to link a qualitative result to a quantitative process. Simple steps to build a useful distribution are:

- Calculating a distribution, in other words, a histogram, that could be a simple counting of events known as a probability density function or a cumulative counting known as a cumulative distribution function.
- Drawing the distribution and exploring the semi-log and log-log axis, because the exponential distribution exhibits a line behavior in a semi-log axis, and the Pareto distribution exhibits a line in a log-log axis.

Data Envelopment Analysis

DEA is a non-parametric approach to address the efficiency estimation problem of a set of units with original production plans, which has multiple outputs from multiple inputs (Luptáčík, 2010). The efficiency is known as a measure of outputs over inputs, which means a resource-based tool to analyze competitive advantage. The non-parametric function differs from a parametric approach where a known function is defined in advance and there are explicit assumptions about the statistical distribution of errors, for example, multiple linear regression techniques. Instead, DEA constructs a multidimensional frontier from inputs and outputs that envelop the so-called decision-making units (DMUs). The frontier defines the maximum efficiency and the position of each DMU inside such envelopment, establishing its relative efficiency, where the efficiency of a DMU is measured relative to the frontier (Luptáčík, 2010).

The solution of the multidimensional problem of multiple inputs and multiple outputs is made through linear programming formulated by Charnes, Cooper, and Rhodes (1978), where the fractional programming problem for each DMU is

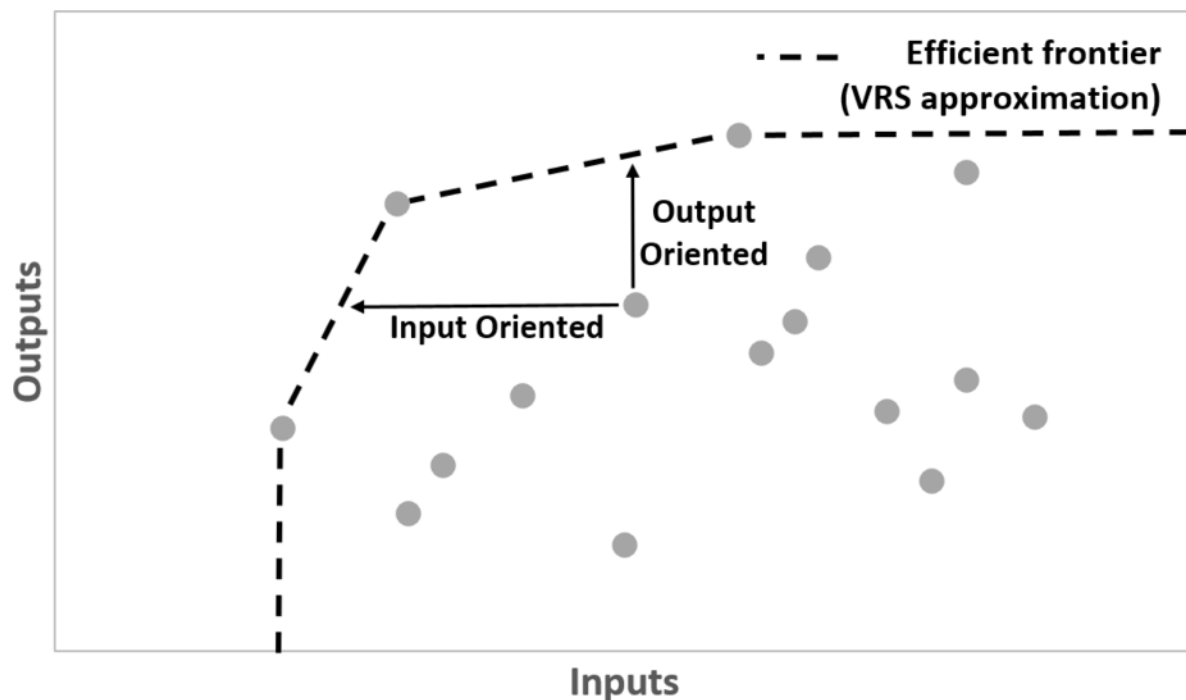
$$\text{Maximize } \theta = \frac{\sum_{r=1}^s u_r y_{ro}}{\sum_{i=1}^m v_i x_{io}},$$

with θ being the efficiency, s the index of the output, m the index of the input, y_{ro} the amount of output r used by the unit o , and u_r the coefficient assigned by the linear programming algorithm to output r . Variable x_{io} is the amount of input i used by unit o , and v_i is the coefficient assigned to input i .

The DEA algorithm can optimize input to achieve maximum efficiency, or it can optimize outputs for the same purpose. If the analyzer needs to be more efficient with fixed input resources to produce better outputs, a maximization process must be done over outputs (output-oriented approximation). However, if the analyzer needs to be accurate over the outputs, a maximization process must be done over inputs (input-oriented approximation). Figure 2 presents a simplified model of one input and one output production plan. The horizontal arrow represents input-oriented DEA, and vertical arrows represent an output-oriented approximation.

Figure 2. Points are DMU, dashed line the efficiency frontier following a variable returns to scale DEA model (VRS, convexity, and free disposability), and arrows represent output-oriented or input-oriented DEA approximation.

Source: (Author, 2021)



The mathematical constraints for an input-oriented approach imply:

$$\frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m v_i x_{ij}} \leq 1,$$

$$u_r \geq 0, v_i \geq 0,$$

where j is another DMU different from the analyzed DMU. If the first constraint is greater than or equal to 1, that implies a DEA output-oriented approach.

According to Bogetoft and Otto (2010), the basic assumptions in a DEA efficiency measurement are:

- **Free Disposability:** Unnecessary inputs or outputs can be discarded.
- **Convexity:** The weighted average of feasible production plans is also feasible.
- **Return to Scale:** Feasible solutions can be scaled.
- **Additivity:** Two feasible production plans can be added as a new feasible plan.

Different DEA models depend on relaxing or emphasizing one or more assumptions.

The analyzer that uses the DEA algorithm faces two main issues related to the model approach:

- An accurate choice of set variables as inputs or outputs, and
- Selection of the appropriate model and orientation (input or output) according to the system and the proposed assumptions.

Principal Component Analysis (PCA)

PCA is a non-statistical technique used for dimensionality reduction (Abdi & Williams, 2010), which preserves the maximum amount of information about a multidimensional data set with just two-dimensional data representation.

In managing multiple variable systems, one of the main issues is how to represent and analyze the entire problem with a simplified visual plot. In the case of a set of n variables to be analyzed, it is needed $\frac{n \times (n-1)}{2}$ XY-graphs to represent all system information, without discarding variables because

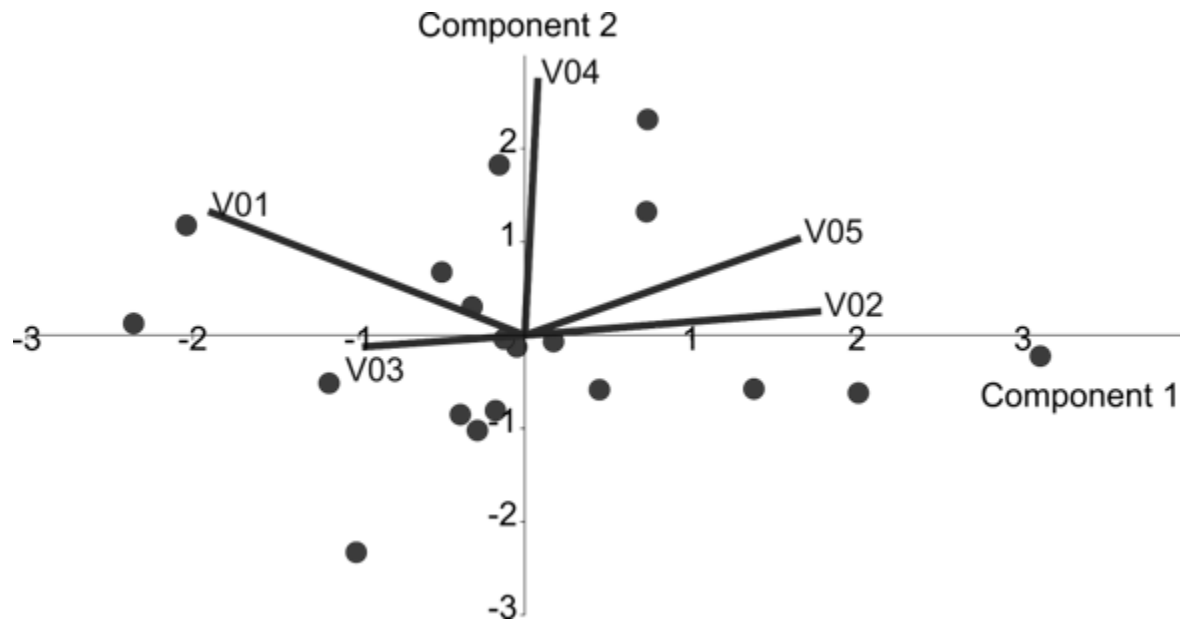
of their high correlations. PCA calculates new variables named components by a linear combination of original variables; the combination aims to collapse the maximum system information into the so-called principal components (Hammer et al., 2001). The algorithm uses a linear LU-algebraic decomposition (lower-upper decomposition) so that not only two components are calculated, but the first two components are used to draw a simple plot preserving the maximum information, as was mentioned before.

The PCA technique can be viewed as a distance measurement between every element, and the resulting distance matrix is used to draw a “map” in two dimensions. An analogy can be found in cartography, where a three-dimensional terrain is drawn in a two-dimensional map but by using statistical information to perform the graph. To determine how to place a point on the graph, the technique performs a maximization of the discrepancy, in other words, the distance between elements. As a distance measure, PCA uses the Euclidean measure, resulting in an XY graph in which points are as far as possible from each other. It can seem counterintuitive, but if there is a pattern in the XY graph as a cluster, there is statistical evidence that elements are similar or “close,” because the technique attempts to maximize the distance between them.

The PCA technique is a particular implementation of the multidimensional scaling technique, where the Euclidean distance is used to measure the distance between elements. Other distance metrics can be selected in a general multidimensional scaling approximation also related to clustering techniques (Patel et al., 2022). Figure 3 depicts an example of the resulting PCA XY graph, from a random data set of 19 points and five variables.

Figure 3. PCA XY graph points are elements, rows, or registers in the data set; horizontal and vertical axes are the first and the second components; eigenvectors from the origin represent the relative weights of each variable V_i to each component

Source: (Author, 2021)



The resulting XY graph represents the relative position of every element in the two first components. The PCA algorithm computes components both as a linear combination of variables and as an optimal information problem, implying that near elements are highly close given the Euclidean distance. The eigenvectors represent the weight of the variable to the horizontal and vertical components. Given Figure 3, variable V04 has an enormous weight in the vertical component and V02 has an enormous weight in the horizontal component. An orthogonal eigenvector means a low correlation between variables, and similar or close eigenvectors mean highly correlated variables. In summary, a PCA XY graph is a powerful graphical tool for exploration.

Data Collection and Corpus Treatment

To perform a practical example of the toolbox usage and illustrate some of the possible outcomes, three public databases were selected: one at the corporate level to reveal the underlying dynamics (local industry), a second at the country level to compare performance (regional), and a third at the global level to reduce and analyze variable importance and correlations (global). The list of databases consulted and downloaded is presented in Table 1.

The data analyzed in this work were retrieved from open and public databases, available for use and analysis by any researcher under a creative common and fair use license.

Table 1. Data sources

Level	Source	Collected Data
Global	World Competitiveness Ranking, IMD Business School (IMD, 2021)	Historical competitiveness annual data were collected from 2005 to 2020 of countries' ranking, pillars, and components.
Regional	Sisfut 2, National Planning Department (Departamento Nacional de Planeación, DNP), Gobierno de Colombia (Departamento Nacional de Planeación, 2021)	Historical financial statement and cash flow of departments and counties from 2012 to 2020
	Datos Abiertos (Open Data Platform), Ministerio de Tecnologías de la Información y las Comunicaciones (MINTIC), Gobierno de Colombia (Ministerio de Tecnologías de la Información y las Comunicaciones (MINTIC), 2021)	Historical expenditure and budget from 2011 to 2020 for governmental entities in each department.
	Terridata, National Planning Department (Departamento nacional de planeación, DNP), Gobierno de Colombia ((Colombia), 2021)	Historical expenditure and budget from 2011 to 2020 for departments and counties in Colombia.
Local industry	Integrated corporate information system (Sistema integrado de información societaria, SIIS), Superintendencia de sociedades, Gobierno de Colombia (Superintendencia de Sociedades, 2021)	Historical financial statement and cash flow of the same 27,165 industries from 2005 to 2020, International Financial Reporting Standards (IFRS) and International Accounting Standards (IAS).

Source: (Author, 2021)

To compile the World Competitiveness Ranking database, the methodology suggested by the International Institute for Management Development (IMD) was followed, and the pillars were rebuilt according to the indicators for the years analyzed. No modification was made to the raw data presented by the source.

The financial statements and cash flows were compiled from the different sources. A consolidation of the accounts was conducted, moving from the International Accounting Standards system to the International Financial Reporting Standards to allow for comparisons and to generate a single database for all years analyzed.

The information of the companies was classified by economic sectors in accordance with the International Standard Industrial Classification. After selecting the data by company, the companies were anonymized and only their International Standard Industrial Classification and the region were retained. All records that presented incomplete information in the raw data were suppressed. The final databases were stored in comma-separated values files and processed in R-project software.

World Competitiveness Index Insights Extracted by PCA

A PCA technique was applied to the World Competitiveness Index (WCI) to depict a general overview of countries given multiple variables. PCA is an exploratory analytical tool, also known as descriptive analytics, since the aim is to visualize the multidimensional system, also referred to as visual analytics. The general objective of this technique is the dimensionality reduction that means understanding how variables are correlated and, simultaneously, how they can be used to separate elements by similar conditions in a visual plot.

Because PCA requires a complete data set without an imputation process about data, the analysis was conducted for all 63 countries and 17 variables of the WCI. It is suggested when performing PCA that, when variable scales are different, each one should be normalized to a mean of zero and a standard deviation of one; such a procedure is often implemented by the software used. The computation was performed using PAST (Paleontological Statistics) software from Hammer et al. (2001). The PCA XY graph is depicted in Figure 4.

Figure 4. PCA XY graph of countries with data in the WCI 2020, where principal component 1 concentrates 52.3% of the variance and component 2 concentrates 9.1%.

Source: (Author, 2021)

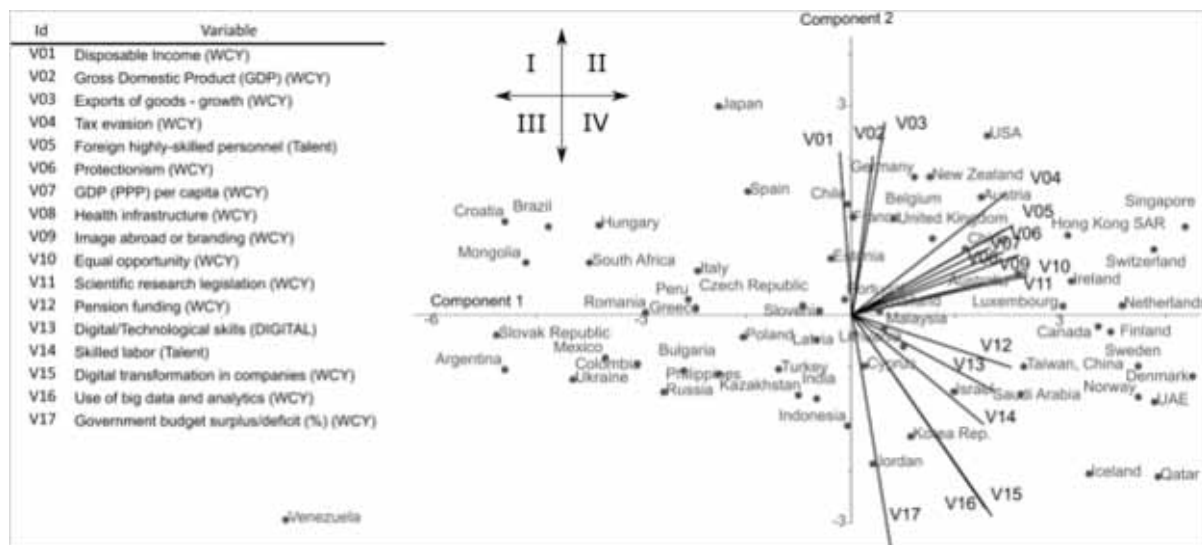


Figure 4 illustrates two main groups of variables given the direction of the eigenvectors V_i , those going downward and those going upward; moreover, all of them are to the right but V01 (disposable income). This distribution allows for analysis of the results by quadrant. It is important to keep in mind that the PCA X-Y representation collapses 17 dimensions in two main axes, each of them as a linear combination of the 17 original dimensions.

As presented in Figure 4, the PCA result can be described qualitatively under the following premises:

- The vectors indicate the development trends of the macrosystem, and
- The magnitude of the vectors represents the importance of each component. Considering the previous premises, we can address the following insights:
 - The upper quadrants (I and II) represent economies that have robust inner structures, with structured policies and long-term strategic development plans that are in the process of implementation.
 - The lower quadrants (III and IV) represent economies that have volatile or less resilient structures that are reactive to economic changes and that tend to implement short-term plans.

- The quadrants on the left (I and III) represent the countries that have a low performance in the execution of their planning.
- The quadrants on the right (II and IV) represent the countries that have a high performance in the execution of their planning.
- The economic growth of a country will depend on the country's efficiency in the execution of development plans and its strategic objectives.

The PCA technique provides a simpler XY representation that separates multiple agents into quadrants and indicates the variables used to divide them. With this analytical tool, the information about the dynamics of agents inside a system increases through the systematic separation and elucidates changes in the scatter distribution. This makes it possible to identify similar or dissimilar agents, in this case countries, and the result is in accordance with what was found by Kurek et al. (2021).

Data Envelopment Analysis Reveals Performance in Colombian Competitiveness Index by Regions

The DEA technique is applied across 32 regions inside Colombia using as main variables the funds invested in education, health, public services, development promotion, and culture, where the first three are inputs and the last two are outputs. The aim of using DEA is to calculate an index to compare regions and gain insights into the complex process of management.

The DEA technique allows for approximating the latent process of strategic decision-making through a comparable efficiency.

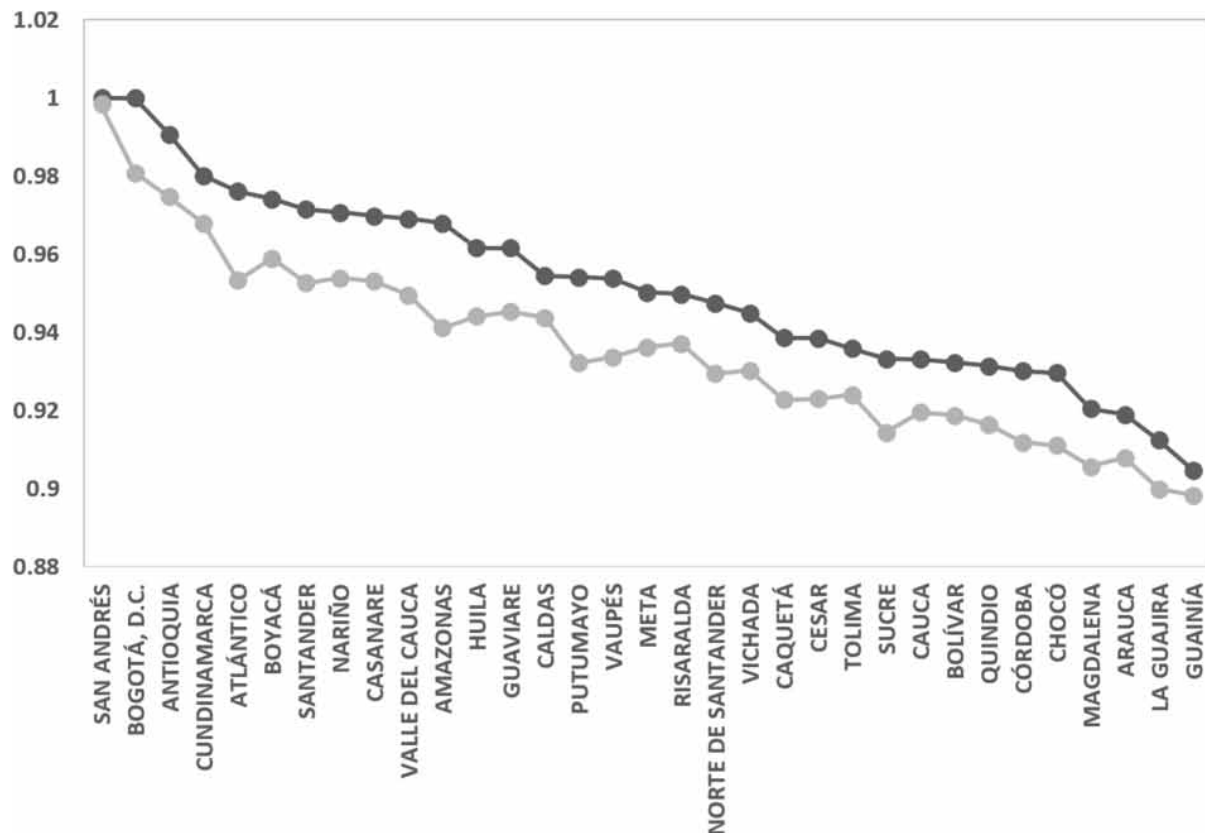
Results applying DEA are depicted in Figure 5, where the efficiency is calculated in an output-oriented approximation using constant returns to scale assumptions (constant returns to scale, convexity, and free disposability). The figure compares the basic approach of efficiency to cross-efficiency (Liang et al., 2008). Cross-efficiency measures the efficiency of each DMU given the weights of the others (remembering that DEA calculates optimal individual weight). Using weights of the others gives n different efficiencies, where n is the number of DMUs. Finally, a mean by DMU is calculated. The resulting cross-efficiency is, by construction, less than basic efficiency and prevents being efficient by only one high output.

The output-oriented approximation is selected because, in public policy, it is difficult to propose less investment in inputs rather than increases in output. An observation is that, except for San Andres, all regions seem to base their efficiency on one output because the cross-efficiency diminishes the efficiency. An interesting observation is that the efficient frontier is defined by two regions: the smallest one, San Andres, which is an isolated system since it is an archipelago, and the capital region of Bogotá, demonstrating that efficiency does not depend on the size.

The DEA technique provides an index to compare agents—in this case, regions inside a country—which allows one to infer strategies from their performances. The DEA technique compares different regions with similar conditions: They are regions of the same country despite their significant differences. Therefore, both these preliminary results in the case of Colombian regional competitiveness and what Charles and Diaz (2017) stated in Peruvian case suggest the use of DEA in cases with highly heterogeneous performances.

Figure 5. Ranked efficiency of the 32 regions in Colombia; darker points are basic efficiency output-oriented and lighter points are the cross-efficiency

Source: (Author, 2021)



A General View Through LDA About Colombian Firms' Competitiveness Complexity

As noticed previously, consolidated data reveal only an instant image of comprehensiveness that includes resources and capabilities to create a compiled result. However, other comprehensive processes are hidden behind the indicator or metric. Furthermore, this section analyzes the critical phenomena at a firm level by using the LTD approach. This is because of the unpredictable nature of stable states that Andreovski and Ferrier (2019) discussed as a result of fast technological and market demand changes, together with creative destruction processes analyzed by Schumpeter (2010) and characterized by shocks and technical discontinuities. We choose as variables for this analysis costs, revenues, assets, and operating profit because each is related to financial performance indicators.

The following results reveal a double-Pareto distribution, which means two different dynamics that interact inside the system.

Two Competitiveness Dynamics

Typically, the TCA is focused on the use of resources to enhance the position in a market. Meanwhile, SCA pursues a sustainable competitiveness advantage by using all available technological resources of the company. Figure 6 illustrates the income distribution of 27,165 Colombian companies, registered in the database of the Integrated Corporate Information System (Superintendencia de Sociedades, 2021). Figure 6 indicates that the distribution structure remained similar throughout the first years, but it manifested a structural change in 2005. This change implies that companies reinforced their short-term commercial initiatives at even shorter times.

The result presented by the LDA suggests that companies can be classified by their dynamic response to environmental changes, revealing the short-term implementations to face changes in the market.

The total assets extracted from the financial statements of the companies were used as an input variable for the analysis depicted in Figure 7. The result allows for a determination that, in 2015, companies with assets below 1,500 million pesos concentrated on the acquisition of assets predominantly more focused on short-term actions, acquiring resources for potential moves to an SCA.

Figure 6. Colombian firms' operating revenue log-log scale density distribution by years; the data on the x-axis are in thousands
 Source: (Author, 2021)

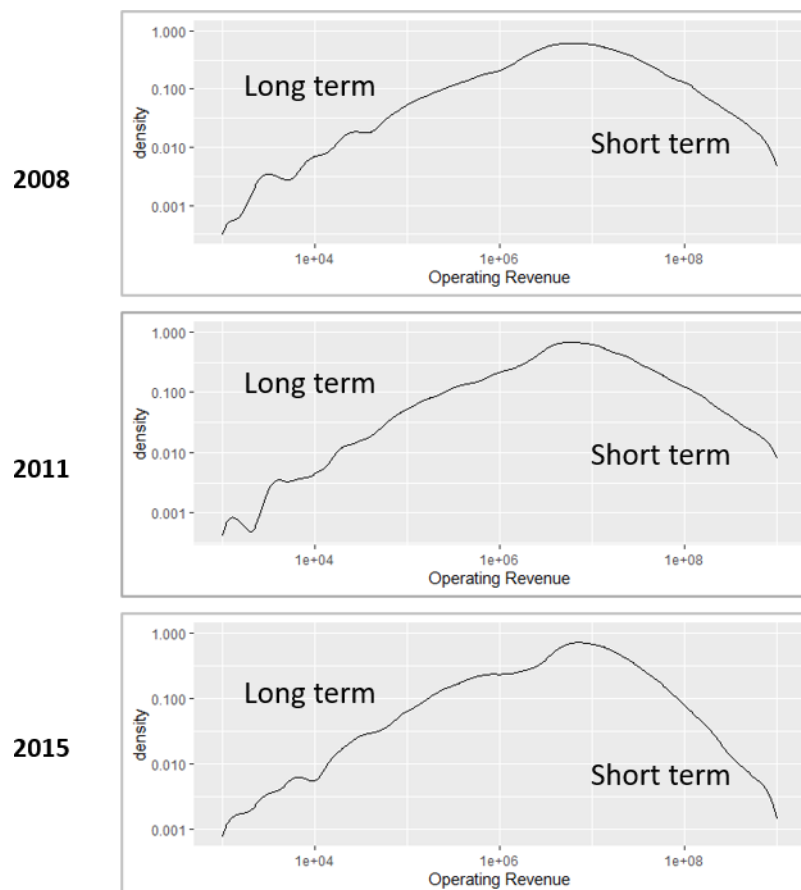
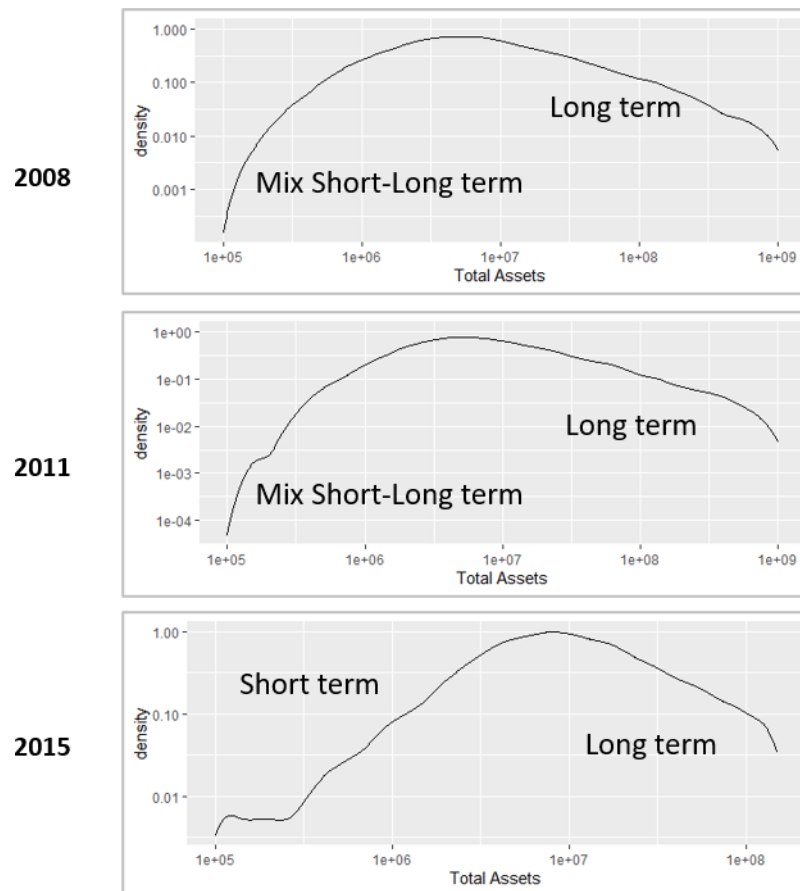


Figure 7. Colombian firms' total assets log-log scale density distribution by years; the data on the x-axis are in thousands

Source: (Author, 2021)



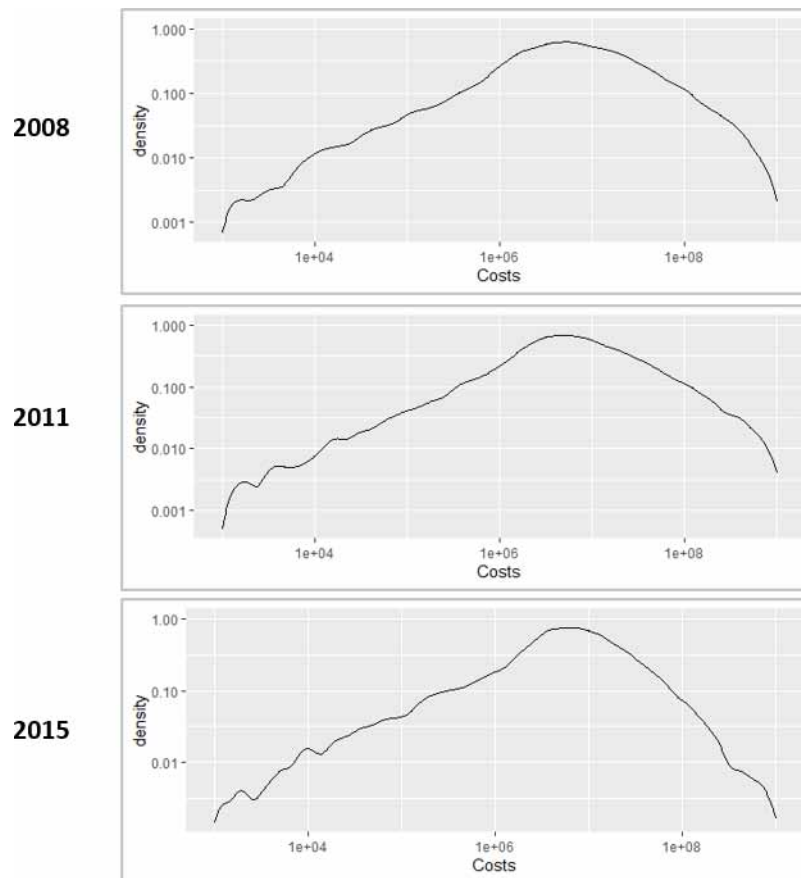
The results imply that companies characterized by high income adapt the quickest to market movements, remaining stable in their policies for the acquisition of new assets. Among companies with lower assets and lower comparative income, it is confirmed that companies under the TCA scheme are intensive in the expenditure of resources, focusing on all resources in the short-term execution.

After a review of cost management, Figure 8 indicates the presence of two different dynamics in which short-term plans predominate over the long term and cost control is the most important criterion to preserve the presence in a market.

In Figure 9, the LDA was applied to the operating profit, revealing a strong change in the dynamics in 2015. Here, it is intriguing that, prior to 2015, the short-term dynamics remained the same for the entire population; however, in 2015, that symmetry changed (see Figure 9). Although this book chapter does not pursue an answer or a model to explain the nature of this change, it is still revealing that a group of companies have opted for a long-term rather than a short-term approach in their earnings management.

Figure 8. Colombian firms' cost log-log scale density distribution by years; the data on the x-axis are in thousands

Source: (Author, 2021)



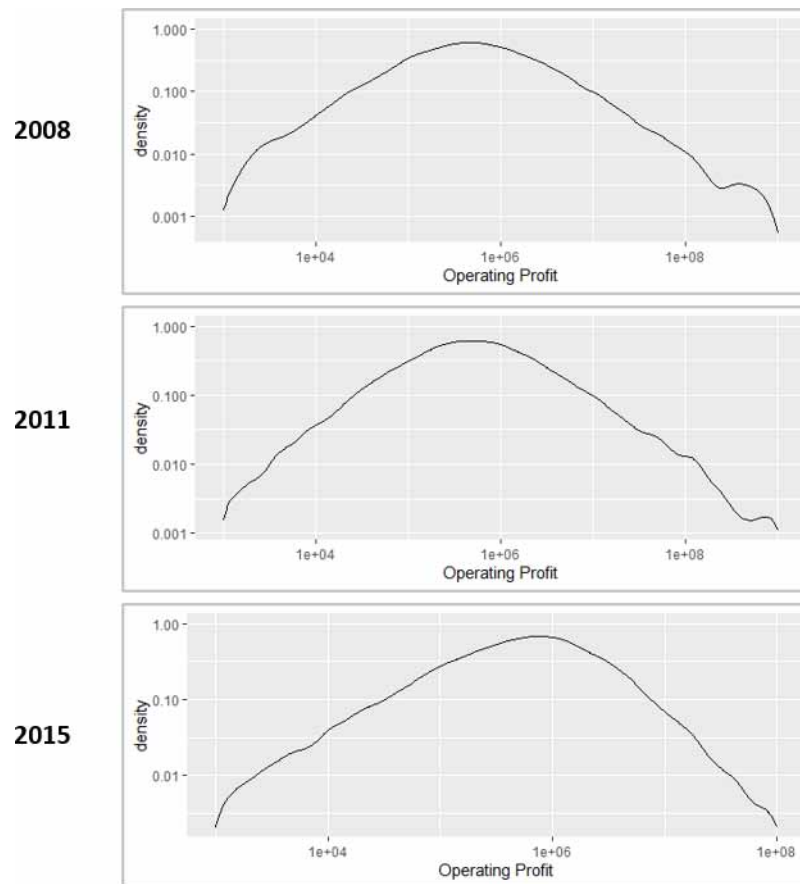
The LDA technique presents an approximation to understand the underlying dynamics and to make inferences about possible strategies. The technique provides information about the system as a whole, knowing that agents—in this case, organizations—can be quite different.

SOLUTIONS AND RECOMMENDATIONS

For the general purpose of gaining insights into the inner dynamics of complex measurements such as competitiveness and to address decision-making problems, the proposed solution is to apply quantitative techniques to compare different agents or to gather dissimilarities in agents that comprise a system. The information provided by these techniques reduces the uncertainty and enables short-term decisions even in unforeseen outcomes. Three techniques were selected to address three dimensions: variable correlation, performance, and behavior. Although other dimensions can be of interest, the recommendation is naturally to enlarge the toolbox and combine various analytic techniques beyond the typical central tendency measurements.

Figure 9. Colombian firms' operating profit log-log scale density distribution by years; the data on the x-axis are in thousands

Source: (Author, 2021)



Some conclusions from results are drawn:

- To reveal insights about a complex system, the use of multiple articulated techniques is necessary to determine boundaries, inner constraints, and intangible assets that shape reality.
- From a holistic point of view, it is important to differentiate between applying a technique and designing a model where one or more techniques are useful tools.

A recommendation as a next step is to articulate various techniques and/or models inside a methodology (e.g., Bayesian networks, heat maps interpretation, entropy models) that allow the building of a robust model with strong numerical and analytical support. This model can be combined with well-founded perceptions about quantitative insights, where methodologies such as cross-industry standard process for data mining (CRISP-DM) can improve the creative process.

Strategic decision-making requires a general understanding of the control variables; however, when analyzing complex systems, the difficulty of being unable to adequately define these variables and their boundaries emerges. The use of analytical tools, such as those suggested in this chapter, allows for the

limited definition of a different set of variables that indicate the general behavior of the system and the existence of short-, medium-, and long-term strategies and their tendencies. This reduces the uncertainty about the ability of the systems to make accurate measurement about risks and their possible outcomes.

Rational decision-making models aim to take advantage of quantitative and qualitative information to formulate alternatives that provide solutions to an identified need or question. The use of numerical information allows for the definition of control variables and boundary restrictions to address an optimal evaluation of alternatives that respond to the identified question. In this way, the uses of an analytical toolbox such as the one proposed in this chapter becomes relevant. The insights revealed about the intrinsic dynamics of a system and the strategic tendencies suggest to the decision-makers how to drive their informed decisions according to strategic objectives and available resources.

The use of the toolbox provides essential information that can be used in prospective or reactive decision processes and allows the structuring of short-, medium-, and long-term plans as well as the construction of strategic risk mitigation and exit plans.

Intuitive decision-making is also part of the set of decision-making models, where the analytical information provides pattern identification from the quantitative and qualitative variables of a system. This allows one to choose the most appropriate decision according to the available resources, the information collected, and the identifiable behavioral patterns. These types of decisions tend to downplay risk mitigation and are subject to the decision-maker's own intuition. It is important to state that the intuitive decision-making process is a common tendency in entrepreneurial business models and in urgent decision-making processes, where short-term reactions through a business planning avoid a well-defined strategy.

FUTURE RESEARCH DIRECTIONS

This study presents a descriptive analysis of three tools, PCA, LDA, and DEA. However, the analysis is limited because of the volume of treatments toward the data, so additional iterations must be followed to reinforce a method that serves as a guide to systematically articulate each tool used by any decision-maker. Through these models, the results proved to be consistent with what academics expect from the relationship between the initial stages of TCA and SCA; however, several mediating or moderating elements may be present, but hidden. This is because of the comparisons that included data only for Colombia at the meso and micro scales, which resulted in the addition of other countries to improve the reliability of this tool. Although each country uses different metrics to measure its regional competitiveness, all of them start from the RBV paradigm, which makes the use of DEA and LDA conceptually suitable tools in this toolbox. Therefore, the findings indicating that DEA defines a frontier associated with limited resources and that LDA identifies criticality in system dynamics, argue that there is a degree of complexity that can be addressed through a simple analysis. A first logical extension of this study would include a comparison between countries at the meso scale, in which the differences seen at the macro level are well determined by PCA and should provide additional evidence of the aforementioned screening phenomena. A second logical extension to this research would be to include algorithms for studying the dimension of time in the toolbox. Due to the complex nature of the results providing evidence of the dynamics of competitiveness, this tool could not be the conventional time-series analysis but, rather, predictive classification algorithms, such as neural networks. The selection of the tools explored thus far responds to how they simplify the information interpretation, in contrast with tools such as neural networks where interpretability is more complex.

In addition, the temporal dimension is important to be analyzed, but it is necessary to select the appropriate analysis tools that reduce the trade of related with non-interpretability. This is only the tip of the iceberg, so the present study promises interesting and research-worthy bases for further development in the knowledge of this subject.

CONCLUSION

The contingency theory aims to analyze any system as an open system, with multiple sources of drivers such as internal constraints and external factors (Tarter and Hoy, 1998).

The use of a multifunctional analytical toolbox is suggested to address knowledge about the underlying dynamics (LDA), the hidden relationship (PCA), or the comparable efficiency assessments (DEA), allowing for easy interpretability of their results.

After the application of these techniques, a conclusion emerges: The objective of applying a quantitative toolbox model is not to develop a prospective model with finite solutions. On the contrary, the results of the toolbox are to build an interpretative framework that allows a process of informed decision-making involving quantitative contributions combined with qualitative analysis. This last point was introduced by the decision maker after an analysis of the results presented in this study revealed insights about the hidden dynamics of the complex system. Therefore, a pragmatic paradigm is proposed, which intends that quantitative methods be inputs for the qualitative analysis of a complex system.

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KEY TERMS AND DEFINITIONS

Competitive Advantage: This describes the ability of a company to stand out from other companies or industrial sectors through a set of techniques or skills. Product or service innovation is usually the most common mechanism used in this context. Competitive advantages often cannot be maintained over the long term because markets are constantly changing, and companies must be alert to these changes.

Emerging Economies: Emerging economies are found in countries that have some characteristics typical of a developed market; therefore, these countries may become developed markets in the future. The countries characterized by emerging economies experience a beginning of economic growth and a remarkable first phase of industrialization.

Long-Tailed Distribution: In statistics, it is a subset of heavy-tailed distributions. As its name indicates, the shape of the distribution in the case of large values of the random variable associated with the phenomenon described decreases logarithmically. The shape of the distribution in the logarithmic plane exhibits a linear and scale-free behavior. It is a question of study methods to demonstrate statistically that a distribution follows a long tail in the social sciences due to the lack of large volumes of data and because the system is, in principle, open. Models that explain unscaled behaviors can be used to infer properties about long-tail behaviors, such as least effort or preferential attachment, even the 80/20 rule. Many social systems in which agents are considered autonomous, such as wealth distribution, sales, and population, tend to exhibit long-tail behavior.

Organizational Competitiveness: This is an umbrella term used to define an organization's ability to efficiently use its resources to offer products and services that exceed customer expectations. As a short-term capability, it refers to how a company manages its market position in both products and services, achieving corporate goals. As a long-term capability, it necessarily involves the investment and use of resources in an efficient way to reach corporate goals.

Organizational Complexity: This describes how the diverse components of an organization (people, process, data, activities, and organizational structure) differ among themselves. This is often regularly operationalized as the number of distinctive proficient specializations that exist inside the organization, since the intricacy of the organizational structure relies on it.

Chapter 16

Pestel Analysis and the Porter's Five Forces: An Integrated Model of Strategic Sectors

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ABSTRACT

Strategic model analysis is required in a continuously changing environment where businesses must respond and fulfill the Sustainable Development Goals. These models must cover all the variables that can affect the environment for doing business within an industry. For this reason, it is proposed to create a sectoral analysis model that integrates the PEST and Porter's five forces analysis. The purpose of this qualitative research is to validate the relevance of the proposed model. The research is carried out based on the perception of a sample of students from the business administration program of the Politecnico Grancolombiano University in Colombia which used the application model proposed during the period 2020-2021. The authors found that with an average rating of 4.48 out of 5, the group of respondents positively values the usefulness of the model proposed.

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INTRODUCTION

Business management is relevant for facing continuous challenges that organizations have to face. Covid-19 has led to greater challenges in developing businesses and it is playing an important role in organizations' achieving sustainable development goals. The tools used for a strategic analysis of the environment are relevant for evaluating businesses' environment quickly and at the same time cover as many variables as possible when taking decisions. In this context traditional models such as a PEST analysis or PORTER's five forces model have some drawbacks when it comes to analyzing all the variables that affect the business environment.

Studies like those by Isabelle et al. (2020) highlight these drawbacks and propose an analysis of Porter's five forces augmented with four additional factors -- the competitor's level of innovations, exposure to globalization, threat of digitization, and the industry's exposure to deregulation. Ramirez and Romero (2017) apply sectoral analysis tools EFI and EFE matrices proposed by Fred David in 2003 in the artisan brick manufacturing industry in Cúcuta in Colombia. They also use the PEST and Porter's five force models. However, these models are aimed more at a business analysis than at sectoral studies.

We propose to develop a strategic analysis model that integrates the expanded PEST analysis methodologies adding ecological and legal factors and Porter's five forces model, with a specific focus on the development of sectoral studies. We did an analysis of 11 different factors among which the environmental aspects are one of the most important. The proposed model also seeks to arrive at results that are easy to understand.

The time period of the study is 2020-21. Students in the last semester of the Business Administration program at the Politecnico Grancolombiano University were divided into teams. Each team had five members who carried out 367 sectoral studies with the help of the application developed by the professors in the university. After the sectoral studies, a survey was done. The survey had nine questions, eight quantitative and one qualitative which was answered by 197 work teams.

The research found a positive appraisal of the application by the students, in which a general rating of 4.48 was obtained on a scale of one to five and a general positive perception was found in the relevance and usefulness of each of the sections of the application. However, it was noted that the weighting section required some adjustments for improving user experience.

Relationship between Competitiveness and Sustainable Development

During the last few decades, society's awareness about the need for environmental protection has grown and companies are trying to be more efficient and competitive in protecting the environment. Boken and Short (2021) argue that in the modern world, companies' sustainability depends on environmental pollution and the endless consumption of short-lived products. However, it is not possible to host the population in quality accommodation or provide food in a sustainable way. This requires a re-evaluation of the economic sectors to move ahead in fulfilling the sustainable development goals.

The origin of the SDGs can be traced to the 1980s when the World Conservation Strategy and the Brundtland report (Brundtland, G. 1987) for the first-time dealt with sustainable development. Later, in 1992 the United Nations Conference on Environment and Development created the Agenda 2021 highlighting the importance of education at different levels to generate awareness among citizens about the seriousness of the problems faced by the world. In 2000 the Millennium Development Goals (MDGs) were signed by all the UN member countries. These goals form the basis of the approval of the SDGs

in the United Nations Conference on Sustainable Development (UNCSD), also known as Rio 2012 or Rio+20. Rio 2012 called to end poverty, protect the planet and improve the quality of life of all people (Mayoral & Vilches, 2020).

In the context of welfare and sustainability, different methodologies and models have emerged that seek to solve the duality that sustainability and competitiveness generate. Hence, the green economy addresses society's needs by taking advantage of the tangible and intangible benefits of the ecosphere. However, it confines itself to addressing social outcomes. The circular economy increases the reduction of inputs and outputs in society while retaining the value incorporated in the cycle of materials for as long as possible, but still poorly addresses the role of natural capital and ecosystem services and the bioeconomy that promote the production of goods derived from the use and transformation of biological resources. However, the circular economy does not take into account aspects associated with social production (D'Amato & Korhonen, 2021).

Abdullah and Hussein (2021) address the application of the green economy in the reuse of palm oil waste, bioenergy, cogeneration and waste treatment with microalgae for the generation of value-added products. Salmon et al. (2021), propose the development of green ammonia and transportation industry as a renewable energy source. However, beyond the relevance of the proposal, they highlight the difficulty in accessing land to implement the project. Blazquez et al. (2021) found that after the 2008 crisis in Spain, access to financing for wind farms was restricted by the financial sector. Despite the obstacles there are factors such as environmental concerns, environmental knowledge and 135 other determinants that affect the purchase of ecological products and their knowledge representing an opportunity for marketing strategies to increase ecological sales (Wijekoon & Sabri, 2021).

Within the framework of the business-level application of the circular economy, the results of the Resi4Future workshop held in 2021 are highlighted, with the participation of steel entrepreneurs from the European Union, in which the sector's practices were identified with the aim of reducing CO2 emission commitments by 2030. The valorization of the resources of the steel companies for internal recycling, improved recycling of steel and the use of secondary carbon (Rieger et al., 2021) are important. Corrar et al. (2021) studied the implementation of the circular economy in a company that took recycling as the axis of its main activities. However, despite the company's commitment to the project, an important cultural barrier was found in customers who preferred products made from mined copper and demanded lower prices for recycled products.

From the financial point of view, a number of studies assess investors' perceptions regarding sustainable businesses. Naffa and Fain (2020) studied portfolios of businesses linked to megatrends such as sustainable energy, food security and water conservation to generate a non-negative excess return with respect to the MSCI- all-country index. However, there is no penalty for American and European companies which are far away from sustainability indices. Durand et al. (2019) did a review of companies linked and unlinked to the DJSI index between 2005 and 2015 and identified investors' greater attention to the assets that formed part of this index while an insignificant impact was observed in the news presented in the companies that were part of this index. Lee et al. (2019) found that Korean companies that formed a part of the DJSI index showed statistically significant abnormal returns, which implies that the news of their inclusion in this index was positively valued by the market.

Kristoffersen et al. (2021) proposed the creation of an entrepreneurial capacity from the circular economy which they, this is developed from three tangible resources: data, technology and basic resources; three intangible resources: data-driven culture, the culture of circular-oriented innovations and openness and co-creation; and two human skills systems: thinking and data science. Bucea-Manea-Tonis

et al. (2021) identified investments in R&D and new methods for stimulating creativity to guarantee greater eco-innovations, which combined with other skills gave a company a competitive advantage. Hinton (2021) identified a decoupling of the limits to study green economic growth. Hinton proposed the classification of businesses into five dimensions: size and geographical scope, strategy, governance or internal regulations, the way it is constituted and, the existence or non-existence of a profit motive. This is because all companies operate in an economic and social context and are subject to pressures, stimulus and restrictions typical of the environment in which they operate. However, the greatest contribution to sustainable development from a strategic perspective was developed by Porter and Kramer (2011) who created the concept of shared value, which proposes that companies can generate economic value while generating social value. This requires building a virtuous circle between new products and markets, redefining the value chain and building local clusters. Bresciani et al. (2021) identified a positive relationship between development, innovations and environmental sustainability when analyzing the level of efficiency in Spain and Italy during 2004-12.

Several theories have been proposed which relate corporate social responsibility initiatives and organizational performance. Hence, the impact of a brand image and its knowledge is observed, together with the corporate image as a moderator between CSR initiatives and organizational performance. Some organizations use CSR as a business and marketing strategy and its impact on customer buying behavior (Streimikiene, 2021). Using the CSR pyramid has an affirmative and positive impact on industrial SMEs' organizational performance if properly addressed in their innovation strategies. Organizational innovations and corporate image are a significant mediator and moderator respectively between the dimensions of the pyramid (Lu, 2020).

In summary, sustainable businesses are growing. There is an awareness among a large part of the population about the importance of caring for the planet. However, there are still cultural, financial and logistical barriers in achieving greater development of such businesses. It is also essential to continue developing sustainable businesses that are increasingly competitive and profitable for investors in a way that they continue to gain space in the business world. The sectoral strategic analysis model proposed in this paper becomes relevant as a support instrument for developing sectoral strategies that integrate competitiveness and sustainability. The proposed model is built from an analysis of PEST and the PORTER's diamond. We conceptually develop the model and review some applications in social sustainability and / or the organizations' environment.

PEST Analysis

This external evaluation aims to identify a series of factors that may influence a company's performance including opportunities that benefit an organization or threats that impede its good performance. Organizations must recognize offensive and defensive factors while formulating strategies that take advantage of external opportunities or reduce the impact of potential threats (David, 2003).

Organizations can understand the macro-environment when they inform themselves about customers, suppliers, competitors and other interest groups and when they find out about the environment in which they are developing their businesses thus growing in knowledge and responsiveness. After getting this information, companies should take action that allows them to mitigate the effects on the environment, to take advantage of the opportunities and minimize the threats in the micro- and macro-environments and take correct action (Hitt & Hoskisson, 2007).

The main objective of this analysis is looking for opportunities and threats. An opportunity is a situation generated by the environment that must be exploited by a company to increase its competitiveness at the strategic level (Hitt & Hoskisson, 2007). For example, the Covid-19 pandemic that had a negative impact on the world economy and its consequences were reflected in the emergence of public health and its implications at an economic level not only in the supply of goods and services but also in demand that affected producers as well as consumers (Instituto Belisario Domínguez, 2020).

A threat is a condition that exists in the micro- or macro-environments that could hinder an organization in achieving strategic competitiveness (Hitt & Hoskisson, 2007). Economic stagnation that is generated after a pandemic such as Covid-19, is a threat in the micro- environment as it leads to an interruption in innovations for approximately seven years. The effect of the pandemic on innovations varies between countries and from one sector to another (Wang., & Verousis, 2021).

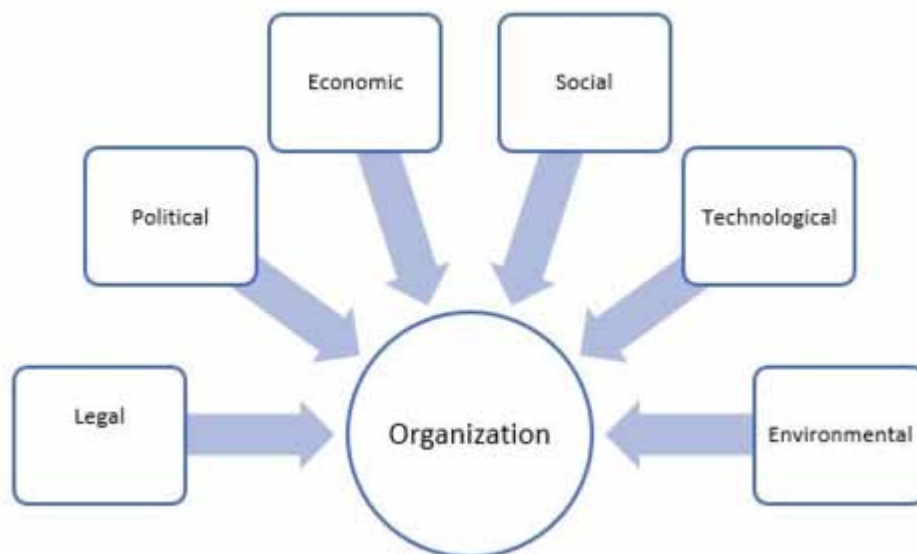
This external evaluation addresses trends or events in the macro- environment. The PESTEL model classifies environmental influences into six broad categories: political, economic, social, technological, ecological and legal (Johnson. & Wittington, 2006). Figure 1 shows the PESTEL framework.

The economic environment refers to the direction of the economy in which a company is competing or could compete. Economic factors have a large impact on the attractiveness of a sector and an organization according to the different strategies that are generated through strategic planning, for example, interest rates. When interest rates increase organizations' financing, they become more expensive or there is no availability of funds. At the same time, income decreases and non-essential products are no longer purchased (Hitt & Hoskisson, 2007).

Another important factor is share prices. When prices increase directly proportionally, the aspiration to acquire common shares as a source of capital for market development increases; likewise, when the market expands, consumers and companies' wealth grows (Johnson. & Wittington, 2006).

Figure 1. The Macro-environment's influence: the PESTEL framework

Source: Adapted from Dirección estratégica. (Johnson. & Wittington, 2006)



Pestel Analysis and the Porter's Five Forces

Another economic variable that is a determining factor for some industries is the exchange rate and its trend. Some industries benefit when the dollar falls compared to the Yen and the Euro including entertainment, tourism, vehicles and the forestry industries (Hitt & Hoskisson, 2007). Table 1 shows other examples of studied economic variables for PESTEL analysis.

Table 1. Economic variables that must be taken into account for PESTEL analysis

Credit Availability	Stock tren
Inflation rates	Gross domestic product
Forex market	Exchange rate
Tax rates	Global economic trends
Fiscal policy	Budget deficit
Unemployment	Available income

Source: Adapted from **Conceptos de administración estratégica**. (David, 2003). Editorial Pearson.

Political factors: The government (departmental, federal, local and foreign), is the main regulator of companies, in the same way as it also sponsors organizations. Hence, political and legal factors can be key opportunities or threats for both large and small companies (David, 2003). Table 2 shows some examples of studied political variables for PESTEL analysis.

Table 2. Political variables that must be taken into account for PESTEL analysis

Government Trust	Government budget
Government regulations	Subsidies
Defense expenses	Local, national elections
Local laws	Changes in fiscal policies

Source: Adapted from **Conceptos de administración estratégica**. (David, 2003). Editorial Pearson.

Social, Cultural and Demographic Factors

Sociocultural factors include an increase in health awareness and social restrictions for smokers in western countries. This variable has adversely influenced sales of tobacco products. Laws regarding smoking in public places have been introduced under public pressure and tobacco companies have had to make marketing efforts in the developing world; they also tend to diversify into other sectors (Johnson. & Wittington, 2006). Table 3 shows some examples of studied social variables for PESTEL analysis.

Technological factors: Changes at the technological level have an effect on different industries. For example, improvements in microprocessors for computer equipment, or improvements in the performance of automobile engines. Improvements have also been found in industries such as precision agriculture through computerized crop management that can be adjusted to soil characteristics to lead to more efficiency (Wheelen & Hunger, 2007). Table 4 shows some examples of studied technological variables for PESTEL analysis.

Table 4. Technological variables that must be taken into account for PESTEL analysis

Leisure services	Public spending on research and development
Public spending on research	Technology transfer
New developments	Productivity improvements through automation.

Source: Adapted from **Dirección estratégica**. (Johnson. & Wittington, 2006)

Table 3. Social, cultural and demographic variables that must be taken into account for PESTEL analysis

Birth rates	Pollution and recycling
Lifestyles	Waste management
Available income	Gender role
Saving's behaviour	Retirement Attitude
Per capita income	Marriages and Divorces
Shopping habits	Ozone Depletion

Source: Adapted from **Conceptos de administración estratégica**. (David, 2003). Editorial Pearson.

After analyzing all the external factors that may affect an organization, companies can generate scenarios that have detailed descriptions of how the expected results can be affected through an analysis of the business environment based on the influences (Johnson. & Wittington, 2006).

An analysis of environmental variables within the framework of strategic planning is relevant for the growth process of small and medium-sized companies. However, SMEs do not plan for the long term essentially due to lack of knowledge about the tools for a strategic analysis (Sumba, 2020). According to Ocampo et al. (2018), achieving sustainability and a competitive advantage depends on a company's ability to adapt to changes in the environment. A strategic analysis model such as the one proposed in this paper makes sense as it seeks to study the environment with the support of an easy-to-use and easy-to-interpret tools.

PEST is an analysis of the organizational ecosystem that allows the identification of trends and political, economic, social, technological and environmental uncertainties through a study of external factors that affect the sector studied. Its use in an analysis of an organization helps identify the probable effects of external factors on organization's performance in the future.

PEST analysis was created by the theorists Liam Fahey and V. K. Narayanan (1986) who were its forerunners. Christodoulou and Cullinane (2019) did an analysis of PEST factors in port energy management contributing to a discussion on the best ways for achieving sustainable maritime transport and identifying the positive and negative effects of the variables in the maritime transport sector.

Using the PEST analysis, Petrauskiene (2020) studied the environment in five regions of Europe to find out the challenges of electric vehicles and renewable energies to climate and environmental changes. Pratiwi et al. (2021) found that environmental uncertainty and climate change strongly affected the agricultural production sectors which are provide livelihood opportunities to small producers.

A PEST analysis is useful for carrying out sectoral analyses in relation to the impact of the Covid-19 pandemic. Thakur (2021) did a strategic analysis of the different health issues that affected exposure to the virus globally. However, opportunities have also arisen for companies through portable blood oxygenation measurement technologies achieved thanks to an analysis of consumer needs in companies

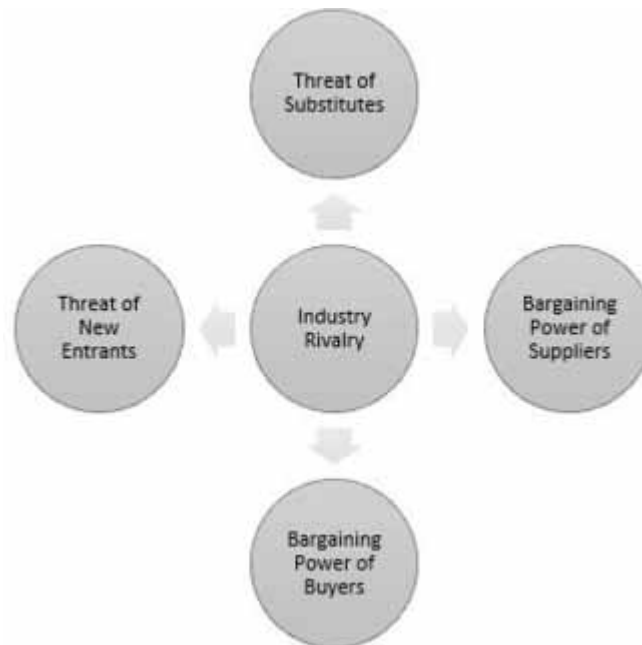
like Apple, Fitbit and Garmin (Bent & Dunn, 2020). Goryachev et al. (2020) did research for a medical institution and found that the pharmaceutical industry registered a reduction in the number of competitors with licenses to manufacture drugs due to the lack of modern and effective production equipment.

PORTER's Diamond

The other well-known model for an analysis of the environment is PORTER's five forces model that allows determining the long-term profitability of an industry (Porter, 1989). In a more recent study, Michael Porter extended his work including new contributions that show how to analyze the five forces in practice (Porter, 2008). Figure 2 shows Porter's five forces model.

Figure 2. Porter's five forces model of analyzing competition

*Source: Adapted from **Conceptos de administración estratégica**. (David, 2003). Editorial Pearson.*



The importance of the PORTER model lies in the fact that it allows an analysis of the industry in which a company is doing business and the relationships between different key market players such as performance factors and influence groups in the sector (Goicochea & Souto, 2017). To understand Porter's five forces, it is necessary to inquire about other concepts suggested by Porter (2007), such as competitiveness, which refers to the value that a company generates in any of its areas which makes it different leading to greater profitability.

For achieving a competitive advantage, Porter proposes three paths: first, being the leader in cost, that is, offering a product at a price lower than the competition with the same quality standards; second, differentiation of specific market segments looking for specialized products or services; and third, an approach that consists of specializing in a segment (Eskandari et al., 2015).

By applying PORTER's model, companies' managers are able to understand their competitive position in the industry. They can also identify direct competition. By understanding a company's position after applying Porter's model it becomes clear if its profitability is affected. (Michaux & Cadiat, 2016).

It is important for managers to understand the Porter diamond for evolving a strategy through the factors that affect the competitiveness of the industry and therefore the country. The starting point should be an understanding of the structure of the sector, since this is what determines profitability for both the company and the industry in the medium and long term (Porter, 2008).

(Porter, 1990) took 10 countries as a sample -- the United States, South Korea, Germany, Denmark, Italy, Sweden, Switzerland, Japan, Singapore and the United Kingdom -- to analyze the characteristics of 100 sectors over four years. His objective was determining the factors that made companies from certain countries more successful in specific sectors and why other companies from other countries did not achieve the same success, departing from the principle of costs only (Blacutt, 2013). Porter determined the factors that generated an advantage for nations: first, the condition of the factors; second demand; third, the company's strategy and the structure and competition; and fourth the presence of related and supporting industries (Benitez, 2012).

The first factor refers to the conditions in a country vis-à-vis the amount of capital, which estimates financial resources and their cost and infrastructure. It also includes natural and physical resources depending on their quantity and quality. Another element is human resources and the quantity of skilled and unskilled labor, cost of this resource and its capabilities. The next is knowledge resources that refer to scientific and technological research and development capacity through universities and / or government entities (Bakan & Dogan, 2012).

Cabrera et al. (2011) describe the demand factors as related to local consumers in a nation. The degree of innovations in the country depends on the quality and quantity demanded by consumers in a particular sector; the higher the domestic demand, the more "simple" it will be to access international markets.

This factor is closely related to research and product development processes at the national level. Bakan and Dogan (2012) mention the main factors that need to be taken into account for countries to be competitive as the sophistication of the demand, the size of the demand and internationalization.

Another factor identified by Porter for generating competitiveness is the integration of industries and related suppliers, since both vertical and horizontal integration allows learning and innovations in products, services and business models. Hence, for developing countries like Colombia, it is more complex to align all the actors in an industry to increase their competitiveness together (Departamento Administrativo Nacional de Estadística DANE, 1995).

The last factor considered in the Porter model is the strategy, structure and rivalry among the companies. Here it is important to adjust the strategy and the structure of the companies to suit their consumers. These factors together can make a sector much more competitive. The sector can compete internationally pushing innovations.

When doing a strategic analysis of a sector taking into account the competition that exists, it is relevant to focus on the sector's growth opportunities. It is important to identify the composition of the competitive forces and their intensity to find out competitors with more solid market positions and those who are not analyzing the possible initiatives of the competitors. In addition, it also helps in determining if an industry will offer attractive prospects in the future (Ramírez, 2020).

Besides, two other determinants that play an important role in generating competition in a sector and among companies are also considered by the Porter Diamond. The first determinant is the government. In Colombia, all regulations and public policies can mark the development of innovations leading to

an improvement in quality. On the other hand, in accordance with the regulations the government can benefit or affect the industries directly. For example, tax reforms, the reduction of fiscal spending with massive layoffs of personnel, environmental regulations and foreign investments which, if not carried out with the productivity and development of companies in mind, can result in stagnation of one or more industries (Bakan & Dogan, 2012).

The other determinant is unforeseen events like external events that occur randomly and are beyond a company's control. For example, Covid-19. According to Labarca (2007), such events can change the dynamics of an industry and generate competitive advantages for new competitors or for competitors that were not so strong earlier. Other random events that can occur are wars, natural disasters and abrupt changes in financial markets.

In addition to understanding the Porter Diamond, attention must also be paid to the business strategy to establish if a sector is competitive in a country with the vision of becoming competitive abroad Porter (2008). There is also a need to identify customers, suppliers, possible future competitors and substitute products. When dealing with direct competition or rivalries with other existing competitors, certain aspects like their fixed costs, the number of competitors, their positioning and whether there is a price war need to be considered (Then et al., 2014). New competitors also pose a threat especially because they can bid for lower prices which will depend on their cost structures so that they can achieve economies of scale quickly, and acquire experience and knowledge (Donawa & Morales, 2018). Suppliers' power in pricing negotiations depends on dependency and differentiation, which can change the internal prices of the industry and change companies' profitability (Damayanti et al., 2013).

Clients buying power refers to price sensitivity, depending on the number of clients in the market and some clients that it concentrates on, purchase volumes and the differentiation capacity of the product or service being offered. In addition, if the client has access to complete information about other suppliers or it can use substitute products (Baena et al., 2003).

The last force considered in Porter's model is the threat from substitute products. This usually appears unexpectedly and is not always perceived by companies. However, it is important for companies because a substitute product can take off easily (Damayanti et al., 2013). Some studies on strategies followed by organizations use Porter's theory to study their social impact. Benerjee (2020) did an analysis of threats and opportunities from the point of view of industrial attractiveness in the production of Majuli fabric in India. The study showed how behavioral economics affected the economic position of artisans. On the other hand, some studies also focus on the threat of new competitors. Ambarwati et al. (2019) studied the oil pipeline industry showing the strategies used for addressing the threat by new competitors as a priority for managers in other companies from oil industry.

Weth (2020) shows that the market for big tech companies like Online Banking solutions is the main driver of digital transformation and represents a significant threat to the financial sector in Germany. Akcagun and Dal (2013) concluded that the Turkish garment industry was affected by strong internal competition due to many similar-sized companies, low exit barriers, and strong external competition. Other studies like Fudjaja et al. (2020) used the Porter's five force analysis in the agro-business sector identifying human resources, natural resources and the environment as determinants of competitiveness in coconut oil in the regency of Polewali Mandar in Indonesia.

In recent years, strategic analysis models have been developed to overcome the shortcomings of the PESTEL and Porter's five force models. Seyituglu and Ivanov (2020) propose a design of the system for providing services to hotel and catering businesses in the world post-Covid 19. They complement the PEST analysis with an analysis of the value chain and stakeholders which allow the inclusion of more

variables to the PEST analysis for doing a comprehensive analysis of the organization. Isabelle (2020) proposes an expanded Porter's five force model by incorporating four additional forces --- the level of innovations by the competitor, exposure to globalization, threat of digitization and the exposure of the industry to deregulation. This is an important research contribution because it recognizes that it is necessary to expand the variables to be studied when using Porter's five force model. However, this model does not consider environmental aspects in the analysis. Ramirez and Romero (2017) apply a sectoral analysis' tools to the EFI and EFE matrices proposed by Fred David in the artisan brick manufacturing industry in Cúcuta in Colombia based on an analysis of specific internal variables of the Porter's Diamond. However, this study also does not take into account environmental issues.

From this discussion it can be gathered that the PEST and Porter five forces models by themselves do not cover all the variables for an adequate sectoral analysis. Hence, an application that integrates the two models is proposed. This new model could allow more comprehensive sectoral studies with easier and more understandable results.

Description of the Application

The sector analysis application was created on Microsoft Excel and is composed of five sections that are developed sequentially: GENERAL, PESTEL, POWER, WEIGHTING and GRAPHICS. In the general section, a series of short questions were developed to get a general vision of the sector to be analyzed. Some questions were asked such as detailed economic activity in the sector, the most representative products or services, clients' profiles, guilds or associations that group the companies in the sector and a characterization of the main competitors. This questionnaire allowed the analyst to understand the general context of the sector.

In the second section, an analysis of the macro-environment of the sector was done using the expanded PEST analysis tool, called PESTEL. For this, the analyst fed a matrix of 15 critical success factors on which seven variables were determined as shown in Figure 3.

Figure 3. PESTEL Matrix of the application

Source: Based on the sectoral analysis application.

No	Factor	Critical success factor	Description	SWOT	Impacto	Ranking	Weighing
1	Economic	Exchange rate	So far, since January 2017, the Colombian peso <u>has</u> devalued against the dollar by 22% For companies in the alcoholic beverages subsector there is a negative effect due that barley is one the main raw material and it comes from foreign markets Source: https://www.banrep.gov.co/es/estadisticas/tasas-de-cambio-y-sector-externo	Threat	1	3	-2

The first variable is factor where the critical success factor is analyzed using PESTEL categories classified into political, economic, social, technological, ecological and legal categories. After this categorization, comes the second variable in which a name is assigned to the critical success factor that is being analyzed. This must be clear and concrete to allow readers to get a clear idea of what is being done. The third variable is the description. It shows a detailed explanation of the analyzed FCE. This

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explanation must be supported by figures, data and sources of information in such a way that a solid and sustained strategic analysis can be developed. The next variable is SWOT. The analyst must identify whether the FCE analyzed is categorized as an opportunity or a threat for the companies that belong to the sector. Another variable is the magnitude of the impact which shows the level of impact that is applied to each FCE according to the scale given in Table 5.

Table 5. Magnitude of impact of the PESTEL matrix

Impact	
3	High
2	Half
1	Low
0	Null

Source: Proposed magnitude is within the sectoral analysis model.

The FCE with a very important impact on the dynamics of the sector is rated with high impact (3) and the one with little relevance to the sector is rated as zero impact (0). From the previous analysis, the sixth variable is developed, ranking. In this a ranking of importance for the variables is done, listing them from 1 to 15. This is developed from the magnitude of impact, which means that those with the greatest impact appear in the first few places of the ranking and those with the least impact appear last.

Finally, there is the weighting variable that is developed from the following function:

$$Weighing = \frac{Impact\ Magnitude * (15 - Ranking)}{8} \quad (1)$$

This function also generates different results for opportunities and threats, showing that the weighting of the former has a positive sign and that of the latter is multiplied by minus one (-1) to give a negative result. The purpose of this feature is highlighting the higher impact of CSFs in the analysis and assigning a smaller weight to the lower impact CSFs.

For the third section of the application, PORTER, the dynamics is the same as that developed in the PESTEL analysis with the difference that as this is an analysis of the micro-environment of the sub-sector the dynamics of competitors, customers and suppliers are analyzed. The factors are classified into: customers' bargaining power, suppliers' bargaining power, threat from new competitors, threat from new substitute products and rivalry between competitors. The fourth section, WEIGHTING, is considered a results area. In it, it is possible to identify the competitive position of the sector to face the variables in the environment. Three weightings are developed: PESTEL weighting, PORTER weighting and General weighting.

In the first two, the weighting is by the type of factor according to the classifications of the first variable of the PESTEL and PORTER matrices explained previously, for example, in PESTEL the weighting is a summation of the weightings of the analyzed political, economic and social factors. Taking all these the average weights are arrived at. This result matrix shows two things: first, which aspects have

more opportunities or threats for the sector, where the factors with the highest positive score represent the area with the greatest opportunities and factors with the highest negative score represent the area with the greatest threats and second, is the average, which has a measurement scale with zero (0) as a reference point, where a value greater than zero represents a favorable environment for the sub-sector and a value below zero indicates otherwise.

Figure 4. Example of PESTEL weighting at using the application

Source: Based on the sectoral analysis application.

PESTEL WEIGHTING	
Factor	Weighting
Political	0,0
Economic	4,9
Social	-1,5
Technological	1,4
Ecological	0,0
Legal	-4,3
Average	0,9

In Figure 4 it is observed that in the PESTEL weighting that appears as an example, the situation at the macro-environment level for the sector is favorable because it has an average higher than zero. Likewise, it is observed that the greatest opportunities are in the economic environment (4.9), while the greatest threats are in the legal environment (-4.3).

Finally, the overall weight corresponds to the average of the result of the PESTEL and PORTER weightings. In the same way, a score higher than zero is interpreted as the existence of a positive environment for the sector and a score below zero, implies the existence of a negative environment for the sector. This also means that at the macro-environment level there may be a favorable environment for the sector with a score higher than zero, but at the micro-environmental level the opposite could happen and the score can be lower than zero, which will be reflected in the overall weighting obtained. The last section of the application is GRAPHICS which shows a spider graph with the results of the weighting section (Figure 5).

Software Application

Currently, the software is used by the students of the business administration program of Politecnico Grancolombiano University. One of the skills to be developed in this subject is "Knowing the economic, legal, social and environmental principles that affect business activities to make decisions with emotional intelligence, within the framework of ethics, social responsibility and environmental awareness." In this context, the software is relevant to search the development of this competence. The implementation of the software coincides with the appearance of the COVID-19, therefore the studies carried out with this application are focused primarily on how the sectors analyzed could redirect their businesses within the scope of the pandemic. During this time, a total of 595 sectorial studies have been carried out. Figure 6 shows the distribution of these studies.

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Figure 5. Example PESTEL graph arrived at using the application

Source: Based on the sector analysis application.

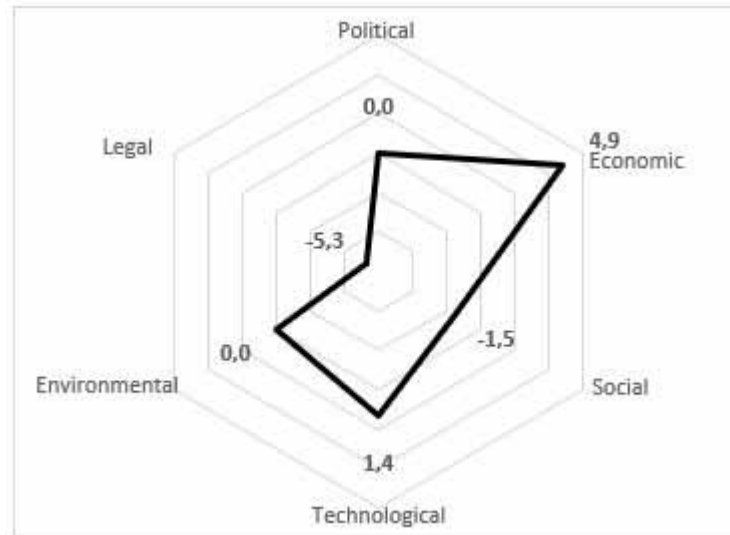


Figure 6. Distribution of studies carried out using the sector analysis software

Source: Based on the sectoral analysis studies conducted during 2020-21.

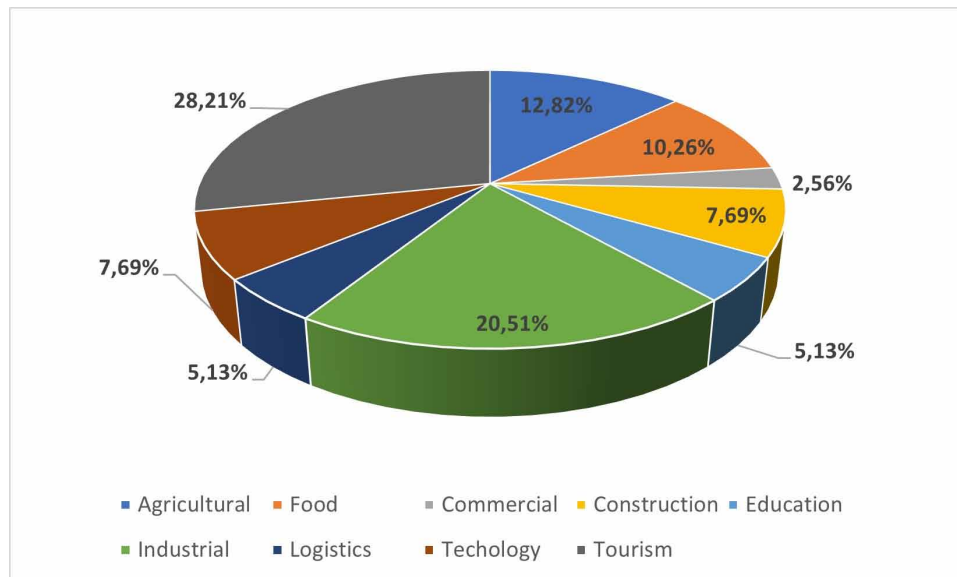


Figure 6 shows that most of the studies had been carried out on the businesses where the pandemic have had greatest impact. Hence, 28.21% of the analyzes focus on tourism sector such as hotels, ecotourism, agrotourism and travel agencies. The industrial sector shows 20.51% of the studies highlighting businesses like: manufacturing cosmetic products, manufacturing of plastic products and manufacturing of footwear. Agricultural sector shows 12.82% of the studies. They were developed in the dairy, coffee, poultry, and sugar cane businesses.

As a result of these sectorial studies, the research colloquium on business diagnosis was created. The colloquium is held every six months since the second half of 2020. This space for the socialization of knowledge is designed for students to show their research results in the field of business consulting and sector studies. Additionally, as a result of these efforts, an academic book is in the process of being published that compiles the best sectorial studies carried out by students of the business diagnosis course.

Methodology

The sector analysis model was applied by the students of the last semester of the virtual Business Administration program of the Politecnico Grancolombiano during 2020-21; 1,837 students of the last semester formed work groups of five students each. A total of 367 work teams were generated.

Each of the work teams had to use the sectoral analysis application to address an economic sector that they had selected according to the classification of economic activities grouped in the ISIC codes. The purpose was proposing sectoral strategies for addressing and overcoming the Covid-19 situation.

After the students had developed the strategic sector analysis throughout the semester, a survey was done covering all the work teams, which was answered by 197 teams. This result exceeds the sample size (188) with a confidence level of 95 percent and a margin of error of 5 percent.

The participants were 64 percent women and 36 percent men, 47 percent had some type of a marital union and 53 percent had at least one child, showing that the participants were mostly young adults; 94 percent of the students lived in urban areas, while the remaining 6 percent were located in rural areas. However, there was a concentration of students living in Bogotá, where 61 percent of those surveyed resided. Further, 76 percent of the participants had some employment, which favored the knowledge of business dynamics, which could facilitate the management of the sectoral analysis application.

The questionnaire had nine questions, of which the first eight were closed questions on a numerical scale where the minimum score was one and the maximum was five. The last question was open to be able to deepen respondents' perceptions regarding the use of the tool. The questions sought to evaluate each of the components of the sectoral analysis application and also general perceptions regarding the usefulness of the tool in fulfilling its purpose.

Results

It was observed that the general rating given by the students to the usefulness of the application in the development of strategic sectoral analyses was 4.48, which is positive for the development or strengthening of the tool. The generalities section had a score of 4.48 with respect to the help provided in the general understanding of the context of the sector. The components of the PESTEL and PORTER sections are given in Table 6.

Within the sectoral analysis model, a specific methodology was created to determine the level of importance of each of the analyzed factors giving a ranking of critical success factors. This methodology has been positively appreciated by respondents with a rating of 4.52. On the other hand, for the elaboration of the weighting of the critical success factors, a mathematical formula was developed that privileges the critical success factors with the greatest impact. The effectiveness of this formula to determine the relative importance of the analyzed factors was rated by respondents with a score of 4.49.

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Table 6. Results of the evaluation that the students carried out of the input matrices

Issue	Score
Methodology for conducting the FCE ranking	4.52
Formula for the weighting of each FCE and its effectiveness in determining the relative importance of the PESTEL and PORTER factors	4.49
Average	4.51

Source: Taken from the tabulation of the survey of the selected sample.

The components of the PESTEL and PORTER matrices were rated by the respondents with a score of 4,51 (Table 6). This result is important as these are input matrices that give rise to the result matrices in the following sections of the application. Table 7 shows the evaluation of result matrices by students.

Table 7. Evaluation of result matrices by students

Issue	Score
Measurement of the final PESTEL weight that explains the sector's position with respect to the macro-environment.	4.40
Measurement of the final PORTER weigh that explains the sector's position with respect to the micro-environment.	4.39
Measurement of the GENERAL weighting explains the general situation of the sector.	4.37
Measurement scale validity. Zero is the benchmark between a favorable and unfavorable competitive position.	4.32
Average	4.37

Source: Taken from the tabulation of the survey done of the selected sample.

The result matrices arise from the summation of the weighting of the critical success factors by type and the calculation of the average of the values found. These yield a score that reflects the situation of the analyzed sector. There are three result matrices which are the macroenvironment or PESTEL matrix, the microenvironment or PORTER matrix and the general weighting matrix.

Regarding the scores obtained by the result matrices, it was found that the respondents gave a weight of 4.40 to the final PESTEL weighting and its effectiveness to explain the position of the sector with respect to the macro environment. The ability of PORTER's final weighting to explain the sector's position with respect to the microenvironment was 4.39.

On the other hand, it is observed that the general weighting and its ability to explain the general situation of the sector obtained a score of 4.37. The lowest qualification was in the measurement scale with a score of 4.32 where zero means the benchmark to determine the competitive position of the sector. It would then be worthwhile to focus on making improvements in these last two aspects to achieve a better perception by the users of the application.

Regarding the qualitative aspects, opinions such as, *"The tool is quite complete. However, a deep and conceptual analysis must be carried out to arrive at the percentages and other values that the tool assigns us"* allow us to deduce that in effect the tool is useful. However, the work of gathering information and an analysis of the users is essential for the proposed objective to be achieved. On the other hand, in terms of appreciation the comments said, *"I feel that the matrix is not very clear for someone outside. However, it was a good tool for the development of our team project."* It is inferred that within

the classroom environment where the teacher accompanies the students through all the stages of the process, the tool is very useful, but in the face of a potential opening for its use by external users, it will be necessary to create tutorials that explain how to use the tool more clearly. Finally, the perception, *“It seems to me that the structure of the application and its content was of vital importance to understand and analyze the forces of the PESTEL and PORTER and with this give a diagnosis of the state of the analyzed sub-sector”* accounts for the general experience of users with the application used, and means continued testing of the tool not only in the academic field, but also in the business field.

CONCLUSION

An adequate analysis of the environment is a fundamental tool for taking managerial decisions. A significant number of studies have focused on sector studies. These strategic analyses are mainly done using the PESTEL or PORTER methodologies (Petrauskiene, 2020; Pratiwi et al., 2021; Thakur 2021).

However, in general it is identified that the PESTEL and PORTER analyses have limitations when applied individually because they leave out key variables from the strategic analysis, such as environmental variables. Although it is true that authors like Seyituglu & Ivanov (2020) and Isabelle (2020) propose expanded models of the strategic analysis, a model such as the one proposed that combines PESTEL and Porter's five forces analysis covers 11 variables which allows greater depth to the sectoral studies carried out.

One of the differentials of the application developed by this research is that it generates a numerical value as a result of the sectoral analysis, which facilitates an interpretation by the user. For this, a score of zero is taken as a reference, and a value above this implies a favorable competitive position of the sub-sector and a value below zero represents the opposite. Regarding this differentiating element, the participating students positively valued the methodology. As a result, they gave a rating of 4.37 to the understanding of the situation of the sector obtained by the general weighting using the application and a rating of 4.32 to the scale of measurement proposed in the model to determine the competitive position of the sub-sector.

From the results, it is concluded that it is worth while developing the application in a more complex programming language, which also incorporates tutorials that help understand the tool. On the other hand, it is worth delving into sector studies carried out by the students with the use of the application to generate periodic publications with the results of the sector studies carried out by students. This could be very useful for the business sector, especially for small and medium-sized companies. Additionally, in the second stage, it is possible to develop sector studies in various countries in the region, which will broaden the impact of the studies carried out at the business and academic levels.

FURTHER STUDIES

The analysis of this research was made of the perception of people who use the software for the generation of sectorial studies; it is worthwhile in a second stage, to carry out a study of the perception of businessmen and academics regarding the validity, relevance and usefulness of the sectorial studies elaborated with the software. On the other hand, in terms of technological development, it is proposed in the future to incorporate questionnaires and checklists into the software that allow greater depth and quality in strategic analyzes.

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KEY TERMS AND DEFINITIONS

Bioenergy: Renewable energy created from the waste of living beings, through biological or mechanical processes.

Clusters: Group of companies correlated and located in the same geographical area.

Cogeneration: It is the conjoint efforts to produce and apply different kinds of energy in industrial processes

CSR Pyramid: Corporate Social Responsibility pyramid that contains the levels that companies must consider when preparing their corporate social responsibility policy.

Data Science: The use of statistics and artificial intelligence to handle large amounts of data for advanced analysis.

DJSI Index: Dow Jones Sustainability global index. It tackles the world's leading companies in terms of business sustainability.

Eco Innovation: All types of efforts to get a sustainable development reducing the impact on the environment.

Ecosphere: Ecosystem of planet earth. It includes all living beings in the biosphere and recognizes the interrelationship among them.

Environmental Sustainability: Keeping ecological balance despite the use of natural resources.

Food Safety: Nutritious food that should be accessed for all human beings to lead an active and healthy life

Green Economy: Economic model that aims to generate economic benefits from sustainable development.

Green Sales: Sales of ecological products and ecological services to manage sustainable businesses.

Social Production: It is a way of managing companies in which job stability: equity and justice are sought for all people within an organization.

Sustainable Energy: Energy sources that are not depleted with their use, such as water, but that can last or their depletion is imperceptible.

Systemic Thinking: It corresponds to a system of thought where there is a global and dynamic vision of different systems.

Chapter 17

Why Are There Discrepancies in the Results of Entrepreneurial Orientation and Its Impact on a Firm's Performance?

A Review of the Literature

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ABSTRACT

Entrepreneurial orientation (EO) and its relationship to a firm's performance is a topic of substantial interest among scholars in different contexts. To date, however, literature on the subject has reported conflicting results and inconclusive evidence in studies relating entrepreneurial orientation to a firm's performance. In this sense, the authors have reviewed the literature and found that diverse opinions regarding definitions, scales of measurement and modeling of the construct, and its dimensions have led to conflicts within empirical research. They have also reviewed studies that have highlighted curvilinear relationships between EO and performance. This summary of issues highlighted in previous reviews serves as a guideline when addressing research on EO, contributing to the general discussion in strategic entrepreneurship literature about this important subject.

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INTRODUCTION

Organizations around the world that operate in a business climate characterized by rapid growth in the number of competitors and an urgent need to develop innovation processes to capture new opportunities - particularly those that produce goods and services with elevated levels of sophistication - have demanded great adaptability capacities and efforts to achieve, preserve and increase their competitive edge (Andrade-Valbuena & Torres, 2018). In this context, both innovation and entrepreneurship have been signaled as key strategic factors for discovering and exploiting new business perspectives. In this regard, Drucker (1985, p. 17) pointed out:

Innovation is the specific tool of entrepreneurs, how they exploit change as an opportunity for a different business or a different service. It is capable of being presented as a discipline, capable of being learned, capable of being practiced. Entrepreneurs need to search purposefully for the sources of innovation, the changes and their symptoms that indicate opportunities for successful innovation.

Valuing the importance and significance of entrepreneurship and innovation in organizations from a managerial perspective, various positions have been proposed to understand and study them, and somehow assess their effects and/or contributions on and to different areas at the organizational level (Covin & Slevin, 1989; Wiklund, 1999; Wiklund & Shepherd, 2005; Andrade-Valbuena, Merigó-Lindahl, Fernández & Alarcón, 2019; Kollmann, Stöckmann, Niemand, Hensellek & de Cruppe, 2021). One of the methods most widely used and recognized by the academic community is based on the construct called Entrepreneurial Orientation (“EO”), which seeks to capture the strategic position of an organization based on the processes, practices, and activities it deploys to conceive, conduct and implement ventures (Wales, Kraus, Filser, Stöckmann & Covin, 2021). The progress made in EO research has led to it being identified as an alternative management strategy that discovers and exploits new business prospects, even in those businesses that are not involved in launching new initiatives. (Lumpkin & Dess, 1996 ; Covin & Miles, 1999 ; Zahra, Nielsen & Bogner, 1999 ; Rauch, Wiklund, Lumpkin & Frese, 2009 ; Wales *et al.*, 2021).

Despite advances in research in different contexts that provide evidence of a positive relationship between EO and high performance in firms (Covin & Slevin, 1991; Lumpkin & Dess, 1996; Wiklund, 1999; Ireland, Hitt & Simon, 2003; Hughes & Morgan, 2007; Madsen, 2007; Anderson, Covin & Slevin, 2009; Rauch *et al.*, 2009); there are also independent studies that suggest that the EO - Performance relationship is only partially positive in some contexts (Lumpkin, Wales & Ensley, 2006; Madsen, 2007), and under certain conditions can even lead to poor performance (Hart, 1992).

Different calls for research indicate that these variations are the consequence of explanans that can be external or internal to the firm (Wales, *et al.*, 2011, 2021; Hernández-Perlines, Covin & Ribeiro-Soriano, 2021; Andersén, 2021). Other research has pointed out that there are elements impacting the results that do not correspond to moderating or mediating explanans but are rather the consequence of other more fundamental causes. For instance, Basso, Fayolle & Bouchard (2009) highlights that there are discrepancies in the measurement scales used (Lumpkin and Dess, 1996; Covin & Slevin, 1989), and which are therefore present in the categories or nature of the elements included in the research, pointing out that obvious differences are more profound than merely including additional dimensions. Other studies, such as those by George (2011), Covin and Wales (2012), George and Marino (2011), point out that the inappropriate use of existing measurement scales, specifically the use of formative or

reflective measurement models, has led to discrepancies between EO results and Performance. Other empirical findings suggest that the discrepancies in the relationship between EO and performance are the consequence of a relationship between them, that does not correspond to linearity but is more akin to curvilinearity (Bhuian, Menguc & Bell, 2005; Kreiser, Marino, Kuratko & Weaver, 2012).

As may be imagined, the source of discrepancies is quite heterogeneous and dispersed. In this order of ideas, the purpose of this chapter is to bring together these diverse sources of discrepancy in the results between EO and performance, reviewing the dimensionality and scales used for the definition of EO itself. In this sense, general guidelines are set forth for attending to research into EO and firms' performance.

AN OVERVIEW OF THE EO-PERFORMANCE RELATIONSHIP

Defining Entrepreneurial Orientation

Covin and Slevin (1989) proposes an approach that defines an entrepreneurial firm based on its expected behavior: "*An entrepreneurial firm is one that engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with proactive innovations, beating competitors to the punch*" (Miller, 1983, p. 771), in this sense, EO is understood to be a multidimensional concept, which includes proactivity (proactiveness), proclivity towards taking risks (risk-taking) and capacity for innovation (innovativeness) as independent dimensions, the three being representations of attributes that are indispensable for categorizing the firm as entrepreneurial (Covin & Slevin, 1989). Since it is so broad this first definition has generated great academic discussion regarding the omission of essential issues, it is not being entirely clear as to the distinction between whether the definition of EO focuses on the firm's willingness to make efforts, or whether it refers to the processes existing in the organization - or the result of such processes (Basso *et al.*, 2009). Based on these questions, Covin and Slevin (1991) reviewed the concept, and frame it in the notion of *strategic posture*, clarifying that visible and measurable actions are what make entrepreneurial organizations. This leaves *behavior* as the key element when defining and measuring the Entrepreneurial Orientation construct.

The study by Lumpkin and Dess (1996) subsequently proposed that Entrepreneurial Orientation is defined by the concrete results of the actions that lead to a new venture, and not from the actions themselves: "*EO refers to the processes, practices and decision-making activities that lead to new entry*" (Lumpkin & Dess 1996, p. 136). In this sense, their proposal focuses on 'new entry' as the central and fundamental object of measurement. Moreover, they consider that intentions and provisions are concepts that must be considered to understand the phenomenon: "*It involves the intentions and actions of key players functioning in a dynamic generative process aimed at new venture creation,*" therefore, they include Autonomy and Competitive Aggressiveness as additional dimensions to the construct (Lumpkin & Dess 1996, pp. 136-137). Autonomy is defined as the independent actions that a team or individual can contribute to the generation or vision of an idea and then carry it out until its completion. Competitive Aggressiveness is defined as the company's tendency to challenge its competitors in an intense indirect way to outperform them in the market (Lumpkin & Dess, 1996, pp. 141-148).

These assumptions lead to a radical change in the conformation of the construct, since it is said that the five above-mentioned dimensions are not collectively required for the phenomenon of Entrepreneurial Orientation to occur in terms of 'new entry', but rather that any of the five dimensions by themselves

or in combination, can generate a 'new entry'. This position is diametrically opposite to the positions of Miller (1983) and Covin and Slevin (1989).

The discrepancies that these positions raise are evident, which is why a review of the origin of the concept was necessary in order to understand its genesis and evolution. The study by Basso *et al.*, (2009) addresses this task, and points out that the concept of Entrepreneurial Orientation is born from the theory of the ecology of organizations, seeking to provide an explanation to the way the firm behaves to adapt and survive, based on its own repertoire of tools, including strategy, decision-making, response to decisions, as well as behavior focusing on the realization of the strategies themselves by the organization's top management (Basso *et al.*, 2009: pp. 317-319). This conceptual review concludes that the Lumpkin and Dess (1996) approach proposes a less accurate definition of the construct, since it represents a deviation from the essence of the concept, for the following reasons (Basso *et al.*, 2009, p. 314):

1. It mixes concepts of individual and corporate entrepreneurship in its definition.
2. It includes psychological traits such as willingness and propensity, which make it a measure of the invisible, as opposed to previously defined actions.
3. The key phenomenon is 'new entry', making the EO a means to an end, where it can only be defined in terms of the 'new entry' phenomenon itself.
4. The need to analyze the EO in terms of its variables independently does not allow us to assess the phenomenon as a whole.
5. Furthermore, Wiklund (1999: p. 38) points out that the focus on actions taken by the firm correctly places the term 'entrepreneurship' in the management framework, eliminating the potential limitations that it presents when correlated with a field of research that covers only the individual.

What is more, as discussed by Basso *et al.* (2009), the inclusion of the new dimensions presents drawbacks, for example, given the discussion regarding disposition-behavior, and trait-attribute, the 'tendency of the firm to challenge its competitors' can be classified as an 'unobservable' element. Moreover, the interpretation of the term 'beating to the punch' in Miller's (1983) definition based on a strategic market position approach and not on being the first to innovate, assigns a reactive/responsorial character to it, depending on the competition, as opposed to the proactive nature of it being the first to develop the product-service based on its attributes. On the other hand, the inclusion of autonomy as a dimension can also be questioned since in the definition of risk assumption, one notes that there is allocation of resources, and since these are not all necessarily monetary, it is somehow assumed that there will be a transition to responsibilities and therefore to independent actions, which generates a certain tautology between the two dimensions (Basso *et al.*, 2009).

These dissimilarities subsequently led to a revision of the definition, weighing the concept between disposition-behavior, and between trait-attribute by both exponents of each proposal (Covin & Wales, 2012). Regarding the disposition-attribute dilemma, they reexamine the concept as an organizational phenomenon and conclude that a better, clearer definition underlies the behavioral perspective, since it is the actions, and not the traits, that define the entrepreneurial event. The unobservable elements are, therefore, concepts that can be related to the EO, such as the firm's organizational culture or its values, but which by themselves cannot conceptualize EO. In terms of the trait-attribute dilemma, they conclude that singular entrepreneurial events do not constitute an attribute, since the definition of an attribute corresponds to a maintenance of the phenomenon over time, and not to an isolated or occasional event, such as a trait (Covin & Wales, 2012, pp. 856-858).

Dimensions and Measurement Scales Utilized to Capture EO

How the different dimensions are defined, how they interrelate with each other, and the structure of the construct's measurement model have been other essential elements present in the academic discussion. As discussed above, the three dimensions initially proposed for Entrepreneurial Orientation, i.e., proactivity (proactiveness), proclivity to take risks (risk-taking) and capacity to innovate (innovativeness), must be appropriated by the firm's actions and attributes. Literature suggests that they can be adapted as follows: *innovativeness* refers to the firm's participation in and support for new ideas, experimentation, creative processes and novelty, all of which can create new products, services or technological processes accompanied, in turn, by new competencies in next-generation technologies, production methods and the development of advanced manufacturing processes (Lumpkin and Dess, 1996: pp. 142-144). Miller and Friesen (1982) suggest that *proactiveness* represents the firm's diligence in taking the initiative and anticipating the search for new opportunities, in other words, it refers a) to the search for new opportunities that may or may not be related to the current lines of operation, b) the introduction of new products and brands, c) anticipating the competition, and d) strategically eliminating operations whose life cycles show signs of maturity or decline (Venkatraman & Ramanujam, 1987, p. 949). *Risk-taking* embodies the business unit management's commitment of resources to audacious projects that involve high risks with a moderate rate of return, employing planning and prediction to reduce uncertainty in the results (Certo, Moss & Short, 2009).

Discounting semantical differences in their definitions, the two leading propositions, one by Covin and Slevin (1989) and the other by Lumpkin and Dess (1996), differ in regard to decisions as to which scale EO researchers should use. Since each different conceptual representation inherently assumes the principle of causality in the construct of EO and its dimensions, this also leads to differences in the operationalization of the construct and therefore, of the results and conclusions obtained. This is important, because an imprecise characterization of the construct according to Monte Carlo simulations conducted by George (2011, p. 1307), lead to an increase in the estimates of the structural parameters of the EO by up to 250% and t-statistics by more than 68% in empirical findings, jeopardizing the validity of the statistical data of some of the studies and their conclusions. Following this line of thought, the study by Covin and Wales (2012) refers to the definition of the construct and the impact on research that the choice between formative vs reflective models and measurements have. They suggest that formative or composite measurement models (Lumpkin & Dess, 1991), arise from the argument that EO is a consequence of the organization's capacity to innovate, take risks, be proactive, autonomous, and aggressively competitive. This line of research suggests that not all these dimensions are needed to make an organization entrepreneurially oriented, rather assuming that the construct is formed or produced by its subdimensions, and therefore suggesting that to measure the latent variable it is necessary to be focused on the visible and calculable variables, which are those that generate the construct. This classification will include the models that suggest that the EO is a linear combination of the measurement of its dimensions, classifying firms in a continuous range of organizations starting at the most conservative and ending with the most entrepreneurial. Reflective measurement models, however, such as Covin and Slevin (1989), assume that Entrepreneurial Orientation is a latent variable whose changes are reflected in the measurement of its dimensions (MacKenzie, Podsakoff & Jarvis, 2005). This arises from the argument that the presence of an EO in the firm generates improvements in the organization's capacity to innovate, assume risk and be thoroughly proactive.

When addressing this concern, theoretical analysts of EO, such as Basso *et al.*, (2009) and George & Marino (2011) suggest that a reflective conceptualization is more suitable than a formative interpretation. Since the EO represents organizational processes, methods, decision-making, or an overall strategic stance, then it clearly attempts to capture an unobservable construct, representative of the firm's inclination toward entrepreneurial behavior, that is much broader than the simple sum of its dimensions. Such proclivity "would be reflected in the key dimensions of innovation capacity, proactivity, and risk-taking, but would not be defined by them" (George & Marino 2011, p. 1016). Other methodological comparisons between both models lead one to conclude that formative models are unsuitable for research into EO for the following reasons (Covin & Wales, 2012, pp. 8-10): firstly, formative models tend to be more susceptible to interpretive confusion, rendering the results obtained dependent on the extent to which the dimensions that make up EO are highly related to similar constructs that arise in the research model (pp. 8-9). Secondly, formative models do not function as unified entities, since their measurement does not share a correlation or a common cause, making it impossible to identify EO, nor does it differentiate its components from other constructs, whether they be antecedents or consequences of each of its dimensions, as compared to other related constructs in a given model (p. 10). Thirdly, the need to form an additive index in the formative models leads to a loss of information if the dimensions are not examined as independent predictors of EO, so parsimony is lost in this type of models.

When considering dimensionality, the EO measurement model, and the analytical approach chosen in different previous empirical research in studies such as those by George (2011), Covin and Wales (2012), and George and Marino (2011), highlight three common mistakes made by researchers:

1. The research starts by defining the EO as a reflective model, considering for instance the Covin and Slevin (1989) model, and then, the studies analyze the behavior of each of the dimensions with other constructs. In this case, inferences should not be drawn about the causal relationship of the subdimensions with other variables or constructs since, by definition, the subdimensions share variance, which is the reflection of the EO as a latent variable (George 2011, p. 1297).
2. The research assumes EO as a formative construct, where each dimension contributes to EO (assuming for instance, the model used by Lumpkin and Dess, 1991), but only certain dimensions are included in the analysis because, by definition, the construct is the combination of its dimensions, so omitting the contribution of any one of them affects the measurement of EO (George 2011, p. 1298).
3. The research assumes EO as a reflective construct, where each dimension contributes to EO, but it is assumed that the sum of the scale corresponds to its measurement. In this case, it is intrinsically assumed that each dimension contributes in the same way to the construct formed, and the measurement obtained will include the error of the measurements taken (George & Marino 2011, p. 1003; Covin & Wales, 2012, p. 10).

Regarding the EO construct measurement scales, the most widely used is the one developed by Covin and Slevin (1989, 1991) based on the work of Miller (1983), and to a lesser extent the Lumpkin and Dess (1996) scale (Rauch *et al.*, 2009). Although in different empirical studies certain different scales have been employed, their novelty lies mainly in the inclusion, variation or elimination of items of the two previously mentioned scales (George & Marino, 2011), and in how these dimensions are structurally related, to conform either formative models, or reflective models, such as the adaptation implemented

by Hughes and Morgan (2007), to the Lumpkin and Dess (1996) scale by converting it into a reflective and non-formative scale, but maintaining the five proposed dimensions.

The Relationship of Entrepreneurial Orientation with a Firm's Performance

There is ample empirical evidence to indicate that the Entrepreneurial Orientation positively impacts the performance of the firm, both at the level of cross-sectional studies (Rauch *et al.*, 2009; Rosenbusch, Brinckmann & Bausch, 2011) and longitudinal studies (Wiklund, 1999; Madsen, 2007). In this sense, certain seminal subjects in the literature, such as size, age, and the maturity of the firm (Wiklund, 1999), first entrant advantages/disadvantages (Lieberman & Montgomery, 1998), asymmetries in information (Kerin, Varadarajan & Peterson, 1992) have been amply addressed. Some well-known contextual aspects have also been meta-analyzed, such as technological and market dynamism (Rauch *et al.*, 2009), regulatory quality and political stability (Saeed, Yousafzai and Engelen, 2014), environmental munificence (Rosenbusch, Rauch & Bausch, 2013), industry trends, growth rates, as well as the bargaining power of customers, suppliers and competitors (Lyon, Lumpkin & Dess, 2000), the environment and the life cycle of the industry (Lumpkin & Dess, 2001), and global competitiveness (Lee & Peterson, 2001). However, the following questions are that arise from the above:

1. In addition to the theoretical discrepancies and the empirical results shown by the scales developed to measure EO, will there be any differences caused by the different performance measures used?
2. Empirical research assumes a linear relationship between EO and performance, but under what conditions, or under what assumptions, could this relationship represent a different relationship?

The following sections will seek to addressing the above questions.

- **Are there discrepancies between EO and Performance due to conceptualizations in the performance measures?**

The performance measures used in the different investigations can be classified as being objective or subjective. The former has been previously calculated directly using indicators based on financial statements, such as ROA, ROE, growth in sales, growth in assets, etc., and others that could be classified as objective even if they are not based on financial statements, such as growth in the number of employees. The subjective measures have been captured through the respondent's perception of the performance of their organization in comparison with that of the competition or against its own performance in previous periods, where performance is valued as a multidimensional measure, mainly evaluating growth and organizational financial performance. When evaluating whether there are differences between these objective and subjective measures, studies such as those by Dess and Robinson (1984); Venkatraman and Ramanujam (1987); Andrews, Boyne, & Walker (2006), and Wall *et al.*, (2004) find evidence from previous studies that both types of measurement are highly correlated.

According to the criteria of Venkatraman and Ramanujam (1986), another possible classification may be between financial and non-financial measures. Two meta-analysis exercises have shown that the relationship between EO and performance is positive even if they are measured with non-financial measures (Rauch *et al.*, 2009; Saeed *et al.*, 2014). Other interesting results of this meta-analysis show that the relationship between EO and performance is positive in various contexts, as shown in Table 1.

Table 1. Summary of related performance measures in the meta-analyzes

EO-Performance		K	N	ES	95%CI
Performance Measure	Objective	50	11497	0,224	0,154 to 0,258
	Subjective	134	37171	0,310	0,265 to 0,315
Dimension of performance	Profitability	45	12711	0,184	0,099 to 0,191
	Growth	49	10470	0,235	0,195 to 0,245
	Overall performance	109	28569	0,304	0,257 to 0,315
Firm Size	Micro	8	1875	0,345	0,200 to 0,346
	Small	64	15044	0,318	0,280 to 0,338
	Large	40	9640	0,264	0,225 to 0,280
Market size	Small	39	9224	0,265	0,215 to 0,275
	Large	127	32431	0,272	0,225 to 0,283
Economic development	Developing nations	55	18037	0,280	0,239 to 0,281
	Developed nations	111	23582	0,240	0,220 to 0,240
Technological Focus	High tech	147	40528	0,271	0,235 to 0,276
	Non-High tech	30	6612	0,321	0,275 to 0,327
K = number of effect sizes; N = overall number of observations; ES: reliability corrected random effect mean effect size; 95%CI: confidence interval.					

Source. Rauch *et al.*, (2009) and Saeed *et al.*, (2014)

It is important to note that the most meaningful relationship in performance measurement is related to “overall performance.” Since focusing only on creating and offering a ‘new entry’ misses innovation dimensions that are essential for generating value for the firm (Rosenbusch *et al.*, 2011), it is evident that having a single approach solely towards the development of new entries such as novel products or services, eliminates elements that generate different beneficial impacts and value for the firm. This strengthens the support given to the model of Covin and Slevin (1989) in previous studies mentioned previously in our paper. On the other hand, the weakest correlation of all is the one related to performance (profitability), especially if the related confidence interval is reviewed, where there is the possibility that there is no correlation. In this sense, it is important to review the second additional question proposed.

• Nonlinear relationship between EO and performance

Searching through the WoS, SciElo and Scopus databases, we find eight (8) articles that have addressed curvilinear relationships between EO and organizational performance.

In the context of US non-profit hospitals, Bhuian *et al.*, (2005) approach EO as a firm’s capacity to coordinate resources and knowledge, bringing competitive advantages that modify the relationship between Market Orientation (MO) and performance. These concepts consider that EO provides a filter through which organizations perceive and direct market intelligence processes and conclude that the effect of a company’s market orientation towards business performance is greater when the EO of the company is at a moderate level and that at low and high levels of entrepreneurship, the effect of MO on performance will be weaker than when the level of entrepreneurship is moderate as a consequence of

1) lack of development of new ideas - low EO -; or 2) approach based solely on the development of the product - high EO -, as a reaction to the information obtained from the market.

Kreiser *et al.*, (2012) conducted the first international study at the SME level, assessing the relationship between each of the EO dimensions and performance in nine different countries (Australia, Costa Rica, Finland, Greece, Indonesia, Mexico, the Netherlands, Norway, and Sweden) and in thirteen different industries. Their study confirms that innovation capacity (innovativeness) and proactivity (proactiveness) have U-shaped relationships with performance. However, risk-taking turned out to have a U-shape with predominantly negative slopes. Regarding the capacity for innovation and proactivity, they argue that the U-shape is a consequence of the high requirement of resources for its development, where the costs exceed the benefits at low levels of proactivity and innovation, but at high levels, its benefits exceed the costs of its implementation. Regarding risk, they argued that its shape is given based on Bowman's risk-reward paradox (Bowman, 1980), where at negligible risk there is no reward, and at extremely high risk, the reward decreases due to management effects. They also found that in individualistic cultures, the dimensions of EO impact on performance are better than in collectivist cultures.

The study by Wales, Patel, Parida & Kreiser (2013) was conducted in small companies in Sweden. Their research confirms that there is an inverted U-shaped relationship between EO and performance, and additionally found that the presence of the ability to generate collaboration networks (network capabilities) and the information and information technologies (ICT capabilities) capacity helps to overcome negative relationships related to debts of size (liabilities of smallness), however, they warn that the absence of these capacities leads to a worsening of the relationship between EO and performance, reaching harmful levels.

Four articles were developed in the Chinese context: Tang, Tang, Marino, Zhang & Li, (2008); Su, Xie & Li (2011); Tang and Tang (2012) and Chen and Hsu (2013).

The research of Tang *et al.*, (2008) proposes that a linear relationship between EO and performance is not the most appropriate in the institutional context of China given the differences between its environment and the western one, based on two very characteristic elements (p. 220): 1) the internal organizational structures differ from those in the West due to the lack of support and contact networks that firms suffer (specifically given the need to have political contacts in order to obtain resources), the inexperience of the management teams and the roles of informalization within the company; and 2) the institutional environment, which contains the coexistence of a market-based capitalist system and a socialist system that controls resources, financing, the size of investments, the structure of the industry, the formation of new businesses, and the distribution of materials. These differences led them to empirically test their hypotheses and to conclude that the specific relationship between EO and performance presents an inverted U shape, given that: 1) companies with low levels of EO do not compete skillfully and therefore generate low returns; 2) firms with high levels of EO do not achieve competitive advantages due to the lack of institutional support and internal informalization, which leads to poor adaptability and therefore lower performance; 3) organizations with medium levels of EO achieve better performance, since they are in the transition zone between the unique capitalist and socialist systems of that nation and this allows them to absorb fewer limitations.

Complementing the results presented above, the subsequent study by Tang and Tang (2012) finds that for this scenario, the generic prospector and analyzer strategies suggested by Miles *et al.*, (1978) are more suitable for mitigating the inverted U shape in SMEs. This means that analyzer and prospector strategies in the Chinese scenario would soften the curvilinearity of the relationship between EO and performance.

The study by Su *et al.*, (2011) compares the relationship between EO and performance, proposing that their relationship is curvilinear only for new ventures. The authors give four reasons to indicate that the EO in new companies is negative: 1) a high EO would imply the inclusion of scarce resources, which would lead to poor performance, so that in new ventures, the EO is low ; 2) a high EO would lead to focus more on the product than on the market, rendering its cost/benefit ratio negative; 3) high levels of proactivity in informal environments lead to poor performance; 4) high levels of risk lead to activities that can get out of control. They encompass these results and argue that for new companies, a too low EO does not allow them to achieve opportunities, while a high EO will lead to lack of control, both leading to lower organizational performance. They conclude that as the company gets older, the relationship changes from curvilinear to linear, a supremely crucial element, since it manages to combine the results obtained regarding the linear relationship in several previous investigations.

Chen and Hsu (2013) attest that in non-profit service organizations, the inverted U relationship in China remains in each of the EO subdimensions, although they conclude that this effect can be mitigated with Market Orientation (MO), specifically concluding that each of the MO subdimensions (generation and dissemination of market intelligence) affect the high or low presence of each of the EO subdimensions in the firm differently.

In the context of the South Korean manufacturing industry Kim and Kim (2016) suggest that the inverted U-shape could be a consequence of organizational incapacity, both in the lack of management of resources invested in R&D, and in the unsuitable management of balanced portfolios in the development of new products. As contingencies they indicate the hostility of the environment. Nevertheless, the study does not conclude whether the lack of management described impacts the relationship between EO and performance; however, they find that environmental hostility has a negative effect on the relationship between EO and performance.

Results of these studies are summarized in Table 2.

In general, the eight studies indicate a relationship between EO and inverted U-shaped performance, most of them conducted in Asian countries: China and South Korea. Two studies, by Kreiser *et al.*, (2013) and Chen and Hsu (2013), have investigated the relationship between the subdimensions of the EO and performance, generating opposite results in the shapes of their curves. Despite the above, both studies assume that the construct is multidimensional and the measurement is made by employing a higher-order reflective scale, in both cases that of Covin and Slevin (1989), which, as mentioned above, is an error in this type of study since, by definition, the measurement assumes that EO is represented by the covariance between its subdimensions, and therefore the relationship found between them and other constructs will be attributed to the error variance (George 2011, p. 1297), and would therefore jeopardize the validity of its conclusions.

Most of these studies have focused on SMEs, showing that internal characteristics such as inexperience in management, lack of formalized processes, lack of capacities to generate and maintain business networks (network capabilities), the liability of the newest/smallest (liability of newness/smallness), lack of portfolio management, lack of risk management in the invested capital, and even the lack of information management based on market intelligence, are generating these inverted U-shaped results. Other aspects that have affected the relationship at the contextual level are the hostility of the environment, intercultural aspects of each nation such as individualism, and certain exotic elements specific to China such as the mixture of institutionalism of two economic models. Additionally, hostility and the dynamism of the environment, the size and age of the firm have been commonly addressed as a control variable, although the second element was addressed in the study by Su *et al.*, (2011), evidencing its impact in the context of Chinese firms.

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Table 2. Summary of findings in studies that relate OE and performance curvilinearity

Author	EO Scale	EO construct -Unidimensional -Multidimensional	Performance Measurement	Sample size	Industry	Firm Size	Country	EO - Performance curvilinearity Shape	Causes of Curvilinearity	Moderators of curvilinearity
Tang, J., Tang, Z., Marino, L. D., Zhang, Y., & Li, Q. (2008)	Covin & Slevin (1989)	Unidimensional reflective	*Subjective (based on McDougall <i>et al.</i> , (1994): sales growth rate; market share; profit growth rate before tax; overall performance) *Objective: Sales volume	392	Multiple industries	Small-Medium-Large	China	Inverted U Shape	*Organizational characteristics (management inexperience, unformalized processes, lack of network capabilities) * Mix of socialist and capitalist institutionalism	-
Tang, Z., & Tang, J. (2012)	Covin & Slevin (1989)	Unidimensional reflective	Subjective (profitability, sales, sales growth rate, market share, net profit, gross profit, cash flow, return on investment, product innovation, and process innovation)	155	Manufacturing and Services	SMEs	China	Inverted U Shape	*Organizational characteristics (management inexperience, unformalized processes, lack of network capabilities) * Mix of socialist and capitalist institutionalism	Prospectors and Analyzers strategies alleviate the curve.
Su, Z., Xie, E., & Li, Y. (2011)	Variation of Keh, Nguyen, and Hwei (2007), Miller (1983), Wiklund and Shepherd (2005).	Unidimensional reflective	Subjective (return of assets, market share, net profit, return on sales, and sales)	223	Manufacturing	Not reported	China	Inverted U Shape	liability of newness	Established firms evidenced a linear relationship between OE and performance, while new ventures evidenced a curvilinear shape (Age)
Chen, H. L., & Hsu, C. H. (2013)	Covin & Slevin (1989)	Higher Order Multidimensional Reflective	Subjective nonprofit firm performance (Sun, 2006): (The prospect of our organization is good; The satisfaction of our service object is high; Our employees are satisfied with the current business model; The coordination is high among our employees) Our employees are satisfied with the organization. Our employees are satisfied with participating organization) (p:466)	307	Non-profit-organizations	Small	China	Inverted U Shape (Each sub dimension)	Based on Tang <i>et al.</i> , (2008)	Market Orientation: Each subdimension of MO (generation, dissemination and responsiveness) impacts each subdimension of EO differently, depending on the MO subdimension's strength, giving shape (linear or curvilinear) to the relation between them (Innovativeness, Proactiveness, Risk taking) and performance. When both market intelligence generation and responsiveness are high, the relationship between innovativeness and performance becomes linear: when high-market intelligence responsiveness, the relationship between Proactiveness and performance becomes linear (p: 445)

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Table 2. Continued

Author	EO Scale	EO construct -Multidimensional	Performance Measurement	Sample size	Industry	Firm Size	Country	EO - Performance curvilinearity Shape	Causes of Curvilinearity	Moderators of curvilinearity
Kreiser, P. M., Marino, L. D., Kuratko, D. F., & Weaver, K. M. (2013)	Covin & Slevin (1989)	Higher Order Multidimensional Reflective	Subjective: sales growth	1668	Multiple industries	SMEs	Australia, Costa Rica, Finland, Greece, Indonesia, Mexico, the Netherlands, Norway and Sweden	U-Shape (Each subdimension)	The U-shape is a consequence of the high resource requirements for the implementation of innovative and proactive activities, where costs outweigh the benefits for low levels of proactivity and innovation, but at high levels, their benefits outweigh the costs of implementation.	NONE: Innovativeness and Proactiveness displayed predominantly positive U-shaped relationships with SME performance. Risk- taking, however, displayed a predominantly negative U-shaped relationship with SME performance. (p:273)
Wales, W. J., Patel, P. C., Parida, V., & Kreiser, P. M. (2013)	Covin & Slevin (1989)	Higher Order Multidimensional Reflective	Objective: 3yr period Growth, measured with sales, operating profit, and return on asset	258	High Tech.	Small	Sweden	Inverted U Shape	Liability of newness	*Information and Communication Technology capability (ICT) and Network Capability: The absence of these capabilities turned the EO-performance relationship negative.
Bhuian, S. N., Menguc, B., & Bell, S. J. (2005)	Miller & Friesen (1983); Morris & Paul (1987)	Higher Order Multidimensional Reflective	Subjective: nine items	231	Non-profit- organizations (Hospitals)	Proxy in number of beds; Small, Medium and Large	USA	Inverted U Shape	Market Orientation	Exploitation of market intelligence
Kim, H. J., & Kim, B. K. (2016)	Miller (1983)	Higher Order Multidimensional Reflective	Subjective: revenue growth, market share growth, profit growth and overall performance	252	Manufacturing	SMEs	South Korea	Inverted U Shape	Organizational inability: 1) Lack of management of resources invested in R & D; 2) poor management of balanced portfolios in the development of new products	Environment hostility negatively impacts the EO performance relationship.

Source. Authors

It could be asked whether the impact on the relationship between EO and performance in the case of countries with emerging economies is due to conditions such as the difficulty in obtaining resources and/or financing (Vives, 2006; Beck, Demirgüç-Kunt & Martinez Peria, 2008), inexperience of the team management and the roles of intraorganizational informalization (Tesfom & Lutz, 2006; Vassolo, De Castro & Gomez-Mejia, 2011), which also negatively influence how EO is disseminated within the organization, and therefore in the organization, creating organizational inertia, which is a common elements in developing countries, and would have commonalities with the case of China presented by Tang *et al.*, (2008).

DISCUSSIONS

This chapter/research has endeavored to collect the diverse sources of discrepancy that have impacted on the measurement of the results of Entrepreneurial Orientation on organizational performance, beyond moderating and or mediating influences of another variables. Five main groups of studies have been found: 1) studies that show an absence of a clear definition, whether of the EO conceptualization, or within the performance analysis, that would allow for evidencing the nature of the phenomenon; 2) the dimensionality of the construct, leading to the inclusion or elimination of dimensions indiscriminately in dissimilar empirical investigations over time; 3) discrepancies in the construct measurement models, where formative and reflective measurements were included, without taking into account which was the most appropriate measurement for the purposes of each investigation; 4) discrepancies in performance measures, which produce variable results; 5) the possibility of curvilinear behavior in the relationship between EO and performance.

Regarding existing measurement scales, it was found that the Covin and Slevin (1989) scale includes items based on the measurement of actions, which is why it has managed to remain the most stable over time in different investigations. Based on previous methodological reviews of the dimensionality of the EO construct (Covin & Wales, 2012; George, 2011), evidence supports a greater contribution of the phenomenon to the three dimensions of proactivity (proactiveness), capacity for innovation (innovativeness) and risk assumption (risk-taking), originally proposed by Miller (1983). In a similar vein, previous theoretical discussions (Basso *et al.*, 2009; George & Marino, 2011) lead one to conclude that the scale of Covin and Slevin (1989) captures the phenomenon with greater parsimony than the five dimensions model of Lumpkin and Dess (1996).

Although there are discrepancies in the measurement models (formative models vs. reflective models) of EO, their dissimilarity can be beneficial if the characteristics to be measured are understood vis-à-vis other constructs. In general, the measurement models that are best suited to measuring EO and its relationship with performance are the reflective models, if they do not attempt to measure the individual relationships of each of the dimensions vs. performance (George, 2011; George & Marino, 2011). In this case, it is better to use multidimensional formative measurement models, where the measurements of the dimensions are formative, and these, in turn, form the concept of EO.

Concerning performance as a variable, the different examples of meta-analysis that we analyzed converge in presenting a greater relationship in the measurement of performance when this measurement is taken generally (i.e., overall performance) than when only financial variables are measured, which is consistent with the suggested EO impact level of Rosenbusch *et al.* (2011, 2013). The different performance measures in general have been considered positive, except in the case of the performance

measurement (profitability). This could be since the use of financial resources to leverage the different projects in practice signifies higher sunk costs, compared to organizations that do not seek support for innovation or entrepreneurship, and therefore the EO can be less strongly correlated with superior performance (profitability).

Regarding the curvilinear behavior of the relationship between EO and performance, studies have focused mainly on SMEs and non-governmental organizations (NGOs), specifying that the curves are due to two elements very commonly used in the literature, the debt of the new entries, and the small debt (liability of newness/liability of smallness), characterized by deficiencies in experience and efficiency in their management processes, as evidenced in Table 2. This suggests that these moderations can go beyond a simple reduction of the effect of EO and performance, even showing a negative effect on it. This is a clear call to conduct further research. Other findings have been given in detailed Asian contexts, which due to the political configuration that underlies the causality of the results, means that it would be difficult to completely replicate them in other settings, although certain elements may be common, such as the difficulty in obtaining resources and/or financing (Vives, 2006; Beck *et al.*, 2008) and the excess of red tape in the economy, which to an extent are common elements in developing countries, and which would be common in the case of China presented by Tang *et al.*, (2008), and Tang and Tang (2012).

CONCLUSION

This study corresponds to different calls for research to inquire about those elements that could be generating discrepancies about the EO-Performance relationship. For instance, the study by Wales *et al.*, (2013) requests the inclusion of the assessment of elements present in the firm's resources, which would have generated curvilinearity in the results of the relationship. Other investigations requested the use of common concepts that would build cumulative knowledge around the phenomenon, pointing out that discrepancies on the different scales for measuring EO correspond to operationalizations that did not match the conceptual level addressed (Basso, *et al.*, 2009; Andrade-Valbuena, Merigo-Lindahl & Olavarrieta, 2018), the incidence of measurement errors (George, 2011), and even discrepancies in the definition of the concept.

Considering the above, this chapter/research has been conducted to provide a global vision of the knowledge available regarding EO and its direct relationship with organizational performance, as two variables of great interest for organizational management, collecting those elements or concepts that have been deemed influential results between these two variables throughout academic literature. In this sense, a review of the concepts, their dimensionality and the scales of measurement used was performed, summarizing previous revisions. Information was also collected on other sources of discrepancy that indicated a curvilinear relationship between these two variables. In general, five sources of discrepancy were found, related to absences in the clear definition of the construct, its dimensionality, the operationalization of the EO and performance measurement scales, the non-linearity of the relationship and discrepancies in the positions of different constructs of the nomological network.

Certain limitations of this study arise from the practical restriction of not being able to address all the studies related to EO. In this sense, studies that expanded the findings of the nomological network, and variables that enrich the concepts addressed, could be obviated (e.g., moderators and mediators of the EO-Performance relationship). In this same sense, studies that were in languages other than English or

Spanish were excluded, given the prerogative attributed to the research in the field of strategic management to organizational resources, and their relationship with performance.

NEW INVESTIGATIONS

- Examine the influence of EO in performance as well as in the development of organizational capabilities in Latin America as well as other Emerging Market scenarios, where there is a lack of empirical evidence of this relationship.
- Explore how characteristic resources on different organizations, as in the case of Multilatinas, Family firms, and even mergers and acquisitions, influence the development of an entrepreneurial oriented strategy within the firm.
- Study how EO, and/or its different dimensions (innovativeness, proactiveness and risk taking) affect further measures of performance (i.e., product service quality/variety, customers trust/satisfaction/loyalty/retention, development of intellectual capital), as well as other internal factors related to employees (i.e., Retention of employees, psychological contracts, burnout, etc.).
- Examine how Entrepreneurially Oriented firms use incentives and productivity to facilitate exploration and exploitation of business opportunities.
- Evaluate if contextual aspects as environment hostility, market dynamism, industry lifecycle, industry tendencies, bargain power of buyers/suppliers or industry rivalry, can shape a curvilinear relationship between EO and firm performance.
- Study the influence of internal and/or external network ties on the development of an Entrepreneurial Oriented strategy, and therefore, in the development of exploration of business opportunities.
- Evaluate the interaction of other strategies focused on exploitation that can be applied simultaneously within the firm (i.e., Market Orientation, Learning Orientation) with strategies focused on exploration, as Entrepreneurial Orientation, and its effects on firm performance.
- Look at the methods and or processes that are favorable for organizations to implement an Entrepreneurial Oriented strategy, as internal knowledge sharing and formalization, knowledge transference between other firms, alliances, among others.
- Examine some resources within the firm as potential drivers of the relationship between EO and performance, as managerial experience, human resource assets, negotiation flexibility.
- Look at the differences between resource characteristics, from dynamic to static, firm specific and nonspecific, tangible to intangible, geographically/socially/temporally constrained and unconstrained, and its influence on the development of an entrepreneurially oriented firm, and thus, performance.

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KEY TERMS AND DEFINITIONS

Construct: Theoretical construction or abstraction, made to understand a specific problem, or to measure an unobserved phenomenon or latent variable, which discriminates between other variables or elements according to the characteristic that it abstracts.

Dimensionality of the Measurement Scales: Psychometric property of constructs, which determines its structure.

Entrepreneurial Orientation: A strategic position of organizations that captures its proactivity (proactiveness), proclivity towards taking risks (risk-taking) and capacity for innovation (innovativeness), that lead processes, practices, and decision-making activities towards new entry.

Entrepreneurial-Oriented Firm: An organization that engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with proactive innovations, beating competitors to the punch.

Formative Measurement Models: Theoretical and methodological approach of variables where the indicators “cause” the latent variable (construct), such that a change in it is not accompanied by a change in all its indicators.

Innovativeness: Refers to the firm’s participation in and support for new ideas, experimentation, creative processes, and novelty, all of which can create new products, services or technological processes accompanied, in turn, by new competencies in next-generation technologies, production methods and the development of advanced manufacturing processes.

Proactiveness: Represents the firm’s diligence in taking the initiative and anticipating the search for new opportunities, in other words, it refers a) to the search for new opportunities that may or may not be related to the current lines of operation, b) the introduction of new products and brands, c) anticipating the competition, and d) strategically eliminating operations whose life cycles show signs of maturity or decline.

Reflective Measurement Models: Theoretical and methodological approach of variables that assume the direction of causality from the construct to its measurements, where a change in the latent variable (not observable) will be reflected in a change in all its indicators.

Risk-Taking: Embodies the business unit management’s commitment of resources to audacious projects that involve high risks with a moderate rate of return, employing planning and prediction to reduce uncertainty in the results.

Chapter 18

Translating in Turbulent Times: Impact of the COVID-19 Pandemic Crisis on the Language Service Industry in Colombia and Spain – Perspectives to Become Sustainable

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ABSTRACT

The language service industry was deeply impacted by the COVID-19 pandemic. The turbulent times faced because of COVID-19 changed the way LSPs made decisions and delivered services to their customers. LSPs had to react by adapting themselves to the unexpected new market game. This study scrutinizes what the COVID-19 meant for the LSPs based in Colombia and Spain, and how they were tackled from those two different markets. Colombia, a developing country with an industry almost exclusively made up of independent freelance translators and interpreters, faced the crisis both distressingly and smartly. Spain, a developed country with a stronger language industry, coped with the COVID-19-induced economic calamity in a quite analogous fashion. In both cases, uncertainty led LSPs to make decisions, clarify their visions, and make a clear commitment to becoming sustainable in the global market. An in-depth analysis of how those two industries behaved might be useful to draw important conclusions on how a crisis can become an opportunity if properly managed.

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INTRODUCTION

The impact of COVID-19 worldwide was, at the very least, twofold: it caused a lot of grief for the loss of some millions of human lives, and it brought about an economic calamity for many. Dozens of industries were stricken by the pandemic-related measures implemented by governments to curb the spread of the disease.

The language service industry was no exception. It was vastly affected in terms of demand and, sometimes, revenue and profit. Some fields of work, such as on-site interpreting or non-essential in-person translation, were dramatically impacted and came close to obliteration. Many language service providers (LSPs), whether companies or freelancers, had to adapt themselves to the new unanticipated situation if they wanted to continue doing business. Some took the crisis as an opportunity for growth and took advantage of it accordingly.

This study scrutinizes what the COVID-19 turbulent times meant for the LSPs based in two Spanish-speaking countries, Colombia and Spain, and how they were tackled from those two different markets. Colombia, a developing country located in South America boasted, at the time of the pandemic, a language service industry almost exclusively made up of independent freelance translators and interpreters, most of whom faced the crisis both distressingly and smartly. Spain, a developed country situated in Europe had by then a stronger language service industry if compared to the Colombian one—but only average if contrasted with other countries, as observed by Clavijo Olmos & Duro Moreno (2020)—, and coped with the COVID-19-induced economic calamity in a quite analogous fashion. In both cases, uncertainty led LSPs to take decisions (sometimes painful ones) to be able to outlive the crisis, clarify their visions, and make a clear commitment to becoming sustainable (or more sustainable) in the global market.

The methods followed to analyze both cases were twofold too: a quantitative approach was used for Colombia, and a qualitative one was employed for Spain. The objectives were, once again, twofold: (i) describing the state of the language service industry in Colombia and Spain, separately, throughout the pandemic-driven crisis; and (ii) comparing how the LSPs from both countries tackled their own specific work-lives and professional situations all along the time it lasted.

Section 2 reviews the most significant facts and figures associated with COVID-19 concerning the language service industry and appraises the literature (most of it published online only) dealing with it. Section 3 explores, separately and comparatively, the cases of Colombia and Spain. Section 4 proposes some research directions for the future. Section 5, finally, wraps up all the above and offers a few take-aways. Section 6, lastly, includes some key terms and definitions.

BACKGROUND—SOME FACTS AND FIGURES

The COVID-19 Crisis Impacted the World Deeply, So Now What?

Since the COVID-19 pandemic impacted the world early in 2020, a global crisis in terms of (i) lost human lives, (ii) permanent or long-standing side effect-stricken patients, (iii) increasing healthcare demands, (iv) asymmetrical vaccination campaigns, (v) erratic political approaches (most of them, ideology-oriented) to fighting the spread of the pandemic, (vi) lopsided (or downright distorted) information transparency strategies, etc. changed, probably forever, the ways most people conducted their, up to then, everyday ordinary existences. The world's economy was vastly and badly affected, too, by some of the pandemic-

related measures (among them, compulsory home lockdowns, strict curfews, travel bans, and business closures) that most governments implemented to curb the propagation of the disease caused by the virus. As a result of all that, many people saw not only their loved ones go forever but also their jobs vanish into thin air. While the storm is still far from abating, the resuscitation of many a production, consumption, trade, business, and finance activity is slowly helping severely constrained economies recover from the doldrums they were forced to linger for eighteenth consecutive months or more. Nevertheless, recovery, however green, techy, good-looking, and shiny may look for some high profile policymakers in the last quarter of 2021 and the first quarter of 2022, is being hard to achieve even for rich countries, since such triggers as the post-pandemic demand excesses, the scarcity of raw materials, the rising cost of labor, and the growing constraints on freight transportation (due to the geopolitical tensions taking place in certain hot locations in the world), among other, are causing shortages and booming inflation trends worldwide. The OECD (2021) clearly stated on this matter that “[t]he COVID-19 pandemic is transforming how we think about our economies and our societies.”

Just as all countries fought the spread of the COVID-19 disease by adopting and implementing the best strategies they could devise and implement during the public health crisis, so too each of them turned to take different steps to overcome the economic calamity it unleashed. Indeed, the COVID-19 pandemic pushed the whole world to adapt to the “new normal” (new social types of relationships, new face mask-filled landscapes, new home-based work modes, new or renewed types of production and consumption, etcetera), at the core of which was technology. New tools, new resources, new apps, new software solutions (and, to the amazement of many, a few disruptive approaches to researching, investing, and contract-making, too) played a pivotal role in the “new normal.” The COVID-19 pandemic was a time of suffering but also a time of learning and adaptation. In the field of interpreting, for example, on-site conferences, meetings, and seminars had to transform themselves if they wanted to survive, and for many months they turned to a remote-only (or a hybrid) modality. Remote communication solutions (cloud-based or not), including video, audio, subtitling, and interpreting tools, became essential for many since they helped break distance barriers and made people feel safer and more confident.

As the pandemic came to be (slowly, asymmetrically, and painfully) under control, most governments, as well as some supra-governmental organizations, such as the European Union, adopted schemes for reviving their own (and, grudgingly, their partners’) economies. The Economist Intelligence Unit report (2021) claimed attention to how public debt and fiscal stimulus were used by governments and supra-governmental organizations to combat the COVID-19 pandemic’s negative impact on the world’s economy, as well as on the implications that those two financial instruments might have: “To tackle the outbreak, developed countries have unleashed record-high amounts of fiscal stimulus, pushing public-debt ratios to unprecedented levels. Meanwhile, long-term growth prospects are grim, raising questions about the sustainability of such high debt levels and the implications of the current situation for economies around the world.” As to how labor markets were affected by the pandemic, the same report tagged as *innovative* the trends of automation and digitalization that stirred many of the world’s economies in those turbulent times. The more skilled people are, the less risk they run to be replaced in their jobs, it claimed (The Economist Intelligence Unit report, 2021):

Machines replace workers in certain industries and new jobs are likely to be less labor-intensive. Jobs that mainly involve routine tasks that can be standardized—those at the low-to-medium skill level in the manufacturing, hospitality, and catering, and retail sectors are particularly at risk of being filled by robots and artificial intelligence (AI). Meanwhile, skills required by newly created jobs take time and

financial resources to acquire, and these new positions may not be suitable for—or desired by—people who were laid off in sunset industries.

As compiled by Adrian (2021) in a speech delivered at the International Monetary Fund, the five key global forces that, according to some scholars and politicians, will be critical to shaping the world's economic outlook for the future are the following: (1) the growth of digital technologies; (2) the importance of sustainability (in a setting of climate change); (3) the role of changing demographics; (4) the complexity of geopolitics; and (5) the inevitability of structural transformation. In our opinion, to those forces at least one more, very commonly neglected, should be added—that of disruption.

Impact of the COVID-19 Pandemic on the Global Language Service Industry—Lit Review

The language service industry was, like many other economic sectors, hugely affected by the COVID-19 pandemic. Most literature published about what—most probably or really—took place during the worst part of it was prepared and disseminated online by consultancy firms or associations. Nimdzi (2021) and CSA Research (2020), two US-based consultancy firms, explored the industry a few times and reported that the vast majority of the largest world's LSPs saw their business impacted by the pandemic, both negatively (in most cases) and positively (in some respects). ANETI (2020) did the same in Spain (the results of the survey it circulated among its members and a significant number of freelancers are discussed below, in the section devoted to the country).¹

Early in the strictest lockdown period (to be precise, on March 25, 2020), Nimdzi (2000a) published a brief first-impression report on how the LSP industry reacted to the quarantine measures imposed by governments all across the world to control the pandemic. It noted that “In conversations with LSPs, we have found players who have seen volumes double in the last couple of weeks while others have seen their business completely disappear, especially in the case of conference interpretation.” On preliminary analysis, industry segments were grouped by the consultancy firm into three categories, according to how high or low their demand for language services it seemed it would be (see table 1 below):

Table 1. Changes in the world's language service demand, classified by segments as of March 25, 2020

Increase	Neutral	Decrease
Healthcare and Medical	Software Localization	Travel and Hospitality
e-commerce	Public Sector	Conferences
Education/e-learning	Home Improvement	Manufacturing
Media and Entertainment	Real Estate	Sports and Fitness
Business Services		Building and Construction
Personal Care and Beauty		Retail
Financial and Legal		Recruitment

Source: Nimdzi (2020a).

Given the initial responses by the industry players, Nimdzi (*ibidem*) predicted that “Linguists will adjust their service offerings by switching focus to the areas where there is increased demand. Conference interpreters can temporarily offer written translation services and join remote interpretation platforms. The pandemic will have lasting effects on the way clients consume language services and will affect industry players financially until the pieces of the economic puzzle are reorganized.”

A few weeks later (on April 15, 2020), Nimdzi (2020b) posted a second report, this time aimed at interpreting only. It pinpointed interpreting companies and freelance interpreters focused on on-site services (such as conference interpreting or government-demanded interpreting) as the providers most bitterly hit at the time by the pandemic-unclenched crisis. On the opposite side, virtual interpreting technology (VIT), termed “a solution without a problem” only one year before, turned to be, at the apex of the lockdown, “the solution to the problem” (*ibidem*). Companies offering services such as over-the-phone interpreting (OPI), video remote interpreting (VRI), and remote simultaneous interpreting (RSI) also skyrocketed in an unprecedentedly short time lapse. *Remote* and *virtual* became suddenly the key terms in the not any longer small field of technology applied to interpreting. As time went by, however, on-site interpreting came to gain ground again and started gradually to share business with remote interpreting, which is likely to stick around, in a much fitter shape, for a very long time.

CSA Research (2020) conducted three COVID-19 surveys along 2020 on the CEOs of the world’s largest LSPs. The third one, dated August 2020, included a sample of 118 respondents. The overall results are condensed below:

- 55% of respondents reported having suffered from **business reduction**, against 66% of the second (May 2020) survey.
- Conversely, 20% of respondents reported having experienced **business growth**, as compared to only 6% of May 2020.
- Only 3% of the CEOs surveyed believed that the pandemic had not **reshaped the language service industry** either temporarily or permanently.
- The average **change in revenue** from January to June 2020 compared to the same period in 2019 was disparate: while many reported a 99% decrease, some others registered over a 100% increase.
- As for the expected **length of the pandemic effects** on their business, 45% of CEOs thought it would last at least until the end of 2020, against 63% of the second (May 2020) survey.
- Generally speaking, CEOs had **less confidence** in a fast return to business as usual in August 2020 than they had in March and May 2020.
- **Uncertainty** was the biggest concern for most of them (59%), followed by a slowdown in demand (41%), predicted demand (40%), business instability (38%), employees’ mental and physical health (24%), employees’ safety against business constraints (20%), payroll payments throughout the pandemic (16%), and transportation of employees to and from their workplaces (5%).
- The market segments with the highest **increased demand** for language services were Healthcare (64%), Medicine & Pharmaceuticals (59%), IT (40%), Government (38%), and News, Sports & Entertainment (35%).
- Contrariwise, the market segments with the **deepest cutback** for translation services were Travel & Leisure (88%), Events (87%), Airlines (73%), Automotive (67%), and Transportation (64%).
- 77% of LSPs’ personnel were working on an **in-office** basis before the pandemic struck; at the height of the pandemic, it was 13% only; in August 2020, the figure went up to 35%; and once the pandemic will be over, no more than 57% will return to their office desks.

- While most LSPs (56%) did not arrange for **resizing** their **offices**, 40% did, in alignment with their projects to have fewer in-office employees after the pandemic; only 4% of them had plans to expand their office spaces.
- The 55% of LSPs that slashed their **sale goals** matched the percentage that reported a revenue drop (55%); 38% of them, though, kept their sale goals the same; just 7% modified their sale goals up.
- And finally, an average of 7% of LSPs felt they were not ready **to go more virtual** in terms of marketing, sales, and account management; 28% of them reported that they would gladly rely on digital marketing; 18% had the same feeling digital selling; lastly, 39% stated that they were prepared to embrace online account management.

In 2016, the International Federation of Translators (FIT) launched an ambitious strategic plan for 2021. Drawing upon Articles 4 and 5 of its bylaws, the plan made “[...] visibility, community, and progress” the organization’s key priorities for the following five years. Unfortunately, as the COVID-19 pandemic unfolded and pounded mercilessly the whole world, the plan was put on hold, waiting for better times to come. Issue 2 of *Translatio*, FIT’s quarterly newsletter, published in May 2020, included some interesting news about how the member associations had supported translators during the Covid-19 pandemic. Below are some of the most significant findings:

- Spain’s *Asociación Española de Traductores, Correctores e Intérpretes* (ASETRAD) launched the social media *#AsetradSeQuedaEnCasa* (Asetrad stays home) campaign, “[...] with the goal that by using the hashtag, our members could share advice on how to get through being isolated at home, messages of encouragement, and amusing anecdotes about what has been happening to them in recent weeks” (FIT: 2020, 4).
- The United Kingdom’s Institute of Translation and Interpreting (ITI) joined forces with the International Association of Conference Interpreters (AIIC) to send a letter to the UK Prime Minister asking for support for their freelance LSPs, who eventually were included in the British self-employment income support scheme. The ITI also launched a weekly virtual coffee morning plan to bring members together (FIT: 2020, 5).
- Argentina’s *Colegio de traductores de la provincial de Santa Fe* (CTPSF) offered “[...] free assistance to those who, as a result of the pandemic, need help overcoming language barriers, whether they are Argentinian nationals abroad or foreigners” (FIT: 2020, 6).
- France’s *Société Française des Traducteurs* (SFT) launched a press release reiterating that translation and interpreting “[...] freelancers and small businesses are not variables in the supply chain” and denouncing that “[...] some large translation companies are using the current situation as an excuse to impose fee reductions of between 10% and 20% on their suppliers who are very often very small companies and freelancers already weakened by the current crisis where the slowdown in activity is having an impact on their order books” (FIT: 2020, 7).
- Canada’s *Ordre des Traducteurs, Terminologues et Interprètes Agréés du Québec* (OTTIAQ) took some “[...] precautions to reduce the impact on our employees and members and fulfil our remit to protect the public.” Additionally, the organization recommended going remote as far as work was concerned, deferred the payment of membership fees, and transformed into webinars all of its face-to-face training events for the rest of the year 2020 (FIT: 2020, 7).
- FIT Europe surveyed its members on how the COVID-19 scourge had hit them (see also below EUATC: 2020). It found out that, by April 9, 2020, 96.7% of respondents had reported being

affected by it and that, surprisingly, only “[...] 18.3% had applied for support from their governments, while a massive 62% planned to do so if the crisis continued and their work continued to be impacted.” Some European countries had implemented support schemes to help LSPs, but some others had not yet or had plans to do so (FIT: 2020, 7).

- FIT Latam emphasized the use of online platforms to offer courses, mentoring programs, or webinars to its member associations, and took such very interesting initiatives as the dissemination of the “stay home, stay safe” message, the exchange of academic materials, the circulation of free webinars and training playlists, and the free translation and propagation of the call by some prominent professional interpreting associations “[...] to raise awareness of the dire situation of interpreters” (FIT: 2020, 10).
- Finally, China’s Translators Association of China (TAC) took, directly or indirectly, “[...] an active part in the battle against COVID-19” by organizing video conferences and webinars on how to fight the disease, translating key terms and expressions related to the pandemic and getting them published, providing translation and interpreting services to several organizations (many of them on a pro-bono basis), and making resources available for public use for free (FIT: 2020, 11).

Perhaps one of the most comprehensive reports published about the COVID-19 sentiment in the LSP industry was that of EUATC *et al.* (2020). Prepared by the European Union of Associations of Translation Companies (EUATC), along with other European trade associations, such as the European Language Industry Association (ELIA), FIT Europe, and the Globalization and Localization Association (GALA), and with the active support of both the European Master’s in Translation (EMT) network of higher education institutions and the European Commission’s LIND research group, it included a remarkable COVID-19 annex which drew upon the data resulting from FIT Europe’s successive surveys on the impact of the pandemic on European LSPs in 2020 (EUATC *et al.*: 2020, 83). The key takeaways from the report were the following (EUATC *et al.*: 2020, 77-78 & 84-92):

- The relationship between language service companies and freelancers slowly improved, since both stakeholders finally realized that they had common and shared objectives: quality, reliability, and ease of doing business.
- Freelancers kept increasing their professionalization skills, know-how, and business acumen.
- They also needed to keep learning and being strategic, inspired, and optimistic.
- Freelancers realized that work-life balance was critical for their well-being.
- They likewise felt that networking was increasingly important to fight work-spawned isolation.
- For freelancers and their associations, fighting precarity became a top priority.
- For language service companies, 2020 was (even before the pandemic) a tipping point business year, since only half of them had reported growth in 2019.
- For them, size mattered in turbulent times.
- Technology should be considered the most influential and significant factor in the language industry both before and after the pandemic, especially in the fields of machine translation and artificial intelligence applied to translation.
- As a consequence of the above, traditional language technology providers should get their act together not to be left behind.
- Specialization could be deemed both as a blessing or as a curse.
- How marketing channels were used was what made a difference.

- Much as LSPs were badly hit in Europe by the pandemic, it seemed that it was somewhat less impacted than other sectors with a high number of small and medium enterprises (except for interpreting, which was simply devastated and almost gone away).
- Freelancers and small translation companies were harder struck than big industry players.
- Many language service companies went remote and, therefore, had to spend more money on remote equipment.
- The pandemic-induced crisis generated small market opportunities for some.
- The new normal was clear for most players, big and small: urgent & agile work, more competitors in less impacted client segments (with renewed price pressure), diversified services, more cloud-based management, and remote, remote, remote work.
- As for the relief and support measures, they were granted asymmetrically in Europe directly by national governmental agencies.
- Relief came in a variety of modalities—furlough, guaranteed income, mortgage or rent payment freezing, etcetera.
- Professional LSP associations diligently cooperated among them and were in close contact with their members.

Chaillou & Van Der Kallen (2021) confirmed all the above:

COVID-19 has thus impacted almost all aspects of translation, whether it be demand, income, or working methods. Nevertheless, despite the problems translators have faced, the interpreting profession has been the most severely affected in the sector, seeing a 24% fall in income, compared to an 8% fall for translators.

The translating and interpreting professions are therefore not without risks. The economic and technological upheaval of recent years has been exacerbated by this health crisis, rendering the future uncertain. It is this uncertainty that worries most translators; what will the permanent consequences of the crisis be? How will the market evolve in the future? Will it still be possible to rely solely on freelance translation, or will retraining become necessary?

This crisis has brought about a great deal of difficulties for translators, and despite their best efforts so far, many still find themselves in a precarious position. Overcoming the problems brought on by this pandemic will therefore rest on their ability to anticipate future potential work and to adapt their own working methods.

The most recent report on the effects of the pandemic on the language service industry was that of Nimdzi (2021), dated March 1, 2021, which came to corroborate essentially the findings included in Nimdzi (2020a) and Nimdzi (2020b). To be precise, it claimed that “In this year’s [2021] survey, close to 75% of respondents reported that the COVID-19 pandemic has had an impact on their business.” It continued by stating the following:

Asked to specify, our data show that a shift to remote work (76.5%) was the most common effect of the pandemic. This is followed by a decrease or loss of existing business (60.8%) and suspension or termination of work from clients (33.3%). On a more positive note, respondents also saw an increase in existing business (28.4%) and a decrease in expenses (27.5%). When it comes to layoffs due to reduced volumes (18.6%) versus onboarding new staff to handle increased volumes (16.7%) the reported figures only vary slightly.

Healthcare and life sciences were confirmed as the market segments with the highest increase rates for anything related to COVID-19, but an important slash in any other non-critical topics. Law continued to be business as usual, except for judicial cases and law firms, which embraced video remote interpreting in most cases. Government-generated business was down by around 50% because it focused mainly on essential services and COVID-19-associated communication. The pandemic forced many LSPs that were dragging their feet on taking technology-related decisions to go digital and machine-loving almost overnight or die. Technology, as highlighted by Nimdzi (2021), was “[...] the big differentiator.” While LSPs reported that their revenue had decreased, they also confirmed that their aggregate profitability had risen. According to the consultancy firm (*ibidem*), 45.5% of survey respondents reported that their profitability had certainly improved in 2020, against 35.6% of those who believed that it had stayed the same as that of 2019, and also against 18.9% of those who complained about a decline.

A hybrid work model (made up of work-from-home commitments and in-office or face-to-face activities) was believed by many LSPs to have arrived to stay for long. As for the survival strategies implemented and the growth opportunities seized by the industry stakeholders, Nimdzi (*ibidem*) emphasized three: a more vigorous customer-oriented type of doing business, a more generous investment in marketing and sales, and a clear move to reshuffling (e. g., by managing cash flow more wisely) and reinvesting (e. g., on technology). Nimdzi’s report ends with a flash of hope (*ibidem*): “They say to never waste a good crisis. Our analysis shows that the language industry certainly did no such thing. This is why we put our growth estimates back on track and predict that the industry will reach USD 73.6 billion by 2025.”

In short, the turbulent times the entire world faced because of the pandemic changed the way LSPs had to make decisions to stay in business. Those operating from Colombia and Spain were no exception.

TWO CASE STUDIES IN THE SPANISH-SPEAKING WORLD

Colombia

An ethnographic mixed survey was conducted on the Colombian freelance translation and interpreting community in September 2021 to find out how the Covid-19 pandemic had affected local LSPs. The survey’s results (see summary below) were obtained and processed in October 2021. The sample was selected randomly, although most respondents identified themselves as active members of ACTTI (the Colombian Association of Translators, Terminologists, and Interpreters). This fact added but a supplementary layer of reliability to the answers provided. The total number of respondents amounted to fifty-seven.

The first question purported to determine the professional experience of respondents, expressed in years. The findings were as follows (see table 2 below): 26% of respondents answered that they had more than twenty years of experience; 28% of them stated that they had more than ten and less than twenty; an additional 23% of them replied that they had from six to ten; 12% assured they had from one to three; 9% of them responded that they had from one to three; and, finally, 2% of them confirmed that they had less than one. All in all, 54% of the professionals surveyed had more than ten years of experience (by all means, a nice-looking percentage). The figures showed that respondents provided a highly representative opinion about the industry and that ACTTI needed to recruit more young members:

Table 2. LSPs (freelancers)' years of experience in Colombia

Years of experience	Percentage
More than 20	26%
More than 10 and less than 20	28%
More than 6 and less than 10	23%
More than 3 and less than 6	12%
More than 1 and less than 3	9%
Less than 1 year	2%

Source: Table prepared by the authors.

The survey also included a list of twelve pre-selected Translation related fields of specialization (market segments) and prompted respondents to choose the ones they used to work more intensively in before and during the COVID-19 pandemic. The questions asked aimed at measuring if LSPs (freelancers) had felt that they needed to specialize themselves, because of the pandemic, in any field other than the ones with which they used to feel comfortable in pre-pandemic times, or, conversely, they had continued to work in the same fields as before. Answers received are shown in table 3 below:

Table 3. List of Translation related fields of specialization in Colombia: before and during the COVID-19 pandemic

Field	Before	During	Business Change
Technical	60%	53%	decreased
Legal	44%	42%	decreased
Economic	44%	42%	decreased
Scientific	39%	37%	decreased
Certified	37%	30%	decreased
Literary	19%	14%	decreased
Audiovisual (other than subtitling)	9%	14%	increased
Academic	7%	5%	decreased
Socio-humanistic	7%	7%	no change
Business	6%	4%	decreased
General	4%	2%	decreased
Subtitling	2%	2%	no change

Source: Table prepared by the authors.

As shown in table 3, Colombian translators needed to specialize in certain fields before and during the pandemic. Nine of the twelve fields included in the survey saw a decrease in business, two of them underwent no change, and only one grew. The figures clearly showed that the language industry was hugely affected by the pandemic-driven economic crisis, like most other industries in the country. The five most representative fields of specialization of translators before the pandemic were Technical (60%),

Legal (44%), Economic (44%), Scientific (39%), and Certified (37%). Although all of them suffered from a severe slash in revenue during the pandemic, their place in business attraction did not change at all. The survey results also showed that all translation fields were well consolidated. The three fields most hardly shaken were Technical (decreased by 7%), Certified (decreased by 7%), and Literary (decreased by 5%). It seemed clear, then, that the pandemic dwindled the T&I service demand in Colombia. As business came to a halt and traveling was banned during the height of the pandemic, those three fields were very harshly impacted. As far as literary translation was concerned, it was difficult to determine why publishing houses stopped commissioning jobs, given the fact that people, locked down in their homes, were reading far more intensively than ever before in years. In the case of certified translation, it was clear that people no longer needed important translated documents to travel abroad for business or education purposes. Alternatively, the demand for audiovisual media (people consumed a lot of audiovisual entertainment during the lockdown too) increased by 5% during the pandemic-related lockdown. This field continues to be nowadays an opportunity window for those translators who feel at ease with it. Fields that were not that seriously affected and decreased only by 2% were Legal, Scientific, Academic, and Business. There were no changes in socio-humanistic translation.

Concerning interpreting services, professionals were asked if they felt that the demand for the three commonest modalities with which they used to work in pre-pandemic times (simultaneous, consecutive, and liaison) had been impacted as a result of the pandemic-related measures (notably, home lockdown, travel bans, and social distancing). Results (displayed in table 4) showed that, while consecutive and liaison interpreting did not change, simultaneous interpreting diminished by 5%. As there were no on-site conferences, face-to-face conference interpreting came to nil during the hardest times of the pandemic. Professional interpreters resorted, then, to using remote interpreting solutions to continue delivering their services. They invested their money and efforts in becoming quickly adapted to those solutions and also bought better Internet connectivity to work from home. Going remote was the biggest change in the Colombian language service industry during the pandemic, which perhaps deserves closer attention in a future study:

Table 4. Interpreting modalities in Colombia: before and during the COVID-19 pandemic

Modality	Before	During	Changes
Simultaneous interpreting	25%	21%	decreased
Consecutive interpreting	18%	18%	no change
Liaison interpreting	2%	2%	decreased

Source: Table prepared by the authors.

Professionals surveyed were subsequently asked if they reckoned that their jobs had been impacted by the pandemic-related measures adopted in Colombia in terms of (i) the percentage of services demanded, and (ii) the earnings obtained. Regarding the percentage of services demanded, 58% of them reported that it had decreased, while 42% stated that it had increased. Although the difference was not so high, the impact of the pandemic on the industry made demand decline without a doubt. Figures are shown in table 5:

Table 5. Percentage of services demanded in the LSP industry during the COVID-19 pandemic in Colombia

Percentage	Decrease	Increase
Less than 5%	6%	0%
From 5,1% to 10%	9%	21%
From 10,1% to 20%	12%	25%
From 20,1 to 30%	6%	25%
From 30,1% to 40%	9%	21%
From 40,1% to 50%	24%	4%
More than 50%	34%	4%

Source: Table prepared by the authors.

As displayed above, 34% of respondents reported a shocking decrease in demand of more than 50%, while 24% of the professionals surveyed reported a very significant drop of 40.1% to 50% as well. In contrast to these figures, 25% of the respondents reported an increase from 20.1% to 30%, and another 25% of them reported growth ranging from 10.1% to 20%. The takeaway was very straightforward: the decrease in the demand for language services was greater than the increase.

As for the earnings obtained, the results (see table 6 below) showed that 54% of respondents stated that they had decreased, while 46% reported that they had increased. The slight difference might mean that the pandemic-driven crisis was an opportunity for some too.

Table 6. Percentage of decrease or increase in earnings during the COVID-19 pandemic in Colombia

Percentage	Decrease	Increase
Less than 5%	3%	4%
From 5,1% to 10%	13%	31%
From 10,1% to 20%	20%	19%
From 20,1 to 30%	0%	11%
From 30,1% to 40%	19%	23%
From 40,1% to 50%	16%	12%
More than 50%	29%	0%

Source: Table prepared by the authors.

As shown above, 29% of respondents reported a staggering decrease in earnings of more than 50%, while 31% of them informed that their highest increase had been from 5,1% to 10%. Once again, the takeaway was straightforward: as far as earnings were concerned, the percentage of decrease was higher than the percentage of increase.

Comparing the results of table 5 and table 6, it can be observed that there was no direct relation between the changes in demand that occurred in Colombia during the pandemic and the earnings obtained by LSPs in the country over the same period. Earnings, certainly, did not vary in the same percentage as the demand for language services. For example, while 34% of respondents reported that the demand for

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their services had contracted by more than 50%, 29% of them conveyed that their earnings had fallen by no more than 29%, which might mean nothing else than what had in reality changed during the pandemic were language service prices. Another example was the fact that 24% of respondents asserted that the demand for their services had decreased from 40,1% to 50%, while only 16% of them stated that their earnings had reduced from 40,1% to 50%. In terms of increase, which was lower, 31% of respondents reported that their earnings had improved from 5,1% to 10%, while only 21% of them notified that the demand for their services had risen from 5,1% to 10%. This might be explained by the fact that LSPs could have been performing other alternative economic activities during the quarantine to make up for or round off the pandemic-driven vanished business.

Surveyed LSPs were also asked about the changes they had to implement in their jobs during the pandemic. Although this was an open question, answers were grouped as shown below in table 7:

Table 7. Changes implemented during the pandemic

Changes	Percentage
Invest more in technology	40%
No changes	20%
Perform additional activities	18%
Work more hours per week	11%
Move to other fields of specialization	9%
Develop strategies to retain and attract clients	9%
Outsource services	2%

Source: Table prepared by the authors.

As can be seen above, 40% of respondents reported that they had to invest more in technology. Remote working was by all matters the solution for all LSPs, so it came as no surprise that they had to hire better communication and connectivity services if they wanted to continue performing their tasks from home. However, 20% of respondents replied that their activities underwent no change, maybe because working from home was not new at all for them. Although they might not have personal contact with their clients or use direct methods of payment, most LSPs had international clients and continued to get paid by them online as before. 11% of respondents answered that they had to change their number of work hours, maybe because being on a lockdown made them all work, be with family, and do house chores in a never-ending loop. Working during the pandemic was a really stressful situation for most people since in most cases all family members were sharing the same place 24 hours a day.

Two final questions, aimed at determining what surveyed LSPs' views were about the hard situation the pandemic had put them in, were asked. The first one asked about how the language service industry had evolved once the vaccination campaign had reached a decent-looking level and the country suffered from much fewer restrictions. The second and last question inquired about what LSPs had learned from the crisis. Although both questions were open, they were grouped into categories. The responses as to how the industry had evolved after the pandemic's height are shown below in table 8:

Table 8. Evolution of the language service industry in Colombia after the pandemic's height

Responses	Percentage
Demand has grown	44%
There has been no change	26%
Less demand than before	7%
Demand is the same as it was before the pandemic	4%

Source: Table prepared by the authors.

As other economic sectors returned to their normal pace, language services did the same too. Some literal responses (translated into English by the authors) to the question above are worth mentioning:

- “Finally, companies found that they don’t need a translator on-site. This fact has increased the load of work for translators working from home.”
- “Translations and other projects are demanded again.”
- “Specialization in other areas and project management.”
- “It is getting better not only because of the end of restrictions but also because I changed my fields of specialization. My earnings have increased, and the demand for translations is stable.”
- “I have just received two offers to interpret on-site. I continue working as RSI.”
- “New opportunities that were not available before the pandemic have come. RSI has let me work with people from different parts of the world in events that are not really international.”
- “Now the payment terms are more reliable. Most translations are delivered by e-mail and processes are faster.”
- “There are new services now, additional to translations and simultaneous interpretation.”
- “This has been like a challenge to me. It has helped me find the best areas to work, according to my abilities to offer more specialized services.”
- “There has been a positive evolution because we had to get adapted to new technologies and to the new way conferences are held to meet their requirements because there is not enough offer. It’s necessary to be updated and to find prospective clients to offer them the best service and innovate.”

The responses concerning the lessons learned in Colombia from the pandemic in the language service industry are summarized below in table 9:

Some literal responses (translated into English by the authors) were the following:

- “No matter what the situation is, translations are always required.”
- “We are lucky because our industry was not severely hit by the pandemic. What’s more, the demand has grown.”
- “It is necessary to design contingency plans for all professional sectors.”
- “It is necessary to find the field that got the biggest benefits from this crisis. Lockdown soared the demand for multimedia assignments.”
- “Working from home is possible, but to increase productivity and concentration it is necessary to adapt spaces.”
- “Translation is essential in critical times. All fields of specialization are required.”

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- “I consider that being a translator during this pandemic was an advantage because we are used to working from home.”
- “My job is to work for my clients in the best way. Confidence is a must in this activity.”

Table 9. Lesson learned in Colombia from the pandemic in the language service industry

Responses	Percentage
We must learn to adapt ourselves to constant change	27%
We must be resilient	10%
We must have additional earnings	7%
It's important to be updated	7%
High quality speaks well of our services	6%
Professional relations are necessary	2%
Having excellent resources is a must	1%

Source: Table prepared by the authors.

Spain

A mixed approach, drawing on observation and analytics, was used in this study to gauge the language service market and sentiment in Spain during the pandemic. Most findings were very much similar to the ones already dealt with regarding Colombia, but the metrics were somewhat different since the number of language service companies in the European country was considerably higher than that of the Southern American country's ones.

DBK Informa (2021: 18), a consultancy firm, classified specifically Spain's translation and interpreting activities (listed under CNAE's heading no. 7430) ² as “[...] significantly impacted”, rather than “strongly impacted”, along with seventeen other big sectorial industries which were also struck with varying intensity. The country's banking authority, Banco de España (2021: 49), reported that “The impact of the pandemic on the Spanish economy was extraordinarily high, both from a historical and a comparative point of view” but included generically the language service industry in the group of *Other production services* as “[...] moderately impacted” (Banco de España: 2021, 224).

As almost everywhere else in the world, the main consequence of the pandemic in Spain was a general decline in demand. In the language service industry, 34.3 31% of companies and 42% of freelancers saw their turnover fall by more than 60% since the quarantine measures were implemented on March 14, 2020 (ANETI: 2020, 7 & 16; see below for further information). The fields of specialization most heavily impacted in Spain were those of on-site interpreting, *prêt-à-porter* translation services (governmental agencies, immigration, court, non-essential healthcare consultations, etc.), and some others like publishing (ACETraductores: 2020), advertising, tourism (PafeLingua: 2021), sworn/official (save for PCR test results and other pandemic-related official documents), audiovisual (dubbing, subtitling, voice-over, and close captions), etc. (EveryWord: 2020). Other fields, nonetheless, were blessed by an ever-growing demand for services and assignments. Among these might be counted the following:

- Non-official COVID-19-related translations and remote interpreting (telephone, video, and simultaneous, above all).
- Economy and Finance.
- Localization.
- Technology.
- Videogames.
- Chemicals.

Only fully tax-compliant registered LSPs (both companies and freelancers) were eligible for relief measures in Spain, most of which came late and were poorly funded. Some medium and medium-large companies could benefit from government-granted measures associated with temporary employment adjustment plans (ERTE),³ but very few freelancers would do the same (see below). Remote working came to stay for a long time. Interpreters had to turn to remote solutions (telephone interpreting, video remote interpreting, simultaneous remote interpreting, and even consecutive remote interpreting) not to be swallowed by, and disappear into, the pandemic-driven economic black hole. Translators continued working from home on a business-as-usual mode but with a lot less workload (see below). Some LSPs reacted quickly and transformed the crisis into an awesome business opportunity by accepting jobs coming from the “blessed” fields mentioned above.

The most comprehensive survey conducted in Spain to determine the impact of the pandemic on the translation & interpreting industry was that of the *Asociación Nacional de Empresas de Traducción e Interpretación* (ANETI). Conducted on May 15-30, 2020, it included two separate questionnaires (one for language service companies, and another one for freelancers). A total of 220 LSPs participated (88 company managers, and 132 freelancers), representing 40% and 60% of the sample respectively. The results, as indicated before, were not disseminated publicly (rather, they were sent to the survey’s participants privately, for their record). Their most significant facts and figures are summarized below for companies and freelancers (ANETI: 2020):

Companies

- 88% of the companies included in the survey answered with “**Yes, no problem**” to the question ***Were you able to implement teleworking easily in your company?***
- 80.7% of them reported that their **turnover had fallen** during the pandemic-caused quarantine.
- 57.1% communicated that **their customers had not delayed payments**.
- 71.1% stated that they had **not delayed payments to their providers either**.
- 57.6% had **not taken any temporary employment measures** (such as temporary or permanent layoffs, furloughs, fewer working hours, etc.).
- 28.2% filed for a **temporary employment adjustment plan** (ERTE), as mentioned above.
- 69% got their plans for adjusting employment temporarily **approved** without any problem (those plans included more than 60% of companies’ personnel).
- 47% did **not** even consider applying for any special financial support in the form of a **government-granted soft loan**.
- 49.4% did **not** consider applying for any other kind of **government financial relief either**.
- 51% replied that their biggest concern for the future was **demand weakness**.

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- Almost 80% responded that their **price per word (in the case of translation) would remain the same** over the following months.
- A little more than 70% gave the **same answer** when asked about their **price per interpreting hour**.
- 42% insisted on the fact that they would all continue **working remotely** until the new normal be a solid reality.
- 53.1% observed that their **turnover would not be the same** as before the pandemic at least until the end of 2020.

Freelancers

- 74% of them reported that their **turnover had fallen** during the pandemic-caused quarantine.
- 89% replied that they **had not discontinued their professional activities**.
- Only 26% answered that they had applied for some sort of **public relief measures** (while 55% reckoned that they had not contemplated it).
- 75% communicated that **their customers had not delayed payments**.
- 83.6% did **not** consider applying for any special financial support in the form of a **government-granted soft loan**.
- 40% replied that their biggest concern for the future was a **drop in demand**, while 26% felt that it was a **decrease in rates**.
- Almost all of them responded that their **price per word (in the case of translation) would remain the same** over the following months.
- The **same answer** was given when asked about their **price per interpreting hour**.
- Finally, 43.2% observed that their **turnover would not be the same** as before the pandemic at least until the end of 2020.

Once the situation reverted to the new normal in late 2021, most LSPs started to wake up from the nightmare and recover slowly. Their pre-pandemic revenue was painfully regained and a few lessons were also learned: more technology (which can make all the difference when a crisis such as that of COVID-19 occurs), a better ability to adapt oneself to change, a nice work ecosystem, a great deal of resiliency, more specialization, more sustainability, and... some savings (highly recommended).

FUTURE RESEARCH DIRECTIONS

This study has covered, by using a mixed methodology (qualitative and quantitative), the COVID-19 impact suffered by the language service industry in Colombia and Spain, in a setting of demand decline for goods and services worldwide. Further in-depth research addressed at measuring how jobs evolved once the pandemic came to be under control after the vaccination campaigns in both countries would be much needed. Some metrics concerning what measures (and to what degree) were adopted drawing on the lessons learned would likewise be appreciated. Some more detailed metrics on how interpreters adapted themselves to the pandemic-driven crisis would shed a much necessary light onto their professional world. A study on contingency plans for future similar scenarios in the language industry would be very useful. Finally, some analytics on the technological tools and competencies that were most commonly used during the pandemic or needed further development would be an added value for the industry to continue growing.

CONCLUSION

The COVID-19 pandemic impacted the language service industry in Colombia and Spain significantly but not desperately (save for all on-site interpreting activities), especially at the height of it, with mandatory home lockdowns, strict curfews, travel bans, and government-decreed quarantines determining the work-life of everyone involved in the value chain. LSPs in both countries faced in a much similar way the professional and economic crisis that stemmed from it: by adapting themselves to the unforeseen (and unwanted) situation, by investing in technology (or improving the existing one), by developing new strategies (or diversifying those already implemented) to market their services, by networking better than ever before in their work ecosystem, by going remote (especially, interpreters) if they were not already there, by being resilient (or more resilient) and sustainable (or more sustainable), and by learning lessons which might be useful for the future. Some of them were quick enough to handle the crisis as a profitable business opportunity. Others could not handle the situation as wisely.

The objectives firstly indicated in the introduction have been fulfilled; to wit: (i) describing the state of the language service industry in Colombia and Spain, separately, throughout the pandemic-driven crisis; and (ii) comparing how the LSPs from both countries tackled their own specific work-lives and professional situations all along the time it lasted. The findings and takeaways obtained may be useful for further research.

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KEY TERMS AND DEFINITIONS

Audiovisual Translation: A specialized branch of translation that deals with the transfer of information in a multimedia format into another language and culture.

Consecutive Interpreter: A professional who transfers oral contents between two parties from one language and culture into another language and culture, having pauses between segments when each party is speaking.

Interpreting: It consists of a process to render spoken information from one language to another in oral form.

Language Service Industry: The economic sector where language service providers (LSPs) are included.

Language Service Providers (LSPs): Independent professionals or companies that provide such language-related services as translation and interpreting.

Liaison Interpreting: A mode of interpreting typically used at small business meetings or accompanying delegations or group visits.

Simultaneous Interpreter: A professional who transfers oral contents from one language into another at the same time as the speaker who utters those oral contents.

Translation: As defined in the ISO-17100 standards, it is a set of processes to render source language content into target language content in written form, including other than text-based formats such as audio files, images, and others.

ENDNOTES

- ¹ While ANETI's survey results were not publicly disseminated, they were kindly sent to the authors by the association itself so they could be taken into consideration for this study.
- ² CNAE stands for *Clasificación Nacional de Actividades Económicas*, a coded list of all registered economic activities in Spain, itemized for statistical purposes.
- ³ ERTE stands for *Expediente Regulador Temporal de Empleo*, a temporary employment adjustment plan that may be implemented under certain extraordinary circumstances as provided for in the Spanish labor legislation.

Chapter 19

The Impact of Technology on Sustainable MSEs in Turbulent Environments

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ABSTRACT

The purpose of this chapter is to present the relationship between sustainability of micro and small enterprises (MSEs) in turbulent environments and technology. To achieve this objective, a questionnaire structured and validated in 2020 by the Latin American Studies Network in Management and Business (RELAYN, its abbreviation in Spanish) was applied to 401 directors of MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda, and Tunjuelito in Bogotá. For the development of this research, a correlational analysis is made, evaluating the degree of association between the variables of perception of knowledge and use of technologies and the increase in sales, increase in profit, and reduction of risk of closure of the establishment. The results show an association between the components of technology with the increase in sales, increase in profit, and reduction of risk of closure of the establishment.

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INTRODUCTION

Digital economy is becoming increasingly important in the business world because a greater access to information and communication technologies (ICT), especially the use of the Internet, facilitates information flows, thus significantly improving the performance of companies (Valladolid and Mayela, 2019). In this sense, the Economic Commission for Latin America and the Caribbean (ECLAC) has proven that globalization and information and communication technologies (ICT) have a strong impact on the composition of the economic activity and the patterns of social interaction, especially entrepreneurial competitiveness (ECLAC, 2000)

In 2019, Colombia ranks 57th among 141 economies in the ranking of the global competitiveness index (World Economic Forum, 2019) and showed an improvement of three positions with respect to the study of 2018 period (position 60 among 140 last year), after Brunei Darussalam (position 56) and followed by Azerbaijan (position 58). The country moves up one position in Latin America ranking, for the first time in 14 years, as the fourth most competitive country in the region (taking into account the change in methodology made in 2018). In addition, Colombia along with Dominican Republic (moved up four positions) and Brazil (moved up 1 position), were the only countries that improved their ranking in the region. Colombia's improvement is highlighted because it raised its score in 10 of the 12 pillars measured by the index, in which health, macroeconomic stability, infrastructure and size stand out. However, the main weaknesses continue being those related to adoption of technologies, institutions, ability to innovate, product market and infrastructure. In the business sphere, those weaknesses are more noticeable in the segment of micro and small enterprises (MSEs) than in that of the medium and big enterprises.

Yamakawa, Del Castillo, Baldeon, Espinoza, Granda and Vega (2010) state that:

Companies no longer interact through physical space only. Now they seek to exploit virtual environments where they share processes and relate to a multitude of external agents through information and communication technologies (ICT) and, according to international experience, MSEs have the ability to become the engine of a decentralized and flexible entrepreneurial development (p.10).

For Yamakawa et al., (2010), it is decentralized because a large number of economic units can be present in different regions of the country, thus contributing to generate wealth and flexibility because MSEs can easily adapt to the new needs and demands of the market.

Taking into account the abovementioned, the purpose of this research is to know if the components of technology with emphasis on TIC's for the recording and management of information, technology for the processes of the company and technology to access information affect the increase in sales, increase in profit, and the risk of closure of the establishment (sustainability) in the MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments.

MSEs (MICRO AND SMALL ENTERPRISES)

Micro and small enterprises (MSEs) are economic units set up by a natural or legal person, under any form of organization or entrepreneurial management as set forth under the legislation in force, which aims to develop activities related to the extraction, transformation, production, marketing of goods or

provision of services. Grimaldo, Agudelo and Hernandez (2011) indicate that MSEs are important for economies because they are one of the main sources of employment, they usually require a small initial investment and can potentially become an important support for large companies.

According to Law 905 of 2004, micro enterprises have a staff of not more than ten workers or total assets, excluding housing, worth less than 500 legal minimum monthly wages in force; small enterprises have a staff between eleven (11) and fifty (50) employees, or total assets worth between 501 and less than 5,000 legal minimum monthly wages in force (Civil Service, 2021). The criterion used to select the MSEs of this research was that of having 50 employees.

MSEs have problems that affect management, survival and self-sustainability, such as: lack of business training of entrepreneurs and undertakers; lack of a preliminary elaboration of a business plan which allows to act with prior knowledge and criterion of the business plan, so as to take calculated risks based on reliable information for decision-making; and the lack of culture to measure and follow-up on the entrepreneurial management, supported by the preparation of a Strategic Map based on the implementation of KPI (indicators), BSC (Balanced Scorecards) and BIP (Business Improvement Plans), as support tools of the Balanced Scorecards for each company (Gaviria, 2017). In addition, Miranda (2005) confirms that MSEs are characterized for having limited managerial skills, low productivity, competitiveness and profitability, poor insertion into markets, especially the external market, low level of technology, poor operational capacity, limited access to information on markets and technology, and barriers to access the formal financial market.

TECHNOLOGY, SUSTAINABILITY, AND TURBULENT ENVIRONMENTS

Technology and MSEs

Lopez, Montes and Vasquez (2007) quoting Moraleda (2004) state that we are in a new technological time as a result of the convergence between computing, communications and the development of Internet in the last decade, using technology as a means to obtain incremental improvements and to do things better in a substantially different manner. In this way, there is a progressive investment in information technologies which is reflected in the increasingly high percentages of the total assets of the companies (7% in the 80s to 15% currently in US economy). In order to be competitive, companies must implement information technologies that allow them to promote interaction with key groups: customers, partners, suppliers and employees. In this sense, the various computer and information technologies are the axis of commercial, logistics and productive development of current companies in an increasingly interconnected world (Puentes, 2017, p.23).

On the other hand, Ramirez-Garzon, Muñoz-Maya, Diaz-Villamizar and Barrera-Valbuena (2021) mention that:

Nowadays we talk about industry 4.0 because it is said that the world has gone through three industrial revolutions since the nineteenth century, and we are living the fourth. The use of engines and other types of tools and machinery were incorporated in the first. The second, at the beginning of the twentieth century, introduced steel, electricity, mass production and the assembly line. In the third, at the end of the fifties, manufacturing companies incorporated electronic technology, computers and automation (p.287).

One of the characteristics of the fourth industrial revolution, or also known as Industry 4.0, is that it is focused on digital technology, as well as on access to data in real time. In this revolution it is highlighted that not only interconnectivity is achieved through the Internet, but also that there is automation in many industries, in addition to automated learning and systems related to cyber-physics. In this sense, productivity in industries has improved because the productive processes have been enhanced thanks to intelligent manufacturing that allows to connect the physical with the digital, besides having access to the necessary data for the owners of the companies, the directors and chiefs of area to have greater control and a better understanding of the operation of the business (Ramirez-Garzon et al., 2021, quoting Schwab, 2016).

It is observed that in Latin America the national agendas have lagged, regardless of the size of the company, the promotion of the use of these new technologies. However, the Economic Commission for Latin America and the Caribbean (2017) assures that the fourth revolution is a responsibility that concerns all companies, and MSEs are not exempt from it. Therefore, it is necessary to generate policies that help them to develop their technological capabilities and thus have competitive advantages that help them with cutting-edge production systems to successfully compete in the industry in which they operate. In this sense, MSEs would become MSEs 4.0 by adopting new technologies and innovating in their processes under the framework of industry 4.0 (Ramirez-Garzon et al., 2021).

Cervantes, Gonzalez and Ibarra (2014) argue that most activities carried out today would not be possible without the use of ICT. Likewise, the growth of communication and information networks favors the whole world and the increase in telecommunications infrastructure directly affects the economic development of the countries. In this sense, Galvez, Riascos and Contreras (2014) assure that ICT are catalysts for processes within the organizations because they are instruments of support of organizational management since they back the development of strategies that are mainly oriented to competitiveness and innovation and in this way, they produce sustainability for the benefit of the MSEs and society.

Leon and Cano (2017) note that in the footwear MSEs of El Porvenir District in the Province of Trujillo in Peru, the proper use of ICT tools benefits the administrative, financial, and sales processes, among others, by giving value to business and increasing competitiveness against local, national or foreign companies that do not incorporate ICT in their processes. They found that these MSEs mainly use mobile phones and computers as a means of communication and information; some of them have access to the Internet, do not have websites of their own to acquire some type of ICT, the financial resources they use are mainly their own and many of these companies do not acquire ICT due to the acquisition and maintenance costs.

Monge, Alfaro and Alfaro (2005) quoting the International Trade Centre UNCTAD/WTO (2000) state that they have identified four important limitations that MSEs face when adopting ICT:

(i) lack of awareness of how ICT can help to improve business performance; (ii) lack of resources to invest in hardware and software; (iii) absence of training facilities or training high costs of the company's personnel; (iv) no access to technical services outside the company (p.33). Despite the difficulties, the adoption of ICT by MSEs can be deemed, not as a major challenge but rather as an important opportunity due to its implications on the ability of this sector to generate greater employment and wealth opportunities given the possibility of developing comparative advantages based on the information and creativity to produce new and better products and services (p.20).

In this sense, technology is vital because it is an instrument that helps companies in their management so that they can be effective, efficient, and competitive, thus becoming a primary need for any organization (Ibujes and Benavides, 2018; Seoane, 2005).

Due to COVID-19, many companies, in particular MSEs, in sectors such as restaurants and commerce were forced to adapt their business models to mobility restrictions, adopting digital sales channels in order to continue operating. This situation resulted in the increase of electronic commerce, which was also taken advantage of by digital platforms in several intermediation segments such as logistics, digital payments and transportation, among others. For its part, the pandemic accelerated people's consumption patterns, encouraging the use of digital media to access products of interest and to manage their purchase (Dini, Gligo, Patiño, 2021).

Therefore, stimulating innovation is essential to guarantee the future of MSEs in Latin America in an economic context such as the current one, which is marked by technological change. Falling behind in adapting to the digitalization process and incorporating new disruptive technologies would pose a serious threat to the future of MSEs in the region (Spanish Confederation of Business Organizations, 2018).

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Sustainability and MSEs

It has been widely accepted that the sustainability of the competitive advantage, especially in the context of dynamic markets, demands approaches that take into account the need to reconfigure the organizational resources (North and Varvaki, 2016 quoting Eisenhardt and Martin, 2000). Innovation and technology have become at a strategic level the most important weapons for companies to achieve competitiveness. The above is the result of the relationship with the goals set regarding the achievement of productivity and quality products, which will depend on the strategies that are aimed at improving processes so as to offer new and upgraded products and services, thus having a positive impact on customers and meeting their needs (Cuevas, Aguilera and Gonzalez, 2016).

Estrada, Cano and Aguirre (2019) quoting Bayraktar (1990), state that technological management arose as a response to the need to manage the technological factor with a strategic sense. It is defined as the process of managing all those activities that enable the company to make the most efficient use of technology, both internally generated and acquired from third parties, as well as to incorporate it into new products (innovation of product) and into the ways they are produced and delivered to the market (innovation of process). It handles decision-making issues at all levels related to the creation and use of technological assets and capabilities; its impact on individuals, organizations, societies and nature; and reconciling the economic, social and environmental consequences of technological innovations.

According to Bocarando, Sangabriel and Sangabriel (2018), ICT produce changes in the methods of working, business, commerce and consumption. In this sense, the adoption of ICT gives multiple benefits to the organizations, among which stands out greater effectiveness, efficiency, competitiveness, customer satisfaction, expansion of the company, improvements in the supply chain, strategic growth and sales. This is how, according to Heredia (2020), promotion of the use and exploitation of ICT in the entrepreneurial sector has significantly evolved in Colombia, especially in the last ten years. Although public policy initiatives related to ICT began, as in the rest of the Latin American countries, with strategies to encourage access to infrastructure and improve connectivity, provisions to strengthen adoption of

ICT in enterprises, specially focused on MSEs, emerged as part of the productive transformation policy developed by the Ministry of Trade, Industry and Tourism (MINTIT)

Turbulent Environments and MSEs

Entrepreneurial management is constantly evolving. Nowadays organizations develop their activities in changing and accelerated environments, so they must not only seek to obtain economic benefits, but those organizations that want to last in the long term, must also bet on “maximizing the creation of value” through sustainable growth (Muñoz del Nogal, 2015). MSEs must learn to sustain competitiveness to increase their agility and to innovate, in order to compete in turbulent times (North and Varvaki, 2016). Therefore, the environment in which MSEs operate is subject to drastic and disruptive changes that have an impact on the way these companies develop and compete. The rapid speed at which scientific, technological, and managerial changes occur create new possibilities for the use of modern technologies that transform the way of producing and making business (North and Varvakis, 2016, quoting ECLAC, 2013).

There is currently consensus regarding the essential role played by MSEs in the economic structure of Colombia and Latin American countries. Small and medium-size enterprises are the engine of growth are the engine of growth and development in all economies of the world. Their role in the progress of developing economies is vital because they are a good opportunity for entrepreneurship, progress, and self-employment, leaving aside informal employment and precarious work. In Latin America, although MSEs (micro and small enterprises) generate half of the jobs, are 90% of the business fabric and contribute to 28% of GDP, they do not receive the necessary attention from public policies in the region (Spanish Confederation of Entrepreneurial Organizations, 2018). In our case, there are several factors that explain the importance of this type of economic units. On the one hand, there is their relevance in quantitative terms because they concentrate 94.7% of the companies that are registered in Colombia (Cubillos-Calderon, Montealegre-Gonzalez, & Caceres-Mayorga, 2018). In Bogota, the capital city, according to the Chamber of Commerce of Bogota (2019), as of November 2018 the city had 788,675 companies and commercial establishments, 91.4% of which correspond to micro enterprises, 6.1% to small enterprises and 1.8% to medium-size enterprises. However, an alarming situation arises because 85% of the MSEs tend to disappear by the third year of being established. In addition, there is a high degree of informality in the way these organizations are managed, which are mostly characterized by giving importance to pricing as primary strategy to survive in a highly competitive market (Rincon, 2017). On the other hand, at a qualitative level, it is necessary to highlight the enormous potential they must form a competitive, adaptable and efficient entrepreneurial fabric.

Lopez, Montes and Vasquez (2007) state that “in order for companies to survive, they have to adapt to market changes in turbulent environments, as well as to constantly evolve, improving their essential competence or competitive core” (p.16). Following the same line, Leon and Cano (2017) indicate that MSEs have the ability of being flexible and of adapting to changes in the economic environment in which they operate -although they are poorly structured in the economic and technological fields. They are also characterized for being companies that contribute to the generation of employment and to the Gross Domestic Product (GDP) of their country. However, the informality, the difficulty in accessing credits, the limited level of education, the use of obsolete technologies and inadequate tools, among others, limit the normal development and growth of the organization.

METHODOLOGY

Type of research

The type of this research is descriptive because it analyzes how a phenomenon is and how it shows itself and its components by answering to the following questions:

1. What is the level of use of technologies in the MSEs located in Bogota?
2. Of the technologies investigated, what is the technology most commonly used by MSEs located in Bogota?
3. What is the impact of technology that contributes to the sustainability of these organizations?

In addition, it is correlational, because this type of study aims “to know the relationship or degree of association that exists between two or more concepts, category or variables in a specific sample or context” (Hernandez-Sampieri, Fernandez and Baptista 2014, p. 93). The research evaluates the degree of association between the increase in sales, in profit and the risk of closure of the establishment, and the technologies for the recording and management of information, for the processes of the company and to access information that are used by MSEs.

The quantitative approach is chosen because it determines the impact of the above-mentioned independent variables on the dependent variables. To determine their impact, a correlational analysis is performed. According to Hernandez-Sampieri et al., (2014), the quantitative approach allows to collect data to prove the hypotheses raised, taking into account the statistical analysis of the aforementioned variables.

Hypothesis

According to Hernandez-Sampieri et al., (2014) the hypotheses allow in a tentative way to explain a phenomenon subject of study and since the scope of the research is correlational, the following hypotheses are proposed:

- H1. Some technologies have an impact on the increase in annual sales of the MSEs located in Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments.
- H2. Some technologies have an impact on the increase in profit of the MSEs located in Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments.
- H3. Some technologies have an impact on the risk of closure of the MSEs located in Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, although they are in turbulent environments.

Sample

According to data provided by Bogota Mayor's Office (2019), the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito, have a total population of 1,216,359 inhabitants, 99,911 economic units, 99.6% of which are micro and small enterprises.

For this area, a convenience sample was taken, achieving a participation of 401 directors of micro and small enterprises. 49.2% of the directors of the sample are women, with an average age of 41.7 years; the most representative marital status is being married, with 40.5%. Regarding schooling, it was found that 10.2% of the directors do not have formal education, 3.6% with primary school, 42.7% with secondary school, 33.3% with high school, 9.6% obtained the bachelor's degree and the remaining 0.6% have postgraduate studies. It is calculated that, on average, directors devote 9.69 hours a week to their business. Students collaborated in gathering the information.

Data collection instrument

An instrument validated by the Latin American Studies Network in Management and Business (Relayn) is used and 15 questions related to technologies in MSEs are chosen, as well as three questions regarding the dependent variables of increase in annual sales, increase in profit and risk of closure of the establishment, and questions for the demographic profile of the sample. The overall results of the initial tabulation of the results are presented in the book *Innovation and Industry 4.0 in micro and small enterprises in Latin America*, published in 2021 by Aguilar-Rascon, Peña-Ahumada, and Posada-Velasquez.

The types of technologies researched and the variables considered are shown in table 1.

Table 1. Bank of reagents to measure knowledge and use of technologies in MSEs

	Variables
Component	Independent
Technology for the recording and management of information	Methods to generate automatic information on what we do in the company
	Automatic backup of company information in the cloud
	Save data generated by a computer connected to the Internet in the cloud
	Methods to view company movements in real time from anywhere
	Specialized software that provides safety in terminals, the Internet portal, outlets, mobile devices and administrative systems
	Use of computers, tablets, or any mobile device to access or operate another equipment remotely
	Video surveillance cameras connected to the Internet
	Equipment or software specialized in the business of the company
Technology for the processes of the company	Use of parcel services for delivery of goods
	Automatic online collection of some sales
	System for attending to complaints and suggestions online (not by email)
	Electronic devices for card charges at the company's facility
	Website or social networks to show the catalogue of products or services
Technology to access information	On-site Internet Access service
	Ownership of a computer, tablet or any electronic device to manage the company
	Dependent
	Increase in annual sales
	Increase in profit
	Risk of closure of the establishment

Source: Own elaboration based on Relayn 2020 questionnaire

FINDINGS

In the first instance, a KMO and Bartlett test was carried out for the bank of reagents, which allowed to measure the perception of the directors regarding the knowledge and use of technologies in the MSEs located in the neighborhoods selected.

The results of the Kaiser-Meyer-Olkin and Bartlett test show that it is appropriate to use the factor analysis statistical technique for the bank of reagents that measure knowledge and use of technologies in MSEs because the measure of sampling adequacy is 0.912 and that of significance is 0.000, as shown in table 2.

Table 2. KMO and Bartlett test for the bank of reagents that measure knowledge and use of technologies in MSEs

KMO and Bartlett test		
Kaiser-Meyer-Olkin measure of sampling adequacy		.912
Bartlett's sphericity test	Approx. Chi-square	4360.819
	gl	105
	Sig.	.000

Source: Results based on SPSS

When analyzing the results of the anti-image matrix, no items are excluded.

Internal Consistency for the Bank of Reagents that Measure the Perception of the Directors Regarding Knowledge and use of Technology in MSEs

The method of extraction of analysis of main components applied to the bank of reagents that measure the perception of knowledge and use which directors have with respect to technology generates the components of technology for the recording and management of information, technology for the processes of the company and technology to access information, as shown in table 3.

When analyzing the reagents within the three main components, an adequate internal consistency is obtained for each component, as shown in table 4.

Results on the Perception of Knowledge and Use of Technology

The component of greater knowledge and use is component 3 (61.4), which corresponds to technology to access information and the smallest is component 2 (21.2), which is related to technology for the processes of the company. Component 1, which is technology for the recording and management of information has a result of (30.7), oriented to the lower part of the rating of knowledge and use.

The high result for component 3 indicates that a significant percentage of MSEs have technologies aimed at accessing information by having on-site Internet access services and owning a computer, tablet or any electronic device to manage the company

Table 3. Rotated component matrix for the bank of reagents that measure the perception of the directors regarding knowledge and use of technologies in MSEs

Rotated component matrix				
	Reagents	Component		
		1	2	3
		Technology for the recording and management of information	Technology for the processes of the company	Technology to access information
1	Methods to generate automatic information on what we do in the company	.844		
2	Automatic backup of company information in the cloud	.824		
3	Save data generated by a computer connected to the Internet in the cloud	.803		
4	Methods to view company movements in real time from anywhere	.770		
5	Specialized software that provides safety in terminals, the Internet portal, outlets, mobile devices and administrative systems	.619		
6	Use of computers, tablets, or any mobile device to access or operate another equipment remotely	.591		
7	Video surveillance cameras connected to the Internet	.548		
8	Equipment or software specialized in the business of the company	.509		
9	Use of parcel services for delivery of goods		.792	
10	Automatic online collection of some sales		.775	
11	System for attending to complaints and suggestions online (not by email)		.760	
12	Electronic devices for card charges at the company's facility		.700	
13	Website or social networks to show the catalogue of products or services		.687	
14	On-site Internet access service			.862
15	Ownership of a computer, tablet, or any electronic device to manage the company			.857
Method of extraction: analysis of main components. Method of rotation: Varimax with Kaiser normalization				
a. Rotation has converged in 5 iterations				

Source: Results based on SPSS

Table 4. Reliability analysis for the components that measure the perception of the directors regarding knowledge and use of technology in MSEs

Reliability statistics			
Component	Cronbach Alpha	Cronbach Alpha based on standardized elements	N of elements
Technology for the recording and management of information	.921	.920	8
Technology for the processes of the company	.882	.883	5
Technology to access information	.831	0.831	2

Source: Results based on SPSS

The Impact of Technology on Sustainable MSEs in Turbulent Environments

The low result for component 2 is related to the low use of parcel services for delivery of goods and of websites or social networks to show the catalogue of products or services. Furthermore, only some companies use automatic online collection of some sales and electronic devices for card charges at the company's facility. Likewise, few of them have a system for attending to complaints and suggestions online (not by email).

The result for component 1 shows a low rating due to the low knowledge and use by the companies of aspects related to: (i) saving data generated by a computer connected to the Internet in the cloud; (ii) having automatic backup of company information in the cloud; (iii) having methods to generate automatic information on what the company does and (iv) especially, not having specialized software that provides safety in terminals, the Internet portal, outlets, mobile devices and administrative systems, as shown in table 5.

Table 5. Results of the perception of the directors on knowledge and use of technology in MSEs

Component	Reagents	I do not know what it is	I know what it is, I do not know how to use it and I feel it is hard to learn	I know what it is, I do not know how to use it, but I would learn easy if I needed it	I know what it is, I know how to use it, but I do not need it	I know what it is and I use it
Technology for the recording and management of information	Video surveillance cameras connected to the Internet	4.7	7.2	11.8	26.4	49.9
	Methods to view company movements in real time from anywhere	11.7	8.7	15.5	27.7	36.4
	Use of computers, tablets, or any mobile device to access or operate another equipment remotely	11.5	9.2	14.5	32.2	32.6
	Equipment or software specialized in the business of the company	12	7.7	18	31.9	30.4
	Save data generated by a computer connected to the Internet in the cloud	13.5	10.5	16.7	30.4	28.9
	Automatic backup of company information in the cloud	15.5	9.7	16.2	31.7	26.9
	Methods to generate automatic information on what we do in the company	13.5	11.5	16.2	35.4	23.4
	Specialized software that provides safety in terminals, the Internet portal, outlets, mobile devices and administrative systems	18.5	6.7	15.7	42.4	16.7
Average component 1		12.6	8.9	15.6	32.3	30.7

continues on following page

Table 5. Continued

Component	Reagents	I do not know what it is	I know what it is, I do not know how to use it and I feel it is hard to learn	I know what it is, I do not know how to use it, but I would learn easy if I needed it	I know what it is, I know how to use it, but I do not need it	I know what it is and I use it
Technology for the processes of the company	Website or social networks to show the catalogue of products or services	8	9	16.7	34.4	31.9
	Electronic devices for card charges at the company's facility	7.2	8.5	18.7	45.1	20.5
	Use of parcel services for delivery of goods	12	8.2	11.7	45.2	22.9
	System for attending to complaints and suggestions online (not by email)	11.7	8.7	17.5	46.9	15.2
	Automatic online collection of some sales	11	12.5	16	45.1	15.4
Average component 2		10.0	9.4	16.1	43.3	21.2
Technology to Access to information	On-site Internet access service	3.2	5.2	4.2	23.2	64.2
	Ownership of a computer, tablet or any electronic device to manage the company	3.5	5.5	5.5	26.9	58.6
Average component 3		3.4	5.4	4.9	25.1	61.4
Overall average		8.6	7.9	12.2	33.6	37.7

Source: Results based on SPSS

The aspects of technology of greater knowledge and use by MSEs are:

- 64.2% have on-site Internet access service
- 58.6% own a computer, tablet, or any electronic device to manage the company
- 49.9% use video surveillance cameras connected to the Internet

The aspects of technology of less knowledge and use by MSEs are:

- Only 15.2% have a system of attention to complaints and suggestions online (not by email)
- Only 15.4% have automatic online collection of some sales
- Only 16.7% have specialized software that provides safety in terminals, the Internet portal, outlets, mobile devices, and administrative systems
- Only 20.5% use electronic devices for card charges at the company's facility
- Only 23.4% have implemented methods to generate automatic information on what the company does

Impact of the Perception of Knowledge and Use of Technology in the Increase in Sales

The relationship between the perception of knowledge and use of technology and the increase in sales has a significant correlation at level 0.01 in the reagents of: use of computer, tablet, or any other mobile device to access or operate another equipment remotely, video surveillance cameras connected to the Internet, on-site Internet access service, and ownership of a computer, tablet, or any electronic device to manage the company. There is also an important correlation at level 0.05 in the reagents of: methods to view company movements in real time from anywhere, equipment or software specialized in the business of the company, and save data generated by a computer connected to the Internet in the cloud. Currently, none of the reagents of factor 2 has a significant correlation because few MSEs have implemented technologies for the processes of the company, as shown in table 6.

Table 6. Pearson's correlation between the perception of the directors regarding knowledge and use of technology in MSEs and the increase in sales

Component	Reagents	Sales	
		Pearson's correlation	Sig. (bilateral)
Technology for the recording and management of information	Use of computer, tablet, or any other mobile device to access or operate another equipment remotely	.112*	0.026
	Video surveillance cameras connected to the Internet	.102*	0.042
	Methods to view company movements in real time from anywhere	.104*	0.038
	Equipment or software specialized in the business of the company	.113*	0.024
	Save data generated by a computer connected to the Internet in the cloud	.104*	0.037
	Specialized software that provides safety in terminals, the Internet portal, outlets, mobile devices, and administrative systems	0.092	0.066
	Methods to generate automatic information on what we do in the company	0.069	0.170
	Automatic backup of company information in the cloud	0.095	0.058
Technology for the processes of the company	Website or social networks to show the catalogue of products or services	0.071	0.156
	Automatic online collection of some sales	0.001	0.982
	Electronic devices for card charges at the company's facility	-0.002	0.971
	System for attending to complaints and suggestions online (not by email)	0.075	0.135
	Use of parcel services for delivery of goods	0.052	0.300
Technology to access information	On-site Internet access service	.143**	0.004
	Ownership of a computer, tablet, or any electronic device to manage the company	.188**	0.000

** . The correlation is significant at level 0.01 (bilateral).

* . The correlation is significant at level 0.05 (bilateral).

Source: Results based on SPSS

Impact on the Perception of Knowledge and Use of Technology in the Increase in Profit

There is a relationship between the perception of knowledge and use of technology and the increase in profit in the three components. There is a significant correlation at level 0.01 in the items of on-site Internet access service, ownership of a computer, tablet, or any electronic device to manage the company, equipment or software specialized in the business of the company and website or social networks to show the catalogue of products or services.

There is also an important correlation at level 0.05 in the items of use of computer, tablet or any other mobile device to access or operate another equipment remotely, video surveillance cameras connected to the Internet, methods to view company movements in real time from anywhere, methods to generate automatic information on what we do in the company, and save data generated by a computer connected to the Internet in the cloud, as shown in table 7.

Table 7. Pearson's correlation between the perception of the directors regarding knowledge and use of technology in MSEs and increase in profit

Component	Reagents	Profit	
		Pearson's correlation	Sig. (bilateral)
Technology for the recording and management of information	Equipment or software specialized in the business of the company	.101*	0.043
	Use of computer, tablet, or any other mobile device to access or operate another equipment remotely	.100*	0.044
	Video surveillance cameras connected to the Internet	.111*	0.026
	Methods to view company movements in real time from anywhere	.121*	0.015
	Methods to generate automatic information on what we do in the company	.120*	0.016
	Automatic backup of company information in the cloud	.138**	0.006
	Save data generated by a computer connected to the Internet in the cloud	.114*	0.023
Technology for the processes of the company	Website or social networks to show the catalogue of products or services	.115*	0.021
	Automatic online collection of some sales	0.018	0.726
	Electronic devices for card charges at the company's facility	0.022	0.659
	System for attending to complaints and suggestions online (not by email)	0.074	0.141
	Use of parcel services for delivery of goods	0.041	0.415
Technology to access information	On-site Internet access service	.152**	0.002
	Ownership of a computer, tablet, or any electronic device to manage the company	.196**	0.000

** The correlation is significant at level 0.01 (bilateral).

*. The correlation is significant at level 0.05 (bilateral).

Source: Own elaboration based on SPSS output.

Impact of the Perception of Knowledge and Use of Technology in the Risk of Closure of the Establishment

The relationship between the perception of knowledge and the use of technology in the risk of closure of the establishment reveals only one significant correlation at level 0.05 in factor 1 related to the item of equipment or software specialized in the business of the company, as shown in table 8.

Table 8. Pearson's correlation between the perception of the directors regarding knowledge and use of technology in MSEs and the risk of closure of the establishment

Factor	Reagents	Risk of closure of the establishment	
		Pearson's correlation	Sig. (bilateral)
Technology for the recording and management of information	Equipment or software specialized in the business of the company	.103*	0.039
	Specialized software that provides safety in terminals, the Internet portal, outlets, mobile devices and administrative systems	0.082	0.100
	Use of computer, tablet, or any other mobile device to access or operate another equipment remotely	0.065	0.191
	Video surveillance cameras connected to the Internet	0.021	0.668
	Methods to view company movements in real time from anywhere	0.075	0.131
	Methods to generate automatic information on what we do in the company	0.068	0.173
	Respaldo automático en la nube de información de la empresa	0.052	0.298
	Save data generated by a computer connected to the Internet in the cloud	0.066	0.188
Technology for the processes of the company	Website or social networks to show the catalogue of products or services	0.036	0.474
	Automatic online collection of some sales	0.085	0.091
	Electronic devices for card charges at the company's facility	0.088	0.077
	System for attending to complaints and suggestions online (not by email)	0.044	0.378
	Use of parcel services for delivery of goods	0.013	0.797
Technology to access information	On-site Internet access service	0.042	0.401
	Ownership of a computer, tablet, or any electronic device to manage the company	0.057	0.253

**. The correlation is significant at level 0.01 (bilateral).

*. The correlation is significant at level 0.05 (bilateral).

Source: Own elaboration based on SPSS output

Results of the Variables of the Demographic Profile of the Sample and the Perception of Use and Knowledge of Technology

In the variables of demographic profile, a significant correlation was found at level 0.01 in the items related to age and academic background, as shown in table 9.

Table 9. Pearson's correlation between the demographic variables and the perception of the directors regarding knowledge and use of technology in MSEs

Demographic variables	Overall technology rating	
	Pearson's correlation	Sig. (bilateral)
Gender	-.077	.122
Age	-.285**	.000
Academic background	.308**	.000

*The correlation is significant at level 0.05 (bilateral)

** The correlation is significant at level 0.01 (bilateral)

Source: own elaboration based on SPSS

Results of the Relationship between the Productivity Index Variable and the Perception of Use and Knowledge of Technology

In the productivity index variable, it was found a significant correlation at level 0.01 in the item related to overall rating of the perception of the directors regarding the knowledge and use of technology in MSEs, which suggests that the greater knowledge and productivity, the greater the productivity of the company, as shown in table 10.

Table 10. Pearson's correlation between the productivity index variable and the perception of the directors regarding the knowledge and use of technology in MSEs

Correlations		
	Overall grading technology	
	Pearson's correlation	Sig. (bilateral)
Productivity index that corresponds to the company	.137**	.006

** The correlation is significant at level 0.01 (bilateral)

Source: own elaboration based on SPSS output

DISCUSSION

The relationship between knowledge and use of technology and the increase in sales has a significant correlation in the component of technology for the recording and management of information and in that of technology to access information. This result is observed in the contribution of Cuevas, Aguilera, and Gonzalez (2016), who assure that those companies that manage technology in a proper manner evidence an increase in productivity because technology is considered a crucial factor for the success and permanence of companies in the market, which facilitates innovation processes and contributes to improving their competitive level (p.20).

A relationship is found between knowledge and use of technology and increase in profit in the components of technology for the recording and management of information, technology for the processes of the company and technology to access information. According to Seoane (2005, p. 6), technology

is a valuable tool in the business world and in order to remain efficient and maintain the competitive advantages acquired, products must be constantly improved, to which the adoption of ICT contributes.

The relationship between knowledge and use of technology and the risk of closure of the establishment has a correlation in the component of technology for the recording and management of information, in the reagent equipment or software specialized in the business of the company. The use of technology is necessary in order for MSEs to be sustainable. In this sense, Seoane (2005, p. 5), quoting the OCDE (s,f), assures that in the United States, 85% of the companies with a strong technological embedding continue to exist ten years after their creation; on the contrary, 80% of the companies that adopt conventional solutions close during the first two years of their life.

There is correlation between age and the overall rating of knowledge and use of technology and between the productivity index that corresponds to the companies in the sample and the overall rating of knowledge and use of technology, which shows that technological tools can significantly support the implementation of the strategy formulated, integrate existing efforts and ensure that the different services are developed (Yamakawa, Del Castillo, Baldeon, Espinoza, Granda and Vega, 2010, p. 136). The foregoing is in line with the findings of Leon and Cano in the sense that the proper use of ICT tools creates value for businesses and increases competitiveness.

As in Valladolid and Mayela (2019) and in Leon and Cano (2017), it is found that access to the Internet, video cameras, computers, tablets or any other electronic devices are the technological tools most commonly used to manage companies and that in MSEs there is little use of specialized software, websites or social networks to show the catalog of products or services and of electronic devices for card charges at the company's facility.

The results of this research show that MSEs located in the neighborhoods of Tunjuelito, Bosa, Candelaria and Puente Aranda in Bogota can not only increase sales and profit but can also be sustainable thanks to a better knowledge and use of technology. This entails that they have tools to face turbulent environments due to the possibility of developing comparative advantages based on information and the creativity to create new and better products and services (Monge, Alfaro and Alfaro, 2005). For an efficient management of technology, it is necessary to consider the opportunities and threats of their technological position, the capacity to acquire and develop resources, the ability to assimilate technologies and learning from this experience (Estrada, Cano, and Aguirre, 2019).

CONCLUSION

This research sought to know if the perception of knowledge and use of technologies in MSEs affects increase in sales, increase in profit and the risk of closure of the establishment. The objective was achieved because it was found that there is an association between knowledge and use of technology with the increase in sales, the increase in profit and the risk of closure of the establishment, even if they are in turbulent environments. Technology itself does not guarantee a competitive advantage; however, the way to integrate it into the business and in the way of doing things within the company is configured as a source of value, differentiation, and competitiveness because it allows to innovate, integrate processes, and transform the whole organization (Lopez, Montes and Vasquez, 2007 quoting Moraleda, 2004, p.11).

Taking into account that the results of some items of component 1 and component 3 show a significant correlation at level 0.01 or at level 0.05, hypothesis H1 is proven in the sense that some technologies

have an impact on the increase in annual sales on MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, even if they are in turbulent environments.

Hypothesis H2 is confirmed, and it is observed that some technologies affect the increase in profit of the MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, even if they are in turbulent environments, because some items of components 1, 2 and 3 have significant correlations at level 0.01 or at level 0.05

Also, with respect to Hypothesis H3, it is partially proven because it is observed that only the item related to equipment or software specialized in the business of the company of component 1 has significant correlation at level 0.05 with the risk of closure of the MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota, even if they are in turbulent environments.

MSEs know in a greater proportion the technologies to access information with respect to on-site Internet access service and Ownership of a computer, tablet or any electronic device to manage the company.

The above shows that these organizations, which have an open system condition (a necessary characteristic of turbulent environments) because they have contact with different stakeholders such as customers, competitors, employees, suppliers, among others, and which are affected by situations of uncertainty, by situations of globalization, by technology, by customer demands and by market trends, have been knowing and using different technologies that have an impact on the increase in sales, increase in profit, and the risk of closure of the establishment; all of which being in accordance with the findings of Leon and Cano (2017) in the sense that in most of the MSEs studied the owners believe that their levels of sales and production have increased after having acquired any type of ICT.

The fourth industrial revolution underway forces to rethink the role of micro, small and medium size enterprises (MSMEs) of Latin America and the Caribbean and to generate policies that allow them to develop capabilities to successfully compete in current productive systems (ECLAC, 2017). The use of digital technologies in the entrepreneurial activity implies an effective appropriation that goes beyond the basic use of tools and translates into the redefinition of business models, which aims at a transformation of the operational and productive processes of the companies. Therefore, it should be understood as a dynamic process that includes strategies ranging from the raising of awareness and building of capacities to encourage adoption of digital solutions, to the implementation of digital technologies to promote innovation processes in the framework of Industry 4.0 (Heredia, 2020).

There is low use of the e-commerce model (15.4) by MSEs despite the fact that these tools do not require high expenses and are usually very profitable. Another useful tool with low penetration in MSEs is the products and services offered by electronic banking (20.5), which expands business possibilities for the companies and reduces the time to carry out financial operations. There is also low use of social networks (31.9) to enhance marketing, to strengthen the bond with customers and to know the actions of the competition.

Finally, technology has a positive impact on the results of MSEs, so the State, as a regulatory entity, must propose clearer policies and practices that promote the implementation of ICT at all entrepreneurial levels and strata of our society.

RECOMMENDATIONS

It can be observed that many MSEs still do not understand the importance of using technologies as a tool that allows them to grow as a company and to be able to develop in a more efficient way in the market and, therefore, they are losing the opportunity to obtain greater benefits as well as more customers.

Taking into account the results obtained in this research, it is recommended that MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota be concerned and manage their digitalization processes and use of technology, because there is a correlation between the knowledge and use of technology and the increase in sales and in profit, besides reducing the risk of closure of the establishment, thus maintaining sustainability over time even if they are in turbulent environments.

The results of the perception of the knowledge and use of technology indicate that many MSEs do not give the importance they should to the use of technology, so it is of the outmost importance that in order for them to develop, they become aware that they need an information system that suits their needs and that they compete in an electronic market. Information and communication technologies (ICT), as well as the Internet as an essential tool of the twenty-first century, are no longer for the exclusive use of large brands and of those who have more resources. Nowadays, the implementation of technologies should not be considered a luxury or an expensive investment, but rather it has become an essential necessity because it makes it possible for micro and small enterprises, above all, to be at the forefront of competitive processes within the national and the international market.

As can be seen in the results, the component most widely spread is that of *technology to access information* and the one of less diffusion corresponds to that of *technology for the processes of the company*; therefore, it is recommended that MSEs invest in this component which allows to innovate business models and, at the same time, triggers changes of the value chains in the organization, as well as it allows resources to be reconfigured in order to respond more quickly to turbulent environments and that companies collect or retrieve information on the environment at a low cost.

Despite the fact that more and more operations are carried out in economies through electronic commerce and wireless communication, it is found that their level of use by MSEs is low (15.4%).

It is recommended to MSEs that, as far as possible: a) they have a website to promote products and services, without having to adjust to a limited space and where the desired image of the company is projected, beyond its real size, and where automatic online collection of some sales can be made, b) they use financial technology and electronic devices to receive payments by card or from electronic pockets or wallets and from mobile phones, or receive payments with QR code, c) they use equipment or software specialized in the business of the company, given the support they give in reducing expenses and increasing sales of products or services, and d) they pursue the increase of use and presence of social networks.

FUTURE RESEARCH

To continue to investigate with a more systematic approach, the MSEs located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota in different components related to management of technology, and to make correlations between these components and their impact on profit, sales and sustainability.

To expand the research to other zones or municipalities and make comparisons of the results with the MSEs studied located in the neighborhoods of Candelaria, Bosa, Puente Aranda and Tunjuelito in Bogota.

Perform comparisons with results of data bases of MSEs located in Latin America, either on issues related to the components of management of technology developed in this research, or with new management components and, furthermore, perform correlation analyses between the components studied and their impact on profit, sales, and sustainability.

Seek to know which factors related to infrastructure, communications and financial resources prevent the intensive use of technologies 4.0 in MSEs.

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KEY TERMS AND DEFINITIONS

ICT: Set of resources and tools that are used for the processing, management, and distribution of information through technological elements.

Increase in Profit: To reach an economic interest or benefit thanks to the actions executed in the operations of an organization.

Increase in Sales: To reach an optimal level of sales thanks to the actions taken in order to place products or services in the market.

MSEs: Micro and small enterprises that, in accordance with decree 657 of 2019, are classified by the economic sector to which they belong (manufacturing, service and commercial) and their size is determined according to the income from annual ordinary activities represented in Tax Value Units (TVU).

Profit: Economic interest or benefit that is obtained by a company in the course of its operations.

Risk of Closure of the Establishment: Possibility that an organization closes or is liquidated due to different factors such as lack of sales, liquidity, non-access to credit, which lead it to take this decision.

Sales: It can refer to an object or service that is available to the public, which means that it is not yet sold and, therefore, is for sale.

Technology: Set of instruments, technical resources or procedures used in a given field or sector.

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