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# Ethical and Sustainable Supply Chain Management in a Global Context



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# Ethical and Sustainable Supply Chain Management in a Global Context

Ulas Akkucuk  
*Bogazici University, Turkey*

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*Giner Alor Hernández, Tecnológico Nacional de México, Mexico & Instituto Tecnológico de Orizaba, Mexico*

The supplier selection process is one of the daily activities of purchasing departments in the maquiladora industries, but traditionally the attributes analyzed are those that can be quantified, ignoring others because its impact on the production process or on the company's revenues is unknown. This article presents a structural equation model in which three latent variables associated with administrative attributes are integrated, the benefits obtained along production process and marketing, where three hypotheses which relate them are exposed. The information is derived from a survey of 253 managers who work in maquiladoras in Mexico, thus, a descriptive analysis of the sample and the items are obtained. The hypotheses were validated according to a structural equation model and the results indicate that there is a direct and positive effect between the variables analyzed, but the most interesting due to its size, is between the profits made by the production process and the marketing benefits.

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*Yasin Galip Gencer, Yalova University, Turkey*

The purpose of this chapter is to explain developments in supply chain management in the global retail business. There are many recent developments which are described in this chapter. As its use is rising in several businesses, we had focused on SCM in retailing business, and this chapter is an enhanced version of that study. Sustainability-related issues have been discussed for many years and the term sustainability has received increased attention in research since the last two decades. This article studies on recent issues and brings an overview of past and current sustainability research in retail applications for examining retailing and sustainability relevance. The article considers supply chain management

facilitates and the development of them in both retailing and general supply chain management practices through innovation, expanded product design, globalization, flexibility, process-based management and collaborative working approaches. Ultimately, the study is exemplified from retailing businesses and it is concluded by further discussions.

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*Akshay Deepak Thakur, Birla Institute of Technology and Science Pilani, UAE*

*Pushkala Muralidharan, Hamdan Bin Mohammed Smart University, UAE*

Sustainable supply chain practices have been adopted by numerous organizations around the world and continue to grow by selecting innovative solutions coupled with modern technology to achieve a greener environment while maximizing costs. Supply chain management includes multiple functions ranging from forecasting and demand management to transportation operations and customer service. The following chapter explains each function along with a case study to depict how various strategies have improved the profits of a firm while trying to save the environment.

### **Chapter 4**

Lean Supply Chain Management and Sustainability: A Proposed Implementation Model ..... 57

*Michael Sony, Namibia University of Science and Technology, Namibia*

Lean supply chain management is one of the emergent fields of interest among academics and practitioners. Many organizations are using Lean principles in their supply chain. However, the success of the initiatives is mixed. The purpose of this chapter is to evaluate existing literature on Lean supply chain management and sustainability to construct a model for sustainable implementation of Lean supply chain management through an integrative review. An integrative review methodology is followed to review the existing 39 literature to construct a sustainable LSCM model. This chapter further discusses the integration philosophy of eight pillars of Lean supply chain management with sustainability using the triple bottom line approach. This is the first chapter as per the knowledge of the author to discuss the issues of sustainability in Lean supply chain management.

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*Yasin Galip Gencer, Yalova University, Turkey*

The purpose of this chapter is to explain the necessity of sustainability in operations management processes. Sustainability in all areas is a key factor for long term successes and operations management is the baseline for nearly all other business units. Thus, the sustainability of operations management becomes critical for all business units in an organization. The chapter starts with a brief description about the both concepts sustainability and operations management then continues with the strong relationship between them. The applications in the work area are analyzed and real-life examples are also proposed. Health, Retailing and Banking sectors are analyzed on the basis of the previous studies from the literature. The contribution aim of this chapter to the literature is to take attention to the strong relationship between sustainability and operations management.

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*Ulas Akkucuk, Bogazici University, Turkey*

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Governance has evolved to be an extremely critical notion for the developed world as well as for the developing countries. For the developing world, novel concepts required for good governance practice may not be easily understood or widely practiced by the stakeholders of private or public corporations. Good governance is needed for numerous institutions both public and private. For public entities, good governance results in scientifically motivated policy development, an increase in accountability and transparency and finally the involvement of all stakeholders in the decision-making process. For non-governmental organizations, governance results in better allocation of resources, finding new opportunities for collaboration, and better cooperation with governmental bodies. For the private sector, governance increases the reliability of the organizations and contributes to sustainability, and a climate of trust to be established among the stakeholders. This chapter will include an extant review of the literature on how good governance and sustainable value creation come hand in hand.

## Chapter 7

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*Yasemin Sarici Aytan, Istanbul Aydın University, Turkey*

*Ilknur Sayan, Istanbul Kent University, Turkey*

To analyze ethics and sustainability in supply chain management: ethics, business ethics and ethical leadership are briefly explained. Ethics is important for the business in 4 aspects: customers, suppliers, competitors and employees. In this chapter, supply management will be given a more detailed examination with sustainability and an ethical point of view. Besides the governmental regulations, big companies also feel social responsibility and take action for the procurement of their supplier's conditions. Sustainability, ethics, ethical leadership are the main problems for a successful supply chain management system.

## Chapter 8

Consumer Awareness and Degree of Engagement With Circular Economy Practices: Evidence

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*Selcen Anlas, Bogazici University, Turkey*

Transforming into a circular economy (CE) requires cooperation and support from all actors within the society. Consumers, as a main actor, can significantly support or obstruct a CE transition through their market power. This chapter attempts to understand the awareness and engagement degree of Turkish consumers regarding the concept and practices of CE. Per results of the survey conducted online, it can be concluded that Turkish people have some awareness (64%) of the concept of CE. However, 61.2% believe CE focuses on recycling whereas 48.2% believe it is about saving. Of the respondents, 25.9% are entirely unaware of the benefits of CE; 95.7% of consumers are not open to buy second hand, hire or reuse as an alternative to traditional ownership. A majority of Turkish consumers practice selective waste management and believe they protect the environment through saving energy and water.

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*Mehpare Karahan Gokmen, Ondokuz Mayıs University, Turkey*

Growing interest in sustainability has gained momentum due to increased globalization. Especially the proliferation of international trade has reinforced the importance of sustainability in supply chains. Internal and external stakeholders are also willing to be informed about these sustainability practices. Accounting provides a proper communication media with sustainability reports. Hence, accounting ensures its relevance in preparation of reports with the inclusion of required information. Additionally, uniformity is brought among sustainability reports that increase comparability and understandability of them. The aim of this chapter is to reveal how companies represent their sustainable supply chain practices in sustainability reports. At the result of the research on companies in Borsa Istanbul it is found that preference for local suppliers, sustainability assessment for suppliers, raw material sustainability, product safety and quality and stakeholder engagement are commonly represented practices that are related with sustainable supply chains.

## Chapter 10

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*Vesna Petrovic, University of East Sarajevo, Bosnia and Herzegovina*

The main aim of this chapter is to analyze the contemporary challenges that have affected movements in the global trade and investments, as well as their interdependence. The focus is on the causes and consequences of the fundamental changes in international economic relations. The analysis is based on the following data: value of world trade, dynamics, and structure of exchange. Contemporary faces of the world economy such as transnationalization, intra-sector trade, increasing discourse on whether foreign trade and FDI's represent substitutes or complements, have also been an unavoidable part of this chapter. Depending on the stage of development, global changes have specific consequences on developed countries and developing economies. The chapter in its final part focuses on the analysis of how global value chains are directly affecting the growth of international trade and flows of foreign capital through the inevitable role of multinational companies.

## Chapter 11

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*Seda Süer, İzmir Katip Çelebi University, Turkey*

One of the firm's financial objectives is to minimize the time between making the payment for inputs and receiving payment for the outputs – the period for which working capital financing is required in the supply chain management process. In an attempt to reduce the level of working capital, a firm has to achieve some goals: to minimize cash available, reduce accounts receivables, extend its accounts payable, and shorten inventory days. To achieve these goals supply chain activities should be related with working capital requirements. The aim of this chapter is to provide an overview of the relationship between supply chain management and working capital management. A theoretical framework is proposed as an evidence to prove the relationship between supply chain activities and working capital components. Consequently, this chapter investigates how improvements on working capital components can add value to the supply chain process.

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In order to use public resources effectively, budgeting and audit processes should be compatible. There is a performance term in base of this harmony. Public Financial Management and Control Law No. 5108 has brought performance-based budgeting and performance audit institutions to Turkish public finance. According to this law, public administrations should prepare performance-based budgeting with respect to strategic plans. On the other hand, a performance audit, which is a kind of internal audit should be performed according to predetermined performance indicators. This process is called performance management in the literature. This study is a literature review which examine topic of performance-based budgeting and performance audit. Some terms have been researched that are thought to be important in the legislation. One hundred seventeen national and international abstracts have been read and full texts of twenty studies directly related to the subject have been analyzed according to the 4N1K literature screening method.

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<i>Renata Paksiova, University of Economics in Bratislava, Slovakia</i>	
<i>Kornélia Lovciová, University of Economics in Bratislava, Slovakia</i>	

The food industry is an important sector in each country with regards to food self-sufficiency, and it is a subject of stricter monitoring compared to other sectors. Disclosure of non-financial information significantly compliments the image of each company and contributes very effectively to the decision making of their customers, not only from the supply chain. Interest in non-financial information as parts of CSR from the perspective of the ethical and sustainable supply chain management is increasing. In the social, environmental, and economic spheres, it is important to determine the specificities of food industry reporting in order to achieve sustainable development. The aim of this chapter is a theoretical analysis of the reporting of non-financial information according to their disclosure requirements in the food industry by enterprises in Slovakia and a quantitative analysis of their reporting in the structure of SK NACE for 2017 in the context of the ethics and sustainability. Slovakia has more requirements for company reporting in the annual report since 2017.

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On the global level, governments are leading the national policy for development of modern technology and alternative energy resources. The tendencies of sustainable development are reflected in the realization of using renewable energy resources that contribute to a more diversified and more efficient use of clean energy. The aim of this chapter is to represent adequate responses to the efficient management at the state level that created all necessary conditions for sustainable development and energy efficiency using renewable energy resources in countries of European Union. Legal regulations, energy policy, short, medium and long-term strategy with a stimulating policy, can contribute for achieving adequate results

in terms of sustainable development. The aims of this policy would be reflected in the development of eco-industrial parks and clean energy that contribute development of new companies, employment, on the state budget and local government levels.

### **Chapter 15**

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*Gamze Yıldız Şeren, University of Namik Kemal, Turkey*

Public policies have undoubtedly a very important position in the economy. The environmental economy is a phenomenon that requires intervention in the market through public policies. This is because environmental problems need to be intervened with public policy tools because they have the characteristics of externalities and are public goods. Accordingly, waste management is a subject of environmental economics, at which point public policies come into play particularly at the level of local governments and gain importance. However, this is not only a matter of public policies but also requires the active involvement of the private sector and social participation. The participation of society and non-governmental organizations, as well as public and private partnerships plays a pivotal role in the effective management of this process because it is difficult to understand the significance of solid waste management for a society that has not completed its intellectual and cultural education.

### **Chapter 16**

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*Srecko Favro, University of Split, Croatia*

The Island of Hvar is part of Split-Dalmatia County and it is surrounded with a group of islands in Central Dalmatia. The island's dependence on the rest of Croatian mainland is inevitable and islanders' lives are still connected with the mainland. The trend of emigrating and abandoning the island is visible. Transport connections and infrastructure between the Island of Hvar and the mainland are unsatisfactory. At the moment, there is not an adequate pier for catamarans intended for a fast island-mainland travel in the area of Hvar Port. Therefore, the topic of this project and research is to present the importance of building infrastructure and the importance of a quality work of fast shipping lines between the town of Hvar and the mainland in order to enhance life quality of people who live on islands.

### **Chapter 17**

Integrating Performance Measurement Systems Into the Global Lean and Sustainable  
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*Gamze Tatlici, Istanbul Technical University, Turkey*  
*Begum Sertyesilisik, Istanbul Technical University, Turkey*

The construction industry is one of the industries that have a great impact on the economy. A construction supply chain (CSC) is an important process affecting the circular economy (CE) and sustainability in practice. In order to analyze the efficiency of CE and CSC, a performance measurement system (PMS) is needed. At such a point, adopting a PMS to a supply chain at relatively early stages of a project could lead to sustainable supply chain management (SCM). Collaboration between all parties such as designers

and contractors will be advantageous to gain competitiveness in the sector. This chapter aims to determine the need of PMS adaptation to construction supply chain process for sustainable and lean construction supply chain management based on the literature review. This chapter is expected to be beneficial for academics, researchers in the relevant field as well as policy makers and professionals.

**Chapter 18**

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*Ulas Akkucuk, Bogazici University, Turkey*  
*Selen Balkaya, Bogazici University, Turkey*

Nowadays, online learning has become a phenomenon and many believe that e-learning can be the next revolutionary change in education. E-learning is a way of learning supported by information communication technologies (ICT) that makes it possible to deliver education and training to anyone, anytime and anywhere. Learning management system (LMS) applications are software applications for the administration, documentation, tracking, reporting and delivery of e-learning courses and programs. With the advancement of technology in general, LMS applications are increasingly becoming the preferred method for learning among students, teachers and others. LMS applications enable university students and teachers to benefit from today’s technology in their learning process. LMS applications will play a major role in education, and technology will get stronger with effective usage of LMS applications. Therefore, defining the current situation in Turkey about LMS applications usage and factors affecting adoption of LMS applications are important for future LMS design and management.

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*Ulas Akkucuk, Bogazici University, Turkey*  
*Serhat Ata, Düzce University, Turkey*

This study aims to explore the factors affecting destination choice for tourism travelers. For this purpose, a survey conducted in the İzmir province has been used to collect data as to what factors drive travelers to choose the İzmir destination. The survey contains demographic questions in addition to questions concerning the reasons for visiting İzmir. 10 multiple choice questions are used in the demographic and descriptive profile. Previous literature has been consulted in order to form 16 questions for the intent to visit İzmir. The questions on the reasons for visiting Izmir have been scaled as (1) does not influence my decision and (5) influence(s) my decision very much. Finally using cluster analysis technique, the visitors are separated into five clusters. A K-means clustering technique is applied by varying k from 2 to 10. The interpretations of the clusters are provided and shed light on the main intentions for the travelers. The cluster interpretations could be used in the area of tourism marketing. The chapter highlights the area of choosing the optimal number of clusters.

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## Preface

The global supply chain creates environmental and social burdens during different stages of production and distribution. Ethical and sustainable practices along the supply chain seek to minimize these burdens and ensure fair labor practices, lower emissions, and a cleaner environment.

*Ethical and Sustainable Supply Chain Management in a Global Context* uses cases, qualitative studies, empirical results, and analyses of legal frameworks to focus on ethics and sustainability as they relate to the management of global supply chains. Featuring research on topics such as production planning, consumer awareness, and labor laws, this book is ideally designed for managers, policymakers, professionals, researchers, and students working in the field of sustainable development and related disciplines including marketing, economics, finance, operations management, supply chain management, environmental science, and waste management.

I am very happy to finalize the sixth book project I did with IGI Global. I gave the first book proposal to IGI Global in the summer of 2013. This first book was finalized towards fall 2014 and published as hard copy in January 2015. This gave me the idea for the second book and this came out as a hard copy by 2016 March. Both of the books included a total of 47 papers from eminent authors worldwide. The third book which came out in 2017 included 14 contributions and was readily indexed by Web of Science. The next book entitled “Handbook of Research on Supply Chain Management for Sustainable Development” was published recently in 2018. This title was also indexed in SCOPUS. The last title included 15 chapters and was on the topic of Circular Economy. With the book you are about to read nearly 125 chapters have been sent by authors worldwide on many different aspects of sustainability touching the areas of Finance, Marketing, Operations, Waste Management and Economics. The number of authors has also reached near a figure of 200 with countries of the participants ranging from Turkey, USA, Bulgaria, Russia, Netherlands, Spain, Portugal, Zimbabwe, Saudi Arabia, Greece, Egypt, India, Canada, Malaysia, Thailand, Mexico, Croatia, Serbia, Bosnia and Herzegovina, Namibia, United Arab Emirates, Slovakia and many others. The books enjoy indexation by prestigious indices and citations by eminent authors.

Chapter 1 starts the discussion with a paper titled “Suppliers Administrative Attributes on Supplier Selection and its Effect on Production Process and Marketing Benefits.” Supplier selection process is one of the daily activities of purchasing departments in the maquiladora industries, but traditionally the attributes analyzed are those that can be quantified, ignoring others because its impact on the production process or on the company’s revenues is unknown. This article presents a structural equation model in which three latent variables associated with administrative attributes are integrated, the benefits obtained along production process and marketing, where three hypotheses which relate them are exposed. The information is derived from a survey of 253 managers who works in maquiladoras in Mexico, thus a descriptive analysis of the sample and the items are obtained. The hypotheses were validated according

## **Preface**

to a structural equation model and the results indicate that there is a direct and positive effect between the variables analyzed, but the most interesting due to its size, is between the profits made by the production process and the marketing benefits.

Chapter 2 is about “Developments Concerning Supply Chain Management in Global Retailing Business.” The purpose of this chapter is to explain the developments about supply chain management in global retailing business. There are many recent developments which are described in this chapter. As its use is rising in several businesses, we had focused on SCM in retailing business, and this chapter is an enhanced version of that study. Sustainability related issues have been discussed for many years and the term sustainability has received increased attention in research since the last two decades. This paper studies on recent issues and brings an overview of past and current sustainability research in retail applications for examining retailing and sustainability relevance. The paper considers supply chain management facilitates and the development of them in both retailing and general supply chain management practices through innovation, expanded product design, globalization, flexibility, process-based management and collaborative working approaches. Ultimately, the study is exemplified from retailing businesses and it is concluded by further discussions.

Chapter 3 investigates “Sustainable Supply Chain Practices in Multinational Organizations.” Sustainable Supply Chain practices have been adopted by numerous organizations around the world and continue to grow by selecting innovative solutions coupled with modern technology to achieve a greener environment while maximizing costs. Supply Chain Management includes multiple functions ranging from forecasting and demand management to transportation operations and customer service. The following chapter explains each function along with a case study to depict how various strategies have improved the profits of a firm while trying to save the environment.

Chapter 4 is a discussion on “Lean Supply Chain Management and Sustainability: A Proposed Implementation Model.” Lean supply chain management is one of the emergent fields of interest among academics and practitioners. Many organizations are using Lean principles in their supply chain. However, the success of the initiatives is mixed. The purpose of this chapter, through an integrative review, is to evaluate existing literature on Lean supply chain management and sustainability to construct a model for sustainable implementation of Lean supply chain management. An integrative review methodology is followed to review the existing 39 literature to construct a sustainable LSCM model. This chapter further discusses the integration philosophy of eight pillars of Lean supply chain management with sustainability using the triple bottom line approach. This is the first chapter as per the knowledge of the author to discuss the issues of sustainability in Lean supply chain management.

Chapter 5 focuses on “The Necessity of Sustainability in Operations Management in Terms of Various Sectors.” The purpose of this chapter is to explain the necessity of sustainability in operations management processes. Sustainability in all areas is a key factor for long term successes and operations management is the baseline for nearly all other business units. Thus, the sustainability of operations management becomes critical for all business units in an organization. The chapter starts with a brief description about the both concepts sustainability and operations management then continues with the strong relationship between them. The applications in the work area are analyzed and real-life examples are also proposed. Health, Retailing and Banking sectors are analyzed on the basis of the previous studies from the literature. The contribution aim of this chapter to the literature is to take attention to the strong relationship between sustainability and operations management.

Chapter 6 is another look at the importance of governance for sustainability. Governance has evolved to be an extremely critical notion for the developed world as well as for the developing countries. For the developing world, novel concepts required for good governance practice may not be easily understood or widely practiced by the stakeholders of private or public corporations. Good governance is needed for numerous institutions both public and private. For public entities, good governance results in scientifically motivated policy development, an increase in accountability and transparency and finally the involvement of all stakeholders in the decision-making process. For non-governmental organizations, governance results in better allocation of resources, finding new opportunities for collaboration, and better cooperation with governmental bodies. For the private sector, governance increases the reliability of the organizations and contributes to sustainability, and a climate of trust to be established among the stakeholders. This paper will include an extant review of the literature on how good governance and sustainable value creation come hand in hand.

Chapter 7 examines “Ethics, Ethical Leadership, and Supply Chain Management.” To analyze ethics and sustainability in supply chain management: ethics, business ethics and ethical leadership are briefly explained. Ethics is important for the business basically in four aspects: customers, suppliers, competitors and employees. In chapter, supply management will be given more detailed with sustainability and ethical point of view. Beside the governmental regulations big companies also feel social responsibility and take action for the procurement of their supplier’s conditions. Sustainability, ethics, ethical leadership is becoming main problems for a successful supply chain management system.

Chapter 8 focuses on “Consumer Awareness and Degree of Engagement With Circular Economy Practices.” Transforming into a circular economy (CE) requires cooperation and support from all actors within the society. Consumers, as a main actor, can significantly support or obstruct a CE transition through their market power. This chapter attempts to understand the awareness and engagement degree of Turkish consumers regarding the concept and practices of CE. Per results of the survey conducted online, it can be concluded that Turkish people have some awareness (64%) of the concept of CE. However, 61.2% believe CE focuses on recycling whereas 48.2% believe it is about saving. Of the respondents, 25.9% are entirely unaware of the benefits of CE; 95.7% of consumers are not open to buy second hand, hire or reuse as an alternative to traditional ownership. Majority of Turkish consumers practice selective waste management and believe they protect the environment through savings of energy and water.

Chapter 9 illustrates “Accounting Perspective for Sustainable Supply Chain Management: Focus on Sustainability Reports.” Growing interest in sustainability has gained momentum due to increased globalization. Especially proliferation of international trade remarked the importance of sustainability in supply chains. Internal and external stakeholders are also willing to be informed about these sustainability practices. Accounting provides a proper communication media with sustainability reports. Hence accounting ensures its relevance in preparation of reports with inclusion of required information. Additionally, uniformity is brought among sustainability reports that increase comparability and understandability of them. The aim of this chapter is to reveal how companies represent their sustainable supply chain practices in sustainability reports. At the result of the research on companies in Borsa Istanbul it is found that preference for local suppliers, sustainability assessment for suppliers, raw material sustainability, product safety and quality and stakeholder engagement are commonly represented practices that are related with sustainable supply chains.

## **Preface**

Chapter 10 is a study on “Contemporary Challenges of International Economic Relations: Global Trade and Investment Trends.” The main aim of this chapter is to analyse the contemporary challenges that have affected movements in the global trade and investments, as well as their interdependence. The focus is on the causes and consequences of the fundamental changes in international economic relations. The analysis is based on the following data: value of world trade, dynamics and structure of exchange. Contemporary faces of the world economy such as transnationalisation, intra-sector trade, increasing discourse on whether foreign trade and FDIs represent substitutes or complements, have also been unavoidable part of this chapter. Depending on the stage of development, global changes have specific consequences on developed countries and developing economies. The chapter in its final part focuses on the analysis of how global value chains are directly affecting the growth of international trade and flows of foreign capital through the inevitable role of multinational companies.

Chapter 11 provides examples on the discussion of “Relationship Between Working Capital Management and Supply Chain Management.” One of the firm’s financial objectives is to minimize the time between when it makes the payment for inputs and when it receives payment for the outputs – the period for which working capital financing is required in supply chain management process. In order to reduce the level of working capital, a firm has to achieve some goals that are to minimize cash available, reduce accounts receivables, extend its accounts payable and shorten inventory days. To achieve these goals supply chain activities should be related with working capital requirements. The aim of this chapter is to provide an overview of the relationship between supply chain management and working capital management. A theoretical framework is proposed as an evidence to prove the relationship between supply chain activities and working capital components. Consequently, this chapter investigates how improvements on working capital components can add value to the supply chain process.

Chapter 12 performs an analysis of “Performance-Based Budgeting and Performance Auditing in Turkish Public Finance.” In order to use public resources effectively, budgeting and audit processes should be compatible. There is a performance term in base of this harmony. Public Financial Management and Control Law No. 5108 have brought performance-based budgeting and performance audit institutions to Turkish public finance. According to this law, public administrations should prepare performance-based budgeting with respect to strategic plans. On the other hand, a performance audit which is a kind of internal audit should be performed according to predetermined performance indicators. This process is called performance management in the literature. This study is a literature review which examine topic of performance-based budgeting and performance audit. Some terms have been researched that are thought to be important in the legislation. National and international 117 abstracts have been read and full texts of 20 studies directly related to the subject have been analyzed according to 4N1K literature screening method.

Chapter 13 explores the relationship between “Reporting on CSR and Ethical and Sustainable Management in Food Industry in Slovakia as an EU Member.” The food industry is an important sector in each country with regards to food self-sufficiency, and it is a subject of stricter monitoring compared to other sectors. Disclosure of non-financial information significantly complements the image of each company and contributes very effectively to the decision making of their users, not only from the supply chain. Interest in non-financial information as parts of CSR from the perspective of the ethical and sustainable supply chain management is increasing. In the social, environmental and economic sphere, it is important to determine the specificities of food industry reporting in order to achieve a sustainable development. The aim of this chapter is a theoretical analysis of the reporting of non-financial information according to their disclosure requirements in the food industry by enterprises in Slovakia and a quantitative analysis

of their reporting in the structure of SK NACE for 2017 in the context of the ethics and sustainability. Slovakia has more requirements for company reporting in the annual report with efficiency since 2017.

Chapter 14 explains renewable energy sources management and role of ecological parks: Improving quality of life for sustainable development. On the world global level, governments are leading the national policy for development of modern technology and alternative energy resources. Tendencies of sustainable development are reflected in the realization of using renewable energy resources that contribute to more diversified and more efficient use of clean energy. The aim of this chapter is to represent adequate responses to the efficient management at the state level that created all necessary conditions for sustainable development and energy efficiency using renewable energy resources in countries of European Union. Legal regulations, energy policy, short term, medium- and long-term strategy with a stimulating policy, can contribute for achieving adequate results in terms of sustainable development. The aims of this policy would be reflected in the development of eco-industrial parks and clean energy that contribute development of new companies, employment, on the state budget and local government levels.

Chapter 15 is on “Solid Waste Management in the Context of Public Policies and Private Sector Participation: Thoughts on the Need of a Comprehensive Approach.” Public policies have undoubtedly a very important position in the economy. The environmental economy is a phenomenon that requires intervention in the market through public policies. This is because environmental problems need to be intervened with public policy tools because they have the characteristics of externalities and are public goods, which are market failures. Accordingly, waste management is a subject of environmental economics, at which point public policies come into play particularly at the level of local governments and gain importance. However, this is not only a matter of public policies but also requires the active involvement of the private sector and social participation. The participation of society and non-governmental organizations, as well as public and private partnerships plays a pivotal role in the effective management of this process because it is difficult to understand the significance of solid waste management for a society that has not completed its intellectual and cultural education.

Chapter 16 is on the use of EU funds for sustainable development. Chapter 17 is about sustainability in the construction sector. The final chapters 18 and 19 describe studies conducted to analyze the use of LMS systems in universities and tourist destination choice.

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*February 2019*

# Chapter 1

## Suppliers Administrative Attributes on Supplier Selection and Its Effect on Production Process and Marketing Benefits

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### ABSTRACT

*The supplier selection process is one of the daily activities of purchasing departments in the maquiladora industries, but traditionally the attributes analyzed are those that can be quantified, ignoring others because its impact on the production process or on the company's revenues is unknown. This article presents a structural equation model in which three latent variables associated with administrative attributes are integrated, the benefits obtained along production process and marketing, where three hypotheses which relate them are exposed. The information is derived from a survey of 253 managers who work in maquiladoras in Mexico, thus, a descriptive analysis of the sample and the items are obtained. The hypotheses were validated according to a structural equation model and the results indicate that there is a direct and positive effect between the variables analyzed, but the most interesting due to its size, is between the profits made by the production process and the marketing benefits.*

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## **INTRODUCTION**

The term Supply chain (SC) was introduced in the 1980s, since then it has been used to describe planning and control of materials, information flows and logistics activities inside and outside of a company (Ahi & Searcy, 2013). Initially, SC was focused mainly on material flows, but nowadays in order to ensure a good performance of SC, it must involve more than just the material flow. Thereby, the SC can be defined as all activities involved in delivering a product since raw material to final customer, which includes obtaining raw materials and parts, manufacturing and assembly, storage and inventory tracking, entry and order management, distribution through all channels, customer delivery, and information systems needed to monitor all these activities (Bruno, Esposito, Genovese, & Simpson, 2016).

Therefore, the SC is neither a single chain nor series of process, but rather is a complex network that involves a number of components to perform it successfully, which can be seen graphically in Figure 1, where are included the material acquisition, process of turning of raw materials into finished products (manufacturing), internal and external logistics and product distribution to customers in order they meet the demand efficiently (Singh, 2014). As shown, the supply chain begins with the purchase of raw material to suppliers, so it represents the first entity in the supply chain, which is discussed below.

## **Suppliers**

As is shown in the Figure 1, suppliers represent the beginning of the supply chain and hence the importance of develop a correct selection of them. The suppliers are those that provide raw materials, components or services to a manufacturer who is responsible for assembling and add value to them. A proper supply selection is the first step in the supply chain evaluation. At present, in the global manufacturing environment, suppliers represent a vital partner in an organization, means the correct selection provides quality products, in a quantity required and reasonable prices (Scott, Ho, Dey, & Talluri, 2015). Therefore, supplier selection is an operational and strategic task for the development of a company and represents a complex problem due to several criteria must be assessed, such as environmental, social, administrative, economic, among others (Sarkis & Dhavale, 2015).

Usually the supplier selection begins with the needs identification process within the company (Dweiri, Kumar, Khan, & Jain, 2016), the next step is more complicated, because different criteria and sub-criteria considered in the selection process as well as decision making. Each buyer has different expectations about providers, also each company has different organizational and cultural backgrounds that may affect the supplier selection process, so the selection criteria may vary from industry to industry (Žak, 2015).

At present, the only approach to choose a provider who offers the lowest cost is no longer accepted in this challenging and ever-changing environment (Cheaitou & Khan, 2015). Besides, the selection of appropriate suppliers is one of the crucial strategies to improve the product quality of any organization (D. Li & Nagurney, 2015), thus companies should be sure to make the right choice.

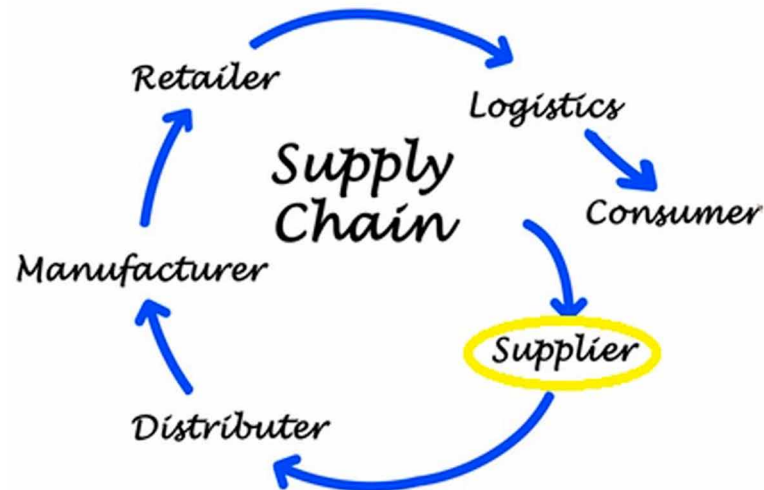
## **Methodology for Supplier Selection**

Currently, there are techniques and methodologies that have been used for the evaluation and selection of suppliers, those are categorized into strategically, economical and analytical (Chung, Chao, & Lou, 2016). First, the strategically techniques are characterized by purely qualitative techniques which are

## Suppliers Administrative Attributes on Supplier Selection

Figure 1. Supply chain

Source: Doron, 2015



used by top management or staff who can access to strategic plans of company. Second, the economical techniques represent industrial practice and most of times the decisions are focused on one attribute, which refers to the cost or, attributes that can be converted using a procedure into a monetary value. Recently, the analytical techniques have been implemented, which are characterized by simultaneously evaluate a set of attributes, as well as providers are characterized by a set of these attributes.

In the literature appear several examples of techniques and methodologies implemented for supplier evaluation, even exist literature reviews, such as performed by (Chai, Liu, & Ngai, 2013), who generally focuses on the evaluation process, but recently exist jobs that belong to (Govindan, Rajendran, Sarkis, & Murugesan, 2015), who focus on green suppliers. The following are examples of techniques and methodologies applied:

- Analytic Hierarchy Process (AHP) (Bruno et al., 2016; Kumar, Padhi, & Sarkar, 2018).
- Fuzzy Programming (Kumar, Singh, & Vaish, 2016).
- Fuzzy-AHP (Galankashi et al., 2015; Gold & Awasthi, 2015).
- Goal Programming- Fuzzy (Azadeh, Zarrin, & Salehi, 2016; Jadidi, Cavalieri, & Zolfaghari, 2015).
- Data Envelopment Analysis (DEA) (Dobos & Vörösmarty, 2018; Mahdiloo, Saen, & Lee, 2015).
- Heuristic methods (Luan, Yao, Zhao, & Song, 2019).
- TOPSIS (Beikhhakhian, Javanmardi, Karbasian, & Khayambashi, 2015).
- Analytic neural process (Wan, Xu, & Dong, 2017).
- Quality function development (Akkawuttiwanich & Yenradee, 2018; Babbar & Amin, 2018).

However, the main element of the techniques and methodologies used in the supplier evaluation, are the attributes of each provider, which are discussed below.



All the above techniques are based on a similar procedure to carry out the same activity, selecting a raw materials' supplier. It is possible that some of those techniques do not include all the general activities, but the level of similarity is very high. Here are some of those activities developed in the supplier selection process:

- Select and integrate a decision-making group who come from different departments in the companies and who know the needs of the same (Hamdan & Cheaitou, 2017; Valipour Parkouhi, Safaei Ghadikolaei, & Fallah Lajimi, 2019), since, based on this, they will issue their judgment. This is critical activity, because from their level of experience depends the success of the decision-making process and it is recommended that they be people with a high commitment to the company and not to their department only.
- List the raw materials and their classification, where the group of experts determines and prioritizes the level of importance that a certain product has for the company (Wetzstein, Hartmann, Benton & Hohenstein, 2016). Frequently they are separated into categories, making use of techniques such as Pareto and the ABC classification method, where the products in "A" are the most important, those in "B" are of medium importance and the "C" are the least important and even, companies can work without some from them. For example, some authors propose not only to use the level of importance of the raw material, but also the level of difficulty for obtain it.
- Criteria and attributes' identification to be evaluated to every supplier. This is an activity that has been widely studied and since it is the central theme of this chapter, it is explained in a later section. Usually there is a list with many attributes obtained from the literature, but it is the responsibility for the group decision makers to reduce it to only those attributes that are really important or strategic for the company (Banaeian, Mobli, Fahimnia, Nielsen, & Omid, 2018).
- Attributes' weighting that consist of adding a level of importance to them (G. K. kumar, Rao, & Rao, 2018). Although there are several methods to perform this task, an important thing is to obtain consensus among the group of experts.
- Define the list of potential suppliers that have a real possibility of supplying the raw material. Usually there are suppliers that are not viable due to problems associated with distance and their geographical location, possible tariffs or tariff restrictions, budget of the company, among others (Kellner, Lienland, & Utz, 2019).
- Assign values to the selected attributes that will be evaluated to every supplier, for which the group of experts will use the technical characteristics offered by the suppliers related to their raw materials, such as costs, delivery times, among others (Igarashi, de Boer, & Michelsen, 2015). Frequently, when a supplier is not known in the company, a common practice is to investigate its reputation with other manufacturers. In a later section it is indicated that there are attributes that are not easily quantifiable, so valuation scales are used to perform the analyzes (Ho, Xu, & Dey, 2010).
- Choice or select a technique to evaluate the suppliers, which is done according to the attributes that the group of experts has identified, which some of them have already been mentioned, which are based on the type of data. Some techniques are totally economic and financial and do not allow the integration of other types of information, others are hybrid and allow the integration of qualitative information, others allow the use of fuzzy information, and others allow the integration of uncertainty (Yazdani, Chatterjee, Zavadskas, & Zolfani, 2017).

### ***Suppliers Administrative Attributes on Supplier Selection***

- Make calculations and conclude about an alternative as this consists of integrating the data associated with the attributes and their weights in the technique that has been selected for evaluation, follow the procedure of the same and obtain a decision index, which allows to make an order or ranking for alternatives and based on this, make the selection.

### **Attributes in the Supplier Selection Process**

Traditionally, it is accepted that suppliers have two types of attributes. On one hand, the quantitative which are represented by a standard scale, such as the price of raw materials, product quality (defective parts per million), delivery time, etc. (Igoulalene, Benyoucef, & Tiwari, 2015; Karsak & Dursun, 2015). On the other hand, there are qualitative attributes but it is not easy to determine a scale to measure them, because those measures depend on the opinion or experience of directors, such as the environmental commitment (Gurel, Acar, Onden, & Gumus, 2015), quality of after-sales services, relationships' quality (Igoulalene et al., 2015), where often is necessary the usage of linguistic variables or diffuse-type (Karsak & Dursun, 2015).

It is accepted that suppliers should be integrated into the supply chain of the manufacturer and that it should be very analytical in its selection process, but the question that is always asked is: what are the attributes that must be evaluated to those suppliers? Fortunately, there are many academic and industrial reports that are held about it. For example, according to Dickson (1966), a pioneer of the investigation of the relationships between buyers and suppliers, who has identified 23 attributes that could be evaluated in a supplier (Abdollahi, Arvan, & Razmi, 2015). Some years later, Weber, Current, and Benton (1991) based on literature review found that the 23 attributes defined in the work of Dickson (1966) continued in force (Singh, 2014), but besides found that just in time (JIT) remained in manufacturing processes and the researchers' preferences, thus his work was focused on analyzing the impact of JIT on the supplier selection and the importance of quality and delivery time. Later, Choi and Hartley (1996) identified 26 attributes for the evaluation and selection of suppliers based on research performed by Dickson (1966), increasing by three attributes to the previous research (Lima-Junior & Carpinetti, 2016).

On the other hand, Goffin (1997) compared traditional attributes with modern environments and found that in the past years, supplier selection was focused on price, quality and speed of delivery, but now it focuses on diversified indicators, such as the technological capacity of suppliers, financial capacity, after-sales service and strategic considerations as well as the cost and quality. Also, Narasimhan (2001) reviewed several studies of supplier evaluation and defined two main evaluation indicators: supplier capacity and supplier performance (Singh, 2014). Nowadays, there are other attributes that can be considered when evaluating and selecting a provider, such as economic stability, historical performance, conflict resolution capacity, organizational culture, staff skills, social responsibility, etc., which are endowed with different importance levels depending on the type of provider that is looking and the type of organization that is evaluated.

Table 1 provides an attributes list that have been identified in the supplier evaluation, which are arranged in descending order according to the number of references that they have. Thus, it appears that the quality and technological capacity are ranked first, as they have been cited on seven occasions.

Thereby, depending on the attributes that are valued in suppliers, different evaluation results will be obtained, so that can have a positive impact on the company performance if the right characteristics are evaluated. However, often are careless attributes or characteristics with a high level of importance which later become essential, such as business strategies, human factors, operating techniques, environ-

ments decisions and as a result the characteristics of different industries are neglected (Chai & Ngai, 2015). However, often they are not integrated into the evaluation due to their qualitative nature and the difficulty to turn them into quantitative.

## **Problem Definition**

Nowadays, the supplier selection process is not only focused on traditional attributes such as quality, delivery time, because exist other attributes for the selection, such as environmental focus, production process, economic aspects, service, administrative, among others, and each type them has a different impact on the organization (Rajesh & Ravi, 2015); however, according to (Govindan et al., 2015), the main problem is that companies do not know the effect of set of attributes in performance that the company has in its production system, particularly marketing, and therefore economic benefits (Galankashi et al., 2015). Thus, this research aims to generate a model of structural equations to find the relationship between administrative attributes which characterize a supplier with the benefits that the company obtained, firstly in the production lines when receive quality raw material and on time, as well as how it affects to market benefits.

## **Hypotheses**

Currently performing economic analysis or making decisions to purchase raw material based only on price is no longer enough, given that a supplier has many other characteristics that must be evaluated before making a decision. Table 1 shows that there are many Administrative Attributes that are associated with aspects of the supplier's administrative system; for example, the communication with the manufacturer and how it gives solutions to the problems that are presented among them (D. Kumar & Rahman, 2016), the supplier's reputation with other manufacturers to whom he provides raw materials, economic stability, skills and abilities in their human resources and training courses offered to them (Chavhan, Mahajan, & Joshi Sarang, 2018; Glock, 2016), the installed production capacity and the level of clean production, as well as the social responsibility in their own context (Mendoza-Fong, García-Alcaraz, Díaz-Reza, Sáenz Diez Muro, & Blanco Fernández, 2017).

The integration of these Administrative Attributes in the supplier selection process will undoubtedly help to avoid many problems in the future and benefits will be obtained, and those will be reflected in the production process and in a greater acceptance in the market in which they participate. For example, it is mentioned that it is possible to obtain a better product quality when there is greater integration between the supplier and t manufacturer (Hamdan & Cheaitou, 2017), the deliveries are made on time by the manufacturer, since there are no delays from supplier and there is always a constant supply and according to request orders (Chavhan et al., 2018), there are no claims by the manufacturer towards the supplier, given that it adequately meets all the requirements (Banaeian et al., 2018). For this reason, the following hypothesis is proposed.

**H1:** The Administrative Attributes evaluated in a supplier, have a direct and positive effect in the profits made by the manufacturers in their Production Process Benefits.

## Suppliers Administrative Attributes on Supplier Selection

Table 1. Attributes evaluated

Selection Criteria	A	B	C	D	E	F	G	H	I	Total
Quality	*	*	*	*	*	*	*		*	7
Technical capacity and technology	*		*	*	*	*	*	*	*	7
Financial situation	*		*	*	*	*			*	6
Installed production capacity	*		*	*		*		*	*	6
Delivery time	*	*		*		*	*	*		6
Flexibility and responsiveness to change		*	*	*			*		*	5
Management and organization	*		*	*			*			4
After-sales services.	*					*		*		3
Ease of communication		*					*		*	3
Quantity of previous business	*					*				2
Communication system	*					*				2
Guarantees and demand policies	*							*		2
Staff's technical skills	*		*							2
Historical performance	*						*			2
Compliance and disciplinary procedures	*			*						2
Reciprocity agreements	*					*				2
Relationship of proximity					*				*	2
Reputation and industry position	*								*	2
Geographic location	*									1
Attitude	*									1
Conflict resolution					*					1
Business desire	*									1
Economy							*			1
Industrial relations records	*									1
Operational control	*									1
Packaging capacity	*									1
Security							*			1
Environmental considerations							*			1
Training	*									1
Total	22	4	7	8	5	9	10	5	8	

Source: Own creation.

(Dickson, 1966; Ghodsypour and O'Brien, 1998; Yahya and Kingsman, 1999; Liu and Hai, 2005; Chen, Lin, and Huang, 2006; Noorul Haq and Kannan, 2006; Punniyamoorthy, Mathiyalagan, and Parthiban, 2011; Xia and Wu, 2007; Lee, Kang, Hsu, and Hung, 2009)

However, the integration of these Administrative Attributes in the supplier selection process will be reflected in the Marketing Benefits that the manufacturer may have, since waste processing and emission control is of vital importance nowadays, since it gives a green image to the company (Gurel et al., 2015; Hamdan & Cheaitou, 2017). For example, Li, Chow, Choi, and Chan (2016) point out that suppliers are the basis for the sustainability of the supply chain and their commitment to the environment is reflected

in benefits that their customers can obtain, in this case they are the manufacturers, which translates into commercial benefits. For this reason, the following hypothesis is proposed:

**H2:** The Administrative Attributes evaluated in a supplier, have a direct and positive effect in the profits made by the manufacturers in their Marketing Benefits.

Once the company has obtained a series of benefits in its production system, the ideal is that they become into commercial benefits that again can be translate into some economic or financial benefits (Gurel et al., 2015). For example, the claims' reduction to suppliers must be converted into deliveries on time by the manufacturer, and then manages will have satisfied customers (Dobos & Vörösmarty, 2018). This mean that integrating green suppliers into their supply process translates into a green supply chain that that allow to be a socially responsible company. Considering that the benefits obtained in the production line impact the commercial benefits, the following hypothesis is proposed.

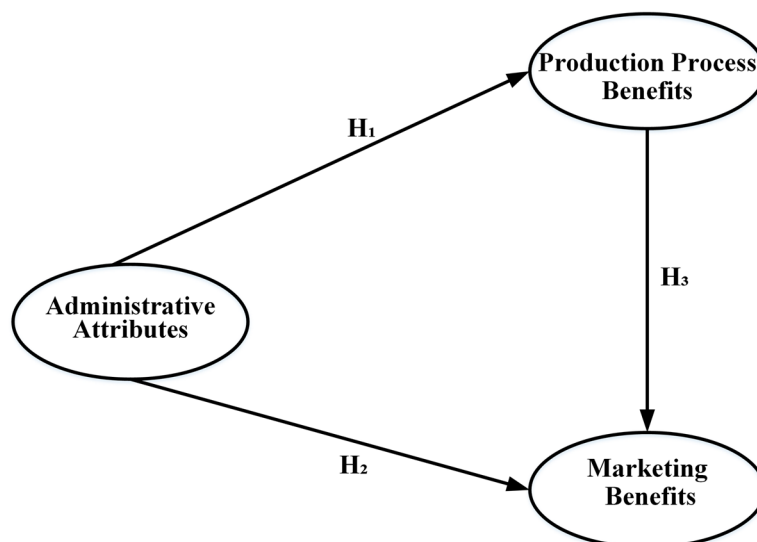
**H3:** The benefit obtained by the manufacturer in the Production Process Benefits when evaluating adequately a supplier, has a direct and positive effect on the Marketing Benefits.

The three hypotheses proposed above, are illustrated graphically in Figure 2

## METHODOLOGY

To understand the methodology, it is divided into steps. As is shown in the Figure 3 and which are discussed below.

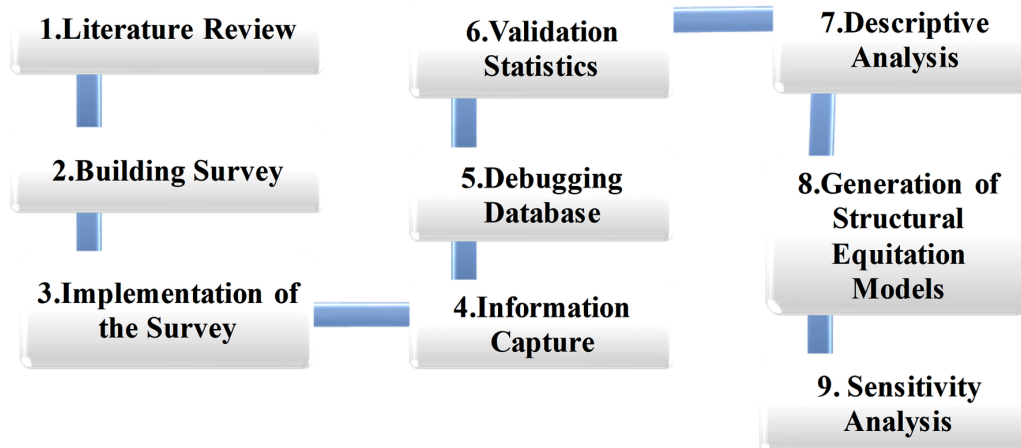
*Figure 2. Hypotheses*  
*Source: Own creation*



## Suppliers Administrative Attributes on Supplier Selection

Figure 3. Methodology steps

Source: Own creation



### Step 1: Literature Review

In this step, a search for information related to the supplier selection was performed, starting at the year 1966 to the present. The search was focused on find the most used attributes and new ones that have been incorporated in recent years as well as the different classifications that other researchers have done before.

This literature review is performed on databases such as: Springer, and Taylor & Francis Science-direct, among others. Using keywords search such as supplier selection, attributes used for the supplier selection and managing the supply chain, where the multicriteria models proposed for evaluation and selection of suppliers are reviewed, noting the attributes that have been evaluated by these authors. However, the benefits that some authors mention. This literature review is a rational validation of the proposed questionnaire, based on research done in other countries in order to adapt it to the environment of the Mexican manufacturing industry.

### Step 2: Survey Construction

A survey is used to collect information since it aims to determine the magnitude of an industrial phenomenon that is performed by the executive management of the company and it is need to know the relationship with other phenomena, but is used especially because it is necessary to know the opinion a lot of people relate with the attributes that should be evaluated in suppliers (Dubey, Gunasekaran, & Samar Ali, 2015).

The survey used in this study consists of three sections: the first has a brief text explaining the aim and purpose of the investigation as well as providing the instructions for filling it. In addition, demographic questions related to the workplace of the survey's respondent, gender, company size, years of experience and industrial sector to which it belongs. These questions describe globally the group of people who answered the survey, and then make different analysis of the responses, although it should be clarified that this survey was focused on senior or executive management, because they are who make the decisions regarding supplier selection.

The second section consists of a table where a total of 39 attributes that can be evaluated at the time of carrying out the selection of a supplier, these attributes were identified using literature review conducted at the beginning of the investigation. The way to answer these questions is based on Likert scale with values from one to five, where number one indicates that the attribute is not important and that the number five indicates that is all-important in the process of selecting a supplier.

The third and final section consists of a table which include 12 benefits that can be attributed to the correct supplier selection and based on the 39 attributes defined in the second section. The way to answer these questions is also based on a Likert scale as the previous section. In order to carry out these surveys is taken as rough draft, the survey performed by (Villanueva Ponce, 2014).

### **Step 3: Application of the Survey**

The survey was applied in the maquiladora industry in Ciudad Juárez, México and aimed at people who work in departments that are involved with suppliers, either in their selection, evaluation, or if has a very close relationship with them, such as: engineering, purchasing, warehouse, receipts quality, management, quality, finance, among others. Administering the survey was conducted by personal interviews in a period of five months.

### **Step 4: Information Capture**

The data capture is performed in SPSS statistical software 22, a computer statistical program widely used in data analysis and database with large samples. It is one of the best-known statistical programs considering its ability to work with large databases as well as its simple interface for most analyzes. In the database built, the rows represent cases or answered surveys or surveys administered and the columns represent the variables or attributes analyzed.

### **Step 5: Database Debugging**

The database's debugging is conducted for two purposes, one of those is to find the missing data and the outlier's identification. Missing data can occur for different reasons such as: omitting the response due to lack of knowledge, carelessness when carrying out the capture of information, or simply because the respondent did not answer the question. If the respondent did not answer a lot of questions, other answers may be useless when it comes to testing causal models (Richter, Cepeda, Roldán, & Ringle, 2016). The range for the missing data can be flexible, but in general, if more than 10% of answers in a particular variable is missing, these values can be problematic, and the case is dismissed (Hair, 2013). In this research, the missing values were replaced by the median's value of the variable in question, due to it is used a Likert scale (Li, Zhao, & Huo, 2018). In the case of outliers which can influence the results, they were detected by box plots, where outliers appear at the ends. In addition, data were standardized, considering an outlier to the one with larger absolute values than four (Kohler, Müller, & Walk, 2015). An estimate of the standard deviation in each of the cases analyzed or surveys, where values close to zero indicate that the respondent simply assigns the same value to each of the questions, and if the standard deviation has lower values than 0.500 on a scale of 5 points, then it indicates that this case presents such a problem, so it is removed (Leys, Ley, Klein, Bernard, & Licata, 2013).

## **Step 6: Statistical Validation**

The suitable instrument which can be used with confidence is required to comply with two requirements: reliability and validity. This indicates whether an instrument properly measured variable that are intended to assess with ease and efficiency. The validity, in general terms, refers to the degree to which an instrument really measures the variable that purports to measure (Qrunfleh & Tarafdar, 2014). The term, reliability defines the probability of success of a system which must necessarily depend on the reliability or success of its components (Huo, Ye, Zhao, & Shou, 2016).

Along this research has been used different indices in order to determine the validity of the survey which was used to carry out the development of this research, one of indices is the Cronbach Alpha, and it is not accompanied by any p-value for rejecting the hypothesis of reliability on the scale. However, the closer it is to its maximum value, 1, the greater the reliability of the scale (Huo et al., 2016). The reliability index is used to measure internal validity, that is, if the items are strongly correlated with each other, it means that measure the same latent variable (the cause), but it does not mean that this latent variable represents the construct which intend to measure it (validity). The AVE for measuring convergent validity, the R-square, adjusted R-squared and Q-square to measure predictive validity (Kock & Moqbel, 2016).

## **Step 7: Descriptive Analyses**

The analysis has been divided, basically focusing on two main issues: the characterization of the sample of respondents and the measures of central tendency and dispersion of the items analyzed.

### **Sample's Descriptive Analysis**

In order to describe the sample, cross tables were performed to determine gender of respondents, the industrial sector to which they belong, as well as the time they have developed their roles. This helps to determine experience level of the surveyed people and therefore the reliability of the information obtained.

### **Information's Descriptive Analysis**

A descriptive analysis of the items analyzed in each of the latent variables was performed. The median is used as a measure of central tendency and the interquartile range (IR) is used as a measure of dispersion, so the first and third quartile of information are estimated. If median's values are high indicate that the surveyed managers consider it as an important item, while low values indicate that this item is not relevant in the supplier selection process. Similarly, if interquartile range's values are high indicate that there is no consensus among respondents regarding to the real value to have that item, but if the IR is low, indicates consensus on its value.

## **Step 8: Generating Structural Equation Models**

To prove the hypotheses stated in Figure 2, the model is evaluated using the Structural Equation Modeling (SEM) technique, due to its widely and recent use in causal relations validations and specifically in the supply chain. For example, the impact of JIT in supply chain performance (Green Jr, Inman, Birou, & Whitten, 2014), the flexibility, uncertainty and firm performance in supply chain (Chan, Ngai, & Moon,



2017), the effect of green supply chain management on green performance and firm competitiveness (Bruno et al., 2016; P. Kumar et al., 2016).

The SEM model is executed in WarpPLS 5.0 software because its main algorithms are based on Partial Least Squared (PLS), widely recommended for low sample size (Kock, 2014). The model here presented is specifically executed using the WarpPLS 5.0 PLS algorithm, with a bootstrapping resampling method for a better coefficients values convergence and diminish the effect of possible outliers.

Three model fit indices are analyzed: average path coefficient (APC), the average R-squared (ARS) and average variance inflation factor (AVIF) that are proposed by (Kock, 2016) and used by (Lee, Ooi, Chong, & Seow, 2014) in the supply chain environment. For the APC and ARS, the p-values are analyzed in determining the model efficiency, establishing a maximum cutoff p-value of 0.05, which mean that the inferences are made with 95% of confidence level, testing the null hypotheses that APC and ARS are equal to 0, versus the alternative hypotheses that APC and ARS are different to zero; while for AVIF, values low of 5 are desirable.

Three different effects are measured in the structural equation model: (1) direct effect (that appears in Figure 2 as arrows from a latent variable to another), (2) indirect effect (given for paths with two or more segments), and (3) total effects (the sum of direct and indirect effects), and with the aim to determine their significance, the P values are analyzed, considering the null hypothesis:  $\beta_i = 0$ , versus the alternative: hypothesis  $\beta_i \neq 0$ .

## **Step 9: Sensitivity Analysis**

The sensitivity analysis is used to know the effect of some changes in an independent latent variable on a latent dependent latent variable. Since the values of the latent variables are standardized, then it is possible to estimate probabilities of occurrence among the variables. For this sensitivity analysis, it is assumed that a standardized value greater than 1 ( $> 1$ ) represents a “high” probability of occurrence, while a value lower than minus 1 ( $-1$ ) represents a “low” probability of occurrence. For each hypothesis in Figure 2 a sensitivity analysis is executed for the four combinations that the variables can have. In this sensitivity analysis, the probability of occurrence will be observed simultaneously in each of the stages and is represented by “&”, while the conditional probability is represented by “if.”

## **RESULTS**

The result section is divided into several sections, thus, the information generated will be discussed below.

### **Sample's Descriptive Analysis**

The total amount of time spent in administering the survey was a period of three months, as a result provides a total of 270 surveys, of which only 253 surveys were valid for analysis, due to the excess of missing values, some were eliminated. Table 2 shows two important aspects relate to the sample, first of all, the survey was answered by more men than women, with a total participation of 182 men, that account for 71.93% of total sample, the rest were women, indicating that management positions related to purchasing are associated with this genre, due to only 72 are women, accounting for 28.07%. Similarly, it is clear to see that 39.52% of respondents work in the automotive industry.

## Suppliers Administrative Attributes on Supplier Selection

As is shown in Table 3, 100% of people surveyed have an experience of at least two years working in their job, the category which includes 2-5 years represents 40.31% of the total and it is the highest, then is clear to see that the sample is reliable because there is a high degree of experience.

## Items' Descriptive Analysis

Table 4 shows the descriptive analysis of the items that compose the latent variables which appear in the model of Figure 2. For administrative attributes, it shows that 5 items have a higher median's value than 4, which means according respondents' perception that these attributes are important when a supplier is selected. In the fourth column is located the interquartile range. The item with the lowest IR corresponds to the item with the highest median's value, indicating that communication and customer-supplier relationship are very important, because it has the lowest variability in that category.

The category of latent variable, marketing benefits, consists of eight items, none of which gets a value more than three, thus indicates that these benefits are rarely obtained. It is also noted that the IRs of the items are high, indicating that there is no consensus regarding the true value they have. Finally, according to the level of benefits received by the good selection of a supplier in the production process, it is observed that consists of four items, two of which have median's values higher than three, but two with median's value lower, which indicates that these values are regularly obtained.

Table 2. Gender and industrial sector

Company's Industrial Sector		Automotive	Other	Medical	Electronics	Electrical	Plastics	Packaging	Total
Genre	Masculine	78	32	19	18	16	13	6	182
	Feminine	22	21	8	7	4	7	2	71
Total		100	53	27	25	20	20	8	253

Source: Own creation

Table 3. Experience's level

Time Spent Working	Frequency
2 - 5 years	102
Less than 1 year	75
6-10 years	45
10 - 20 years	21
20-30 years	8
More than 30 years	2
Total	253

Source: Own creation

## Suppliers Administrative Attributes on Supplier Selection

Table 4. Information's descriptive analysis

Administrative Attributes	Median	Percentiles		Interquartile Range
		25	75	
Communication or customer-supplier relationship	4.346	3.556	4.963	1.407
Supplier reputation	4.274	3.455	4.916	1.461
Economic stability	4.180	3.349	4.849	1.501
Conflict resolution capacity	4.160	3.344	4.837	1.493
Staff's technical skills	4.034	3.242	4.744	1.502
Clean production	3.987	3.155	4.737	1.582
Installed production capacity	3.953	3.209	4.666	1.457
Social responsibility	3.910	3.099	4.682	1.582
<b>Marketing Benefits</b>				
How often has the company increased its economic gains by considering environmental aspects in the supplier selection?	2.727	1.915	3.688	1.772
What is the frequency with which have earned economic gains in the company for choosing a green supplier?	2.695	1.821	3.631	1.810
How often has the company's reputation enhanced by employing green suppliers?	2.695	1.810	3.688	1.878
How often has the company improved its entire supply chain by selecting green suppliers?	2.649	1.748	3.574	1.826
How often has the company's image been called "green" due to the selection process to choose their suppliers?	2.642	1.814	3.612	1.798
How often has the company expanded internationally by selecting a green supplier?	2.553	1.665	3.547	1.881
How often has the company expanded nationally by selecting a good supplier?	2.468	1.615	3.439	1.824
How often has the company expanded locally by selecting a good supplier?	2.452	1.656	3.276	1.620
<b>Production Process Benefits</b>				
How often have quality problems decreased by selecting a good supplier of materials or products?	3.052	2.140	3.989	1.849
How often has the delivery time of its products reduced due to a good selection of raw material supplier?	3.051	2.095	3.967	1.873
How often have wastes of raw materials and products reduced by selecting a green supplier?	2.833	1.936	3.788	1.853
How often have customer complaints decreased by selecting a good supplier?	2.674	1.759	3.649	1.890

Source: Own creation

## Structural Equation Model

The structural equation model was evaluated according to the methodology described above and the result is illustrated in Figure 4, in each of the segments that represents the relationship between two latent variables, it is indicated the value of the beta parameter and p value statistical significance test. Note also that in each of the dependent latent variables, is indicated a value of R-square to measure the amount of variance that is explained by the dependent variables.

The efficiency indexes for model are described below:

### **Suppliers Administrative Attributes on Supplier Selection**

- Average path coefficient (APC) = 0.438,  $P < 0.001$ .
- Average R-squared (ARS) = 0.430,  $P < 0.001$ .
- Average adjusted R-squared (AARS) = 0.427,  $P < 0.001$ .
- Average block VIF (AVIF) = 1.240, acceptable if  $\leq 5$ , ideally  $\leq 3.3$ .
- Average full collinearity VIF (AFVIF) = 2.392, acceptable if  $\leq 5$ , ideally  $\leq 3.3$ .
- Tenenhaus GoF (GoF) = 0.533, small  $\geq 0.1$ , medium  $\geq 0.25$ , large  $\geq 0.36$ .

According to APC, ARS and AARS indexes which have a p value to determine statistical significance, it can be concluded that the model has sufficient predictive validity and the dependencies between the latent variables analyzed on average is nonzero, due to they are statistically significant, reflecting a confidence level of 95%.

Regarding collinearity between the latent variables, it is observed that the AVIF and AFVIF indexes are less than 3.3, thus, it is concluded that there is no such problem of collinearity in the model. Finally, the index of Tenenhaus is an acceptable value due to it is higher 0.36.

### **Direct Effects**

The direct effects are used to test the hypotheses raised initially in the model of Figure 2 and the results are illustrated in Figure 4. The conclusions can be reached based on the results in Figure 4, the hypotheses are the following:

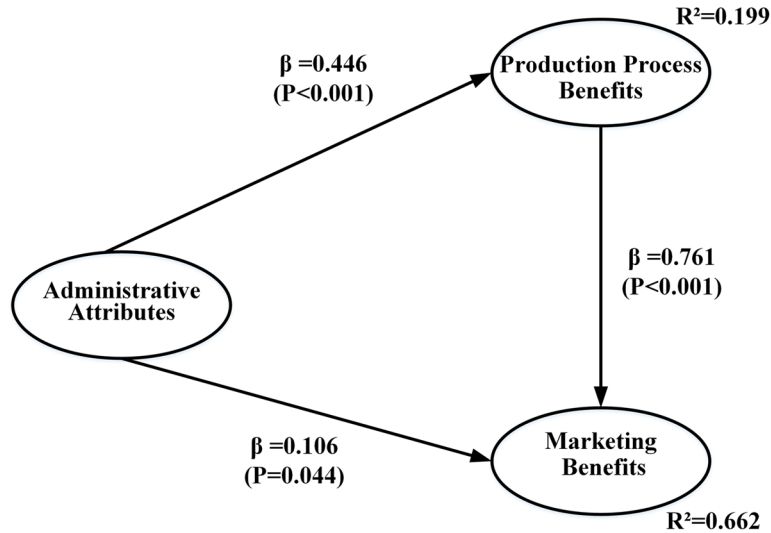
- H1:** There is sufficient statistical evidence to declare that the *Administrative Attributes* evaluated in a supplier have a direct and positive effect on the profits made by the manufacturers in their *Production Process Benefits*, when the first latent variable increases its standard deviation in one unit, the second does in 0.446 units.
- H2:** There is sufficient statistical evidence to declare that the *Administrative Attributes* evaluated in a supplier have a direct and positive effect on the profits made by the manufacturers in their *Marketing Benefits*, since when the first latent variable increases its standard deviation in one unit, the second does in 0.106 units.
- H3:** There is sufficient statistical evidence to declare that the Benefits obtained in the *Production Process Benefits* when a supplier is properly selected, have a direct and positive impact on the *Marketing Benefits* obtained by the company, because when the first latent variable is incremented by one unit, the second does in 0.761 units.

However, it is important to mention that the marketing benefits latent variable is explained by 66.2% for two variables, Administrative Attributes and Production Process Benefits, due to R-square has a value of 0.662. Nevertheless, it is important to note that only 4.7% comes from the first latent variable, while 61.5% comes from the second. On the basis of those values and purposes, it concluded that the Production Process Benefits are important to achieve the Marketing Benefits.

### **Sum of Indirect Effects**

In the evaluated model illustrated in Figure 4, is shown that the latent variable called Administrative Attributes has an indirect impact on the latent variable that is denominated Marketing Benefits, which is

Figure 4. Evaluated model  
Source: Own creation



given by the mediator variable which is called benefits of the production process and product of effects in both segments. In this case, the indirect effect is 0.340 ( $P < 0.001$ ), which is statistically significant with a confidence level of 95% and may account for up to 15% of its variability, due to the effect size is 0.150.

### Total Effects

The sum of direct and indirect effects provides the total effects. In this case, there is only an indirect effect. Table 5 shows a summary of them. Note that two of the relationships between variables the direct effect is equal to the total effect, only in the relationship between the variables called Administrative Attributes and Marketing Benefits the effect includes the direct and indirect effects. It is noteworthy that in the latter regard, the direct effect is only 0.106, but the indirect effect is 0.340; thus, the indirect effect is higher than the direct effect.

### Sensitivity Analysis

This chapter has the objective to justify the importance of considering the Administrative Attributes in the supplier selection process, so it is convenient to report what happens if it is not done. Table 6 shows

Table 5. Total effects

	Administrative Attributes	Production Process Benefits
Marketing Benefits	0.445 (P<0.001) ES = 0.196	0.761 (P<0.001) ES = 0.615
Production Process Benefits	0.446 (P<0.001) ES = 0.199	

Source: Own creation

### **Suppliers Administrative Attributes on Supplier Selection**

the sensitivity analysis about the relationships between the latent variables (hypotheses) of the model in Fig. 4 when they have high and low levels independently, as well as a combination of the levels.

The first hypothesis (H1) relates the Administrative Attributes with the Production Process Benefits and the following can be observed:

- The Administrative Attributes probability in an independent way at its high level and its low level is 0.154.
- The Production Process Benefits probability in an independent way at its high level is 0.186 and for the low level is 0.134.
- The probability that Administrative Attributes and Production Process Benefits are found together or simultaneously at their high levels is 0.051, which is a low value and requires the attention of managers to increase it. But the probability of having Production Process Benefits at its high level, given that they Administrative Attributes has high values is 0.333, which indicates that managers must integrate these attributes, since they help to support the benefits obtained in a production system.
- The probability to find Administrative Attributes at its low level simultaneously with the Production Process Benefits at its low level is 0.055, a low probability, and it deserves attention from managers. In the same way, the probability of having low Production Process Benefits in low level since the Administrative Attributes have not been incorporated or are at their low level is 0.359, which is considered an operational risk.
- Similarly, it is observed that, if Administrative Attributes occur at the high level, the probability of obtaining low levels on Production Process Benefits is 0.051, which indicates that the first variable in that state is not associated with those levels of the second variable. When analyzing the inverse relationship, it is observed that low levels of Administrative Attributes are not associated with high levels of Production Process Benefits, since the probability of occurrence is low.

The second hypothesis (H2) is the relationship between the Administrative Attributes that are integrated into the suppliers' evaluation and selection process and how they affect Marketing Benefits. From results shown in Table 6, the following is concluded:

- The probability to find Marketing Benefits in an independent way at their low level is 0.150, but the probability to find it at their high level is 0.174.
- If there are Administrative Attributes and Marketing Benefits at their high levels, then the probability of finding them together or simultaneously is 0.032, which indicates that managers must make an effort to increase that value, but the probability to find the second variable at high level, since the first has happened in its high level is 0.205. The above indicates that the integration of Administrative Attributes into suppliers' selection guarantees in a 20.5 the Marketing Benefits and that is why managers must integrate those attributes in the selection process.
- The high relationship between Administrative Attributes with Marketing Benefits is checked when analyzing the first variable at its high level and the second one at low level, since the probability of occurrence simultaneously is 0.012, which indicates that whenever it is integrate that type of attributes, commercial benefits are guaranteed. In the same way, the presence of low levels of Marketing Benefits is not related to high levels of Administrative Attributes since the conditional

### ***Suppliers Administrative Attributes on Supplier Selection***

probability is only 0.077 and the same occurs when the relationship is analyzed in an inverse manner.

- However, the worst scenario for managers is presented when Administrative Attributes and Marketing Benefits are presented together at their low levels, where the probability of occurrence together is 0.059 and represents a low risk. For this reason, managers should always strive to integrate this type of benefits, since the probability of the second variable occurring at its low level, given that the first variable has also occurred at its low level is 0.385 and this is a high risk.

The third and last hypothesis (H3) in the structural equation model is the one that relates the Production Process Benefits with the Marketing Benefits, where first one looks to have an efficient and effective production system, and then to look for the commercial benefits. Based on the information in Table 6, the following can be concluded:

- It is observed that the probability that the Production Process Benefits appear independently at its low level is 0.134 and that it does so at its high level is 0.186. However, the probability that it will be present at a high level simultaneously with the Marketing Benefits also at its high level is 0.119, but the probability of having these Marketing Benefits at their high level, given that they have high Production Process Benefits is 0.638. The above indicates that it indicates that companies should focus on obtaining the Production Process Benefits, since it has a high probability of obtaining Marketing Benefits, in other words, commercial benefits can be obtained as long as the benefits are obtained first in the production system.
- However, if there is Production Process Benefits and Marketing Benefits at their low levels simultaneously, then the probability of the two variables occurring together is only 0.099; but the importance in this analysis becomes important when analyzing the conditional probability of occurrence of Marketing Benefits at its low level and Production Process Benefits at low level, that has a value of 0.735. This indicates that if a company does not strive to achieve Production Process Benefits in the supplier selection process, then there is a high probability that Marketing Benefits will not be achieved. In other words, low benefits in productive processes represent low levels of commercial benefits.
- It is also noted that there is no possibility that low levels in Production Process Benefits can be associated with high levels of Marketing Benefits, since the probability of finding those two variables together at these levels is zero. Similarly, the high levels of Production Process Benefits are not related with low levels of Marketing Benefits since the probability is zero. The foregoing indicates that managers can be sure that their efforts to make and obtain an efficient productive system will always be reflected in commercial benefits.

## **CONCLUSION**

Based on the results found in the structural equation model evaluated and the three hypotheses tested, it can be concluded the following:

## Suppliers Administrative Attributes on Supplier Selection

Table 6. Sensitivity analysis

		From			
		Administrative Attributes		Production Process Benefits	
To	Level	+	-	+	-
	P(i)	0.154	0.154	0.186	0.134
Production Process Benefits	+ 0.186	& 0.051 If 0.333	& 0.008 If 0.051		
	- 0.134	& 0.008 If 0.051	& 0.055 If 0.359		
Marketing Benefits	+ 0.174	& 0.032 If 0.205	& 0.012 If 0.077	& 0.119 If 0.638	& 0.000 If 0.000
	- 0.150	& 0.012 If 0.077	& 0.059 If 0.385	& 0.000 If 0.000	& 0.099 If 0.735

Source: Own creation

- Traditional attributes are still attractive for the supplier evaluation, but according to the parameter shown in Figure 4, they have a higher direct impact on the production process than in marketing benefits.
- The direct impact of Administrative Attributes has on the Marketing Benefits is low compared to the indirect effect through the Production Process Benefits as a mediator variable.
- The direct impact of the Production Process Benefits on the Marketing Benefits is high when is compared with others.
- Production managers must be integrated into the supplier selection process because they know the quality required in raw materials and the success selection relies heavily from them, including the Marketing Benefits obtained by the manufacturer.
- The supplier evaluation process should involve not only accounting attributes and qualitative, but also those of non-financial nature that relate to the social and environmental commitment.
- The Administrative Attributes integrated in the suppliers' selection process warrantee the Production Process Benefits for a manufacturer.

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## **KEY TERMS AND DEFINITIONS**

**Attributes:** Attribute is a characteristic of an object, person, thing, etc. Attributes usually represent a manufacturer's or a seller's perspective and not necessarily that of a customer.

**Database:** A database is a collection of information that is organized so that it can easily be accessed, managed, and updated.

**Hypotheses:** Supposition, explanation or theory that is provisionally accepted in order to interpret certain events or phenomena, and to provide guidance for further investigation.

**Likert Scale:** A Likert item is simply a statement that the respondent is asked to evaluate by giving it a quantitative value on any kind of subjective or objective dimension.

**Maquiladora:** A factory in México run by a foreign company and exporting its products to that company's country of origin.

**Raw Materials:** A material or substance used in the primary production or manufacturing of a good.

**Survey:** A method for collecting quantitative information about items in a population.

## Chapter 2

# Developments Concerning Supply Chain Management in Global Retailing Business

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### **ABSTRACT**

*The purpose of this chapter is to explain developments in supply chain management in the global retail business. There are many recent developments which are described in this chapter. As its use is rising in several businesses, we had focused on SCM in retailing business, and this chapter is an enhanced version of that study. Sustainability-related issues have been discussed for many years and the term sustainability has received increased attention in research since the last two decades. This article studies on recent issues and brings an overview of past and current sustainability research in retail applications for examining retailing and sustainability relevance. The article considers supply chain management facilitates and the development of them in both retailing and general supply chain management practices through innovation, expanded product design, globalization, flexibility, process-based management and collaborative working approaches. Ultimately, the study is exemplified from retailing businesses and it is concluded by further discussions.*

### **INTRODUCTION**

After the last decade of 20th century, customers started to take place in the hearth of business decisions and companies tried to develop collaborations with all members (supplier, producer, retailer, etc.) in value chain for satisfying their customers. The name of this collaboration process is called as Supply Chain Management (SCM) (Houlihan, 1985, p. 25). The model of control and coordination between companies is also called as SCM and used for decreasing costs and increasing quality. Supply chain management as a concept; receives increased attention as means of becoming competitive in a globally challenging environment. Supply chain is a network which supplies raw materials, makes them unfinished and finished goods and then distributes them to customers (Lee and Billington, 1992, p. 66).

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## ***Developments Concerning Supply Chain Management in Global Retailing Business***

According to Kopczak (1997), the definition of supply chain is “The set of entities, including suppliers, logistics service providers, manufacturers, distributors, and resellers, through which materials, products and information flow. The term supply chain restructuring refers to significant changes in the set of supply chain entities, the distribution of inventory, or the assignment of tasks, roles and responsibilities to the entities.” Briefly SCM is managing product, money, and information between suppliers, producers, distributors, retailers and customers which take place in value chain (Ozdemir, 2004). On the other hand, retail involves the process of selling consumer goods or services to customers through multiple channels of distribution to earn a profit. Demand is identified and then satisfied through a supply chain. Retailing is also described as the activity of selling to buyers who are buying for their own ultimate consumption. Furthermore, retail has an evolution. Three theories are commonly recognized as the primary retail evolution theories: Environmental theory, cyclical theory, and conflict theory. The basic premise of these theories is that a force (e.g., environment, conflict) causes a retail institution type to change and evolve into a new institution type or a new institution type will emerge as a result of need, conflict or other forces (Kim, 2003; Brown, 1987). Also, two theories explain the present structure of the retail industry and predict the future development of current and new retail formats. The wheel of retailing and the retail life cycle are two particularly important theories.

The wheel of retailing is a well-established framework for explaining developments in retail institutions. The theory suggests that retail institutions go through cycles. The rationale is that, as low-end retailers upgrade their strategies to increase sales and profit margins, new forms of low-price (discount) retailers take their place in the market. The wheel of retailing consists of three stages (Kim, 2003; Evans & Berman, 2007, pp. 129-131). The second phase is called as trading up. Retailers wishing to expand their business and attract more customers, enhance the quantity and quality of merchandise handled, provide more services, and open outlets in more convenient locations. This leads to an increase in operating costs and prices and thus offers opportunities for new competitors to enter the market with low-price strategies. The third phase is characterised by an increase in competition in services of all kinds and by a convergence in terms of the marketing mix of retailers as they mature. They become vulnerable to new competitors that enter the market with low prices (Kim, 2003).

## **RETAILING BUSINESS**

Retail involves the process of selling consumer goods or services to customers through multiple channels of distribution to earn a profit. Demand is identified and then satisfied through a supply chain. Retailers are intermediaries in the distribution channel. Retailing has long been considered a quite passive role in value chain between manufacturer and consumer. But now, retailers use their position to become more powerful player in the distribution channel. Almost all traditional retailers are losing their popularity. For example department stores are large retail units that carry a broad variety of merchandise and offer a deep assortment “under one roof”. The term “department store” results from the structuring into separate departments for displaying merchandise in a manner that resembles a collection of specialty stores. Each department not only has a specific selling space allocated to it, but also usually has its own point-of-sales terminals and salespersons to assist the customers (Levy & Barton, 2007, p. 46).

In recent years, the overall sales and market share of traditional department stores have declined, and they face substantial competition from other retail formats such as category killers and discount stores or non-store formats (e.g. internet retailers). The difficulties mainly result from the problems in retail



positioning as an outcome of the “all under one roof” approach. Whereas first-tier department stores seem to have a clearly differentiated position and usually produce strong financial results, these difficulties relate mainly to outlets in the second and the third tiers, which lack such a clear positioning and are therefore struggling. Also, the overhead and operating costs associated with such large retail outlets that are oriented towards ambience, attentive services and a broad variety of products, are very high in comparison to the more cost-focused and price-aggressive retail formats. Additionally, these retail formats often have better assortments in the limited lines they carry. The departments simply cannot offer the same depth (Zentes, Morschett, and Schramm-Klein, 2007, p. 34; Evans & Berman, 2007, p. 144).

At this stage, we should also mention about retail life cycle. The concept of the retail life cycle refers to the succession of identifiable stages a retail format goes through over time (Evans & Berman, 2007, pp. 132-134; McGoldrick, 2002, pp. 21-23). In the development stage, the new format is introduced to the market. There is departure from the strategy mix of existing retail institutions, as at least one element of the marketing mix is altered in the new format. Sales and profits are low, but growing in the introduction phase. Costs and risks are high because long-run success is not provided at this point. Sales and profits have a rapid growth in the growth phase. Existing companies expand their markets and new competitors enter the market. Towards the end of this stage, growth acceleration begins to decline and cost pressure may emerge. The next stage is described as maturity of the retail format which is brought on by market saturation, in turn caused by a high number of firms. Sales growth declines and profit margins may have to be reduced in order to stimulate purchases. In the final stage, sales volume declines and prices and profitability diminish. Companies can try to avoid decline, for example, by repositioning the format of retail, but many companies abandon the format altogether and start introducing new formats to keep their present customers or attract new customers (Zentes, Morschett, and Schramm-Klein, 2007).

Development of technology and increase in the popularity of internet usage effect e-retailing and electronic shopping improvements. Forms of non-shop retailing include online retailing (a type of electronic commerce used for business-to-consumer (B2C) transactions) and mail order. Even if electronic retailing and electronic shopping are increasing day by day, consumers have some doubts about e-shopping. Some main anxieties include that; delivery costs are very high, willing of trying products by customers, prices are high, being not suitable for non-durable products, and credit cards' information can be stolen (Enginkaya, 2009, p. 12). Retailing plays a vital role in the economy. The retail industry is the first link in the distribution chain, from the customer's point of view (Sarma, 2007, p. 63).

The retailing process is the final step in the distribution of merchandise; retailers are therefore organised to sell merchandise in small quantities to the general public. The services added to the products commonly include transportation and stock-keeping to ensure that the products are available at the point-of-sale. However, the process also encompasses the selection of products for a retail assortment, the provision of sales advice, after-sales-service and many other functions. A retail market is a group of consumers with similar needs that a group of retailers can service using a similar retail format to satisfy them.

## **DEVELOPMENTS IN SUPPLY CHAIN MANAGEMENT**

The business world is facing an irresistible change in every period. Businesses are constantly changing the structure, technology used and the human element that uses this technology. In this context, enterprises should see change as a continuous phenomenon and act with the awareness of this (Gencer & Akkucuk, 2018). Supply chain management is constantly changing to keep up with these businesses. Supply chain

## ***Developments Concerning Supply Chain Management in Global Retailing Business***

management facilitates the development of both retailing and general supply chain management practices through innovation, expanded product design, globalization, flexibility, process-based management and collaborative working approaches.

Retailers are in search of continuous innovation in both their products and retailing activities. All these innovations that are product-oriented or within the scope of the process are also one of the most important factors affecting supply chain management practices. Any innovative approach to product distribution and technological development can lead to significant reductions in supply chain costs. In addition, a completely new product can enable retailers to work with a new supplier. It is difficult for retailers who do not realize the idea of innovation to implement their supply chain strategies (Akkucuk & Gencer, 2017). Thanks to innovation, the profitability of retailers is increasing and thus, the high-income funds obtained are redirected to investment. Supply chain management ensures that innovative products are delivered to retailers quickly, stockpiles should be provided to stock-stock retailers caused by demand intensity, and costs of supply-chain loops should be reduced and retailer products should be extended to stay in retail.

Supply chain is defined as a set of processes involving the transmission of financial, physical and intellectual assets from suppliers to end users. In today's world, the concept of product does not only include goods or services from the production system. The meaning of the product and the expectations of the product are being expanded more and more. For this reason, in parallel with research and development (R & D) and production activities, marketing and sales activities must be designed simultaneously. Product design decisions related to supply chain management should be considered in the context of the expanded product concept.

In terms of supply chain management and retailers, globalization is very important about affecting both suppliers and customers. With the introduction of retail markets into emerging markets such as South America, China and Eastern Europe, supply chain management-related activities have begun to be strategically important (Gencer, 2019). Production quality, transport possibilities, customs duties and quotas, political and economic risks are the points to be considered during the supply chain management processes and activities of retail. Supply chains of globally operating retail chains;

- Be able to respond quickly to the availability of spare parts, sudden changes in shipping channels and import regimes and vulnerabilities in exchange rates,
- Have high-level information and communication technologies capable of delivering fast transport of parts and finished products to be used in production processes,
- They should employ local nationals who are specialized in dealing with political risks, as well as customs, freight, transportation (Heizer and Render, 2009).

Process-oriented change in business and retail is not a new issue. Management techniques such as process renewal, six sigma, lean manufacturing and total quality management all aim at process-oriented change. Process-based approaches are considered to be an important phenomenon in order to be successful in supply chain management. Process-based approaches do not focus on local achievements but instead focus on the overall success of the system (Gencer, 2018). At the same time, these approaches do not put the cycles associated with each other in the process and share information on problem solving. Such applications are easy to say and plan, but difficult to implement. Many factors such as physical distance, performance criteria, suspicion, physical distance and poor cost accounting are seen as factors that complicate the applicability of process-based management within the scope of supply chain management.

All levels of the supply chain approach have to work in a collaborative manner. Supply chain designs and plans should also be prepared to enable collaborative work. In today's retail enterprises, collaborative work is provided by sharing information in the most appropriate way. All supply chain management software that has been modified and developed has an integrated effect on many supply chain levels. In addition, these software create a platform where they can collaborate with supply chain levels. In this way, retailers can optimize decision making processes (Gencer, 2015). Thus, they can achieve profitable results for all stakeholders and functions of the supply chain.

## **ETHICS**

In general, ethics is the combination of standards that organizes behavior of the individuals and groups. Ethics also can be defined as a chain of rules that determines morals, modes of behavior, duties and obligations of people in a work activity. Ethics does not include written and certain conditions as laws. It shows some differences such as time, changing conditions, social needs and scientific developments (Akkucuk and Teuman, 2016). However, the main determinants as "doing favor," "avoiding from evil," "acting fairly" don't change. Besides, ethics is a discipline that explores fundamentals and values of moral actions and rules. In other words, ethics is personal thinking about how to provide a good life with others. Ethics makes distinction between good and bad in this sense. Ethics queries concepts of right and wrong, duty-obligation and social responsibility with a philosophical perspective.

When it comes to social factors of ethical behavior, we should refer from culture, values and norms. Culture: All created by the people. Culture is also all lifestyle of a society of life. Patterns create culture that consists on feeling, thought and actions of community (Tezcan, 1993) Values: Importance which attributed to different factors in the individual's life. Value may define as each kind of mindsets, objects or events which are important for individual. Norms: Norms are social expectations that guide behavior. Social norms regulate individual's relations and guide their actions in a particular group. Norms are generally a reflection of shared values and they are collective because of being shared by all members of groups. Ethical principles of management are gaining importance here. They are justice, equality, honesty and integrity, objectivity, responsibilities, human rights, humanism, loyalty, rule of law, love, tolerance, secularism, respect, thrift, democracy, positive human relations, openness, rights and freedoms, giving the right to labor, resistance against illegal orders.

## **BUSINESS ETHICS**

Business ethics is generally defined as right and wrong behaviors in the business world (Arikan, 1995, p. 173). The dynamics of business ethics are culture and time. Changing business life also changes rules. However, this change in time affects the culture. In this context, historical development of business ethics focuses on the changes that occur in culture and time.

Today, business ethics examines ethical framework in organizations' practices. In today's modern business environment, firms' aim is not only to obtain profit. Businesses operate as units that responsible towards consumers, employees, environment and community. This concept is defined as the social responsibility of business that demonstrates the understanding ethical behavior of employees and managers.

## **ETHICS IN RETAILING**

Today, various types of intermediaries are used to deliver products to consumers. These intermediaries act as bridges between producers and consumers to meet supply and demand. Manufactured products should be delivered to customers by paying attention to wherever they want, whenever they want and how many they want. Otherwise, production loses its meaning. Distribution channels are that factors which provides the transportation (Mucuk, 1997, p. 241). The rapid developments in the retailing sector bring with some of ethical problems. Retailing is basically a marketing that requires having a face to face relationship with consumers. Therefore, ethical issues in retailing directly affect consumers and consumer response as well. It turns directly to retailers. Therefore, detection and analysis of ethical problems experienced in retailing is important for retailers.

Retailing is an important distribution operation within the distribution channel. Retailing is a structure that includes some operations about selling and delivering of products to final consumers (Cemalcılar, 1998, p. 239). It is possible to see ethics almost everywhere because of its role in directing human behaviors. Retailing is one of them. Retailing is the closest member to consumer in distribution channel, and also due to the structure it is one of the areas where there are ethical problems frequently. Retailers carry out their activities in several group relations. In other words, there are several groups or stakeholders for interaction of retailers such as shareholders, suppliers, competitors, employees and consumers. It is possible to examine some ethical issues that may arise in retailing, from the viewpoint of these stakeholders that are in interaction with each other (Varinli 2006, 39). It is also important to emphasis on ethical issues between retailers and consumers. Because, for the retailer's part the most important factors are consumers to continue their existence. If this area experiences a negative situation, it can cause them to lose their customers and may cause extinction of retailers.

Development in the retail sector and increasing competition causes several ethical debates and issues in the retail practice. The retailing process is the final step in the distribution of merchandise. Emphasis should stand on ethical issues and discussions between the retailer and consumer. An experienced negative situation can cause retailers to lose customers and therefore extinction in this area. Determining ethical assessment of retailers on this point is important. Because the high-minded and ethical evaluation focused on the ethical level and acts retailer can bring out fewer ethical problems. Because when retailers focus on ethics and high level of ethical assessment more they may face fewer ethical problems. According to a survey research which is done by 507 retailers, non-ethical behavior generally is not accepted, when ethical behavior is accepted by retailers. Findings show that retailers generally approve ethical behaviors and disapprove unethical behaviors in theory (Kurtoglu, 2016).

## **SCM IN RETAILING**

Main purpose of a supply chain is maximizing total value. The value created by supply chain is the difference (range) between the marginal value of the last product for customer and the effort spent by supply chain to satisfy the demand. Supply chains are dynamic and involve the constant flow of products, information and finance between the different stages. Supply chain management is defined as the planning and management of all business activities involved in fulfilling customer requests, such as sourcing, procurement, operations, marketing and logistics management.

## ***Developments Concerning Supply Chain Management in Global Retailing Business***

SCM does not only focus on processes or functions within one particular company, but also includes coordination and collaboration with other parties in the supply chain (Stank, Davis, Fugate, 2005). The main goal of supply chain management is to ease the integration of supply and demand management for the purposes of improving the performance of individual companies and the supply chain as a whole. The objective of supply chain management is thus to maximise overall value generated and it focuses strongly on supply chain profitability (Mentzer et al., 2001).

Successful SCM requires a change from managing individual functions to integrating activities into key supply chain processes. Traditionally, both upstream and downstream portions of the supply chain have interacted as disconnected entities receiving sporadic flows of information over time. The purchasing department placed orders as requirements became necessary and marketing, responding to customer demand, interfaced with various distributors and retailers and attempted to satisfy this demand. Orders were periodically given to suppliers and their suppliers had no visibility at the point of sale or use. Satisfying the customer often translated into demands for expedited operations throughout the supply chain as member firms reacted to unexpected changes in demand (Lambert et al., 2000).

The primary idea of supply chain management is that all parties involved should coordinate their activities and collaborate, thus improving the profitability of all supply chain partners. If each value-added partner is considered in isolation, inefficiencies in the supply chain can occur. They result mainly from the isolated planning of materials or order quantities along the value chain and are described as the bullwhip effect. This occurs when sales or order quantity fluctuations swing upwards through the various value-added stages, with the amplitudes increasing at each stage. The bullwhip effect results from the fact that customer demand is often unstable. The bullwhip effect is characterised by variations amplifying the further one moves up in the supply chain from the consumer to the suppliers (Lee, Padmanabhan, Whang, 1997). The after effect of the problems encountered with isolated planning is that cooperation and collaboration among the supply chain participants are at the core of industry efforts to constrict the bullwhip phenomenon.

On this stage, we can mention about efficient consumer response (ECR). The concept of ECR is significant in this context. ECR comprises a number of collaborative strategies and operating practices between retailers and suppliers that focus on fulfilling consumer needs better, faster and at less cost-efficient consumer response is central to the development of concepts for consuming potential between organizations through the structuring and control of value chains and offers a range of supply-side and demand-side oriented concepts based on retailer-supplier collaboration.

Supply chain management requires efficient information sharing processes between the parties at each stage of the value chain. Many available technologies enable such information flows. In order to facilitate an interorganisational data exchange, electronic data interchange (EDI) and communication networks that enable instantaneous real-time information transfers such as Internet, intranet or extranet are necessary (Chopra & Meindl, 2004, p. 63). Master data: Master data are the basic data in information processing. They characterise each object in the supply chain, for example, each customer or supplier. Customer and supplier master data are usually company specific whereas article master data are usually exchanged between the parties.

Thus, standardisation in this field is very important. As the bullwhip effect demonstrates, information availability is extremely important at all stages of the supply chain. For example, suppliers need information from the retailer on sales, inventory turnover, and feedback on competitors or on the level of customer returns. Information is also needed from consumers on attitudes toward the products, brand loyalty, willingness to pay, etc. Retailers need, for example, sales forecasts, information on product

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specifications, advance notice of new models, training materials for complex products, and information from consumers on their shopping needs, where else they shop and their satisfaction level with the retailer and the merchandise (Evans & Berman, 2007, pp. 226-227).

Retailers play a crucial role in collecting information on consumers, because they have direct contact with the customers at the point of sale and can collect information which goes beyond sales or scanning data and is important for marketing and logistics. They thus can act as gatekeepers in the supply chain who are able to control information flows. Also, important ones are enterprise software systems such as enterprise resource planning systems (ERP) or merchandise information systems (MIS).

ERP systems such as SAP, Oracle or Microsoft Dynamics integrate all data and processes of the retail company into a single unified system. They usually consist of various components such as human resources, finance or logistics. In retail companies, particularly MIS, as integral part of ERP systems, play a central role. MIS such as SAP for Retail or Oracle Retail support all information processes related to product flows in the retail channel, for example, merchandise planning, ordering or inventory processes (Morschett, Schramm-Klein, and Zentes, 2007).

At all stages of the supply chain, data is important for decision support. The information (e.g. merchandise information, sales, customer data, or supplier information) is “stored” in huge databases that are referred to as data warehouses. This information can be accessed by different departments within a retail company (e.g. marketing, buying, or logistics) and serves as input for the various software systems such as ERP, MIS or data mining systems. Conclusion and Outlook In the past, suppliers and retailers were intent on minimising their own logistics costs. This optimisation at one stage of the supply chain often leads to additional costs at other stages, either for retailers or for suppliers.

Recently, more integrative views on the supply chain have evolved, which has led to supply chain management and the various concepts of ECR. Apart from this change to a more strategic view of the supply chain in terms of focussing on total system efficiency, efficient information processing is of central importance in collaborative supply chain management. In this context, new technological developments such as data warehousing, web EDI, RFID or Internet applications have added new dimensions to collaboration in the value chain and have enabled the various new concepts in supply chain management (Morschett, Schramm-Klein, and Zentes, 2007).

In combination, the SCM definition and the new framework move SCM philosophy to its next evolutionary stage. The implementation of SCM involves identifying the supply chain members, with whom it is critical to link, what processes need to be linked with each of these key members, and what type/ level of integration applies to each process link. The objective of SCM is to create the most value not simply for the company but the whole supply chain network including the end-customer. Consequently, supply chain process integration and reengineering initiatives should be aimed at boosting total process efficiency and effectiveness across members of the supply chain (Lambert, et al., 1998).

## **SUSTAINABLE SUPPLY CHAIN MANAGEMENT**

Sustainability has received more attention in retail management. Sustainability-related issues have been discussed for many years and the term sustainability has received increased attention in research since the last two decades. Defining a strategy by companies makes it easier to provide sustainability (Wiese, Anne, 2012). The growing intensity of retail competition due to the emergence of new competitors, formats, and technologies, as well as shifts in customer needs is forcing retailers to devote more attention

to long-term strategic planning. As the retail management decision-making process indicates, retailing strategy is the bridge between understanding the world of retailing that is, the analysis of the retail environment and the more tactical merchandise management and store operations activities undertaken to implement the retail strategy.

The retail strategy provides the direction retailers need to deal effectively with their environment, customers, and competitors. The first part of this chapter defines the term retail strategy and discusses three important elements of retail strategy: the target market segment, retail format, and sustainable competitive advantage.

We will look at some approaches for building a sustainable competitive advantage. Some important opportunities for retailers to develop sustainable competitive advantages are: Customer loyalty, location, human resource management, distribution and information systems, unique merchandise, vendor relations, and customer service. SCM is a type of management that integrates supply and demand management between supply, purchase, conversion, and all logistics management processes; also coordinating works between suppliers, intermediaries, third-party service providers and customers. SCM is aimed to meet the customer needs with the goods at the right time, right place, right amount of presence, and effective integration of production facilities, stores and outlets to reduce total system cost.

The difficult conditions of competition in recent years, globalization, the rapid development of technology, the complexity of the supply chain network increases and the shortening of product life cycles and so on. Development of enterprises has required a re-examination of supply chain strategies. Companies' competition level increase customer expectations are increasing in parallel. This company in order to meet customer expectations and improve the supply chain is no longer thought of social responsibility, taking into account the true and fair use of natural resources, they need to manage the supply chain effectively. Retailers also can build a sustainable competitive advantage by offering excellent customer service which is very important to provide sustainability in retailing.

Today, %50 average of a product owned value created by supplier. For this reason, the sustainability goals of the institution, it seems impossible to realize without having to involve suppliers. Now customers and consumers, the products are not thinking about only by brand, at the same time, the supply chains producing and offering them are considering buying. Some of sustainable business practices covers areas such as corporate social responsibility, sustainable supply network management, supply chain environmental management, green purchasing strategies, buying environmental, green marketing, environmental marketing and product diversification, reverse logistics, sustainable labeling schemes, life cycle analysis, recycling, source reduction, management of waste. As you can see, is located in the position of an important part of supply chain practices in corporate sustainability process specified in this field directly or indirectly.

Ensure an efficient management of the supply chain, as well as the instantaneous control of each link in the chain, cannot be possible without the reverse logistics and green management approaches. After these developments, the transition from classical supply chain management to a green supply chain management is mandatory. The scope of Supply chain management is expanded with the addition adjective 'green' and has brought up to be configured to include environmental awareness in each step from the logistics functions to the waste of end customers with the organization materials management.

Green supply chain management, from tactical decision-making to strategic decision, reduce negativity, strengthen the control mechanisms, enable the use of resources and allows you to recycling. Creating value in the supply chain of the company, explains the importance of the environment as well. Organizations are trying to increase the ecological efficiency and reducing environmental risks, as well as

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help to realize the win-win strategy to reach the target profit and market share. Job satisfaction, while improving the quality of life of society, it also plays a role in creating value for the company by providing customer satisfaction. The profitability of green supply chain management, it is stated that effective asset utilization and improve recovery service levels in the company.

Green supply chain management, green purchasing, green manufacturing / materials management, green distribution / marketing and reverse logistics processes can be defined as a whole. Green supply chain, starting with the extraction of raw materials to the surface, respectively, manufacturer, wholesaler, retailer and ends with the end customer. Chain covers the product re-use or recycling. In the extended supply chain planning, product design, manufacturing, fabrication, assembly, transportation, storage, distribution functions are carried out. Many retailers now have huge revenue, very large numbers of employees and extensive store networks.

The USA's and the world's largest retailer, Walmart, achieves a turnover of \$485.65 billion which exceeds the gross domestic product of many smaller countries and employs 2.3 million people (corporate.walmart.com).

Carrefour Group, the largest retailer in Europe and the 2nd number in the world, operates over 12,000 stores worldwide. Many retailers have developed into international multi-channel retailers, that is, they operate in many countries and offer different retail formats for their customers. For example, the French Carrefour is now a multi-format group that uses hypermarkets, supermarkets, convenience stores, hard discounters and other formats to sell its assortment to customers in over 30 countries. More than half of its turnover is earned outside the home market.

The German Metro Group employs food superstores (Real), food supermarkets (extra), consumer electronics category killers (Media Markt and Saturn), cash & carry wholesale stores (Metro C&C), and other formats and earns more than 50% of its turnover in 29 markets outside Germany.

Tesco is expanding rapidly into Eastern European and Asian markets and, in addition to several store-based formats, very successfully operates an e-commerce channel, Tesco.com. While the rise of e-commerce in retailing was initially over-estimated in the days of Internet hype, it has nonetheless developed slowly but surely, and Tesco now achieves sales of over 1 billion EUR with its online-channel (Zentes, Morschett, and Schramm-Klein, 2007, p. 3).

## **RETAIL EXAMPLES**

### **The Benetton Group**

Luciano Benetton and his younger sister Giuliana founded The Benetton group in 1965 in Treviso, Italy, by. At the time, Giuliana was working for one of the region's many textile artisans who produced woolen sweaters in traditional sombre colours and rather scratchy wool. Luciano worked as a wholesaler selling artisans' output to department stores. When his sister started sewing sweaters with more colourful and fashionable designs on her own, he was sure he could sell these designs. Their small-scale operation grew slowly at first, but, by 1965, they were able to open the first Benetton factory in the nearby town of Ponzano. Soon, their two other brothers, Gilberto and Carlo, joined the company and three years later, in 1968, the Benetton family opened its first clothing store in Belluno, followed by a second store in Paris a year later (Datamonitor, 2005). Now, The Benetton group is present in 120 countries around the world. They have a network of about 5,000 stores in the main international markets. While more than



80% of turnover is still generated in Europe, the company is continuously strengthening its international expansion, especially in Asia. 115 million garments are produced around every year and turnover of around 1.8 billion EUR is generated as a total by the Group. Almost three quarters of sales come from the casual brand United Colours of Benetton (UCB).

In order to accelerate processes throughout the supply chain, Benetton has increased upstream vertical integration by consolidating its textile and thread supplies. 85% is currently managed by the company. This says that Benetton has the ability to speed up the flow of materials from raw material suppliers through its production poles to ultimate distribution from Italy to its global retail network (Moore & Fernie, 2004, pp. 187-188).

Benetton's philosophy has always been to offer product lines on a worldwide basis that have sufficient breadth to accommodate the needs of markets in many countries. In addition to offering casual clothing, Benetton also licences its trademarks for products that are manufactured and sold by others. For this reason, there are also fragrances and cosmetics, watches, sunglasses, housewares and other fashion accessories on offer, which complement the Benetton product lines (Datamonitor 2005a, p. 5).

The products have also experienced changes recently, which actually enforced the existing Benetton product strategy. While Benetton used to offer a standard range in most markets, allowing for 20% of its range to be customised for country markets, the company now allows a differentiation of only 5-10% in each collection (Moore & Fernie, 2004, p. 188).

**Supply Cycle** In the fashion industry, it is extremely important that new products be available in the retail outlets right at the beginning of a new season. However, the textile industry also has to cope with long production and distribution lead times. Benetton therefore has to plan and produce a long time in advance, although it is never clear until well into each season which colours sell best.

Faced with this continuing problem, the company decided to partially reverse the production process in order to be able to receive rapid feedback from their retail outlets on the colours that sell fast. The traditional process of manufacturing knitwear consists of spinning or purchasing the yarn first, then dyeing and finishing it. After that, the garment parts are manufactured from the dyed yarn and finally joined to form the finished garment.

In order to ensure rapid reaction to consumer demand and fashion changes, a good and direct understanding of what is sold in the shops is crucial for the success of the Benetton model. While much information is obtained through the close relationship with the company's sales agents, one of the benefits of setting up the owned and directly managed retail network is to obtain this direct understanding of market developments.

In the past, based on the traditional IT system, Benetton used to receive only direct reports on sell out data from selected stores. Starting in 2006, Benetton plans to further refine its just-in-time production, by moving away from two collections per year (spring/summer and autumn/winter) towards a 2+2+1 concept. The company is planning to break up the spring/summer collection into two parts, the autumn/winter collection into two parts and create a fifth collection comprising the base priorities or top sellers. Before the postponement strategy was introduced, there were always too many garments with colours customers did not want, whereas the colours in demand were always sold out. The new strategy allows Benetton to be extremely responsive to rapid changes in customer demand for different colours in clothing and so also permits higher customer service levels (Waller, Dabholkar & Gentry, 2000, p. 136).

Currently, however, further efforts at information gathering include the company's pilot project, in which a number of independent shops are linked to Benetton through its IT platform. The long run objective is to obtain a good sample of all the different size shops that represent Benetton's retail network. As

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a first step, the IT network was installed in the shops that Benetton owns and manages, and as a second step, the system is currently being broadened to include third party stores as well.

The company estimates that having 10% of the approximately 5,000 independent shops feeding data into the IT platform will be sufficient to acquire a correct and accurate picture of the market and therefore to monitor consumer demand precisely. For the future, Benetton is planning to further optimise its demand-driven supply chain nationally as well as internationally, in order to remain successful in the increasingly competitive business environment.

### **Walmart**

Walmart, Inc. is the world's largest retailer and, since 2002, has been the largest company in the United States, as evidenced by the no. 1 position in the Fortune 500 list for four consecutive years. This global company, with its headquarters in Bentonville (in the North-Western part of Arkansas) was named America's "most admired company" by Fortune Magazine in March. Sources used for this case study include the web site <http://www.walmartstores.com> as well as explicitly cited sources. 2003. With its current number of about 1.8 million employees worldwide, Walmart constitutes the largest private sector employer in the world (Walmart, 2006). It operates about 6,150 stores and wholesale clubs in numerous countries.

The company is the most prominent example of a "big box discount retailer" applying the principle of everyday low prices (EDLP), holding leading positions in virtually all consumer goods categories, i.e. clothes, shoes, toys, home appliances, consumer electronics, sporting goods, bicycles, groceries, and food in the USA (Smith, 2004). Walmart is likewise known for its "cutting edge technology, distribution proficiency, and data mining capabilities" (Discount Store News, 1999, p. 107).

Walmart's worldwide competitors in the food retail industry are Carrefour from France, Tesco from the United Kingdom and the German Metro Group. Walmart is in an unchallenged position as the world's leading retailing company. With respect to suppliers, Walmart's buyers have to negotiate continually lower prices.

Due to its volume power, Walmart can often force the integration of suppliers' operations into its supply chain. This might imply the implementation of a joint business plan with contracts specifying price, volume, delivery schedule, packaging and quality. It might also involve a subsequent close monitoring of their suppliers' production and gaining access to their books and accounts (Smith, 2004). Walmart grades its suppliers on weekly, quarterly and annual report cards, sets price points and monitors whether they meet their targets. Walmart has established a close partnership with its key suppliers such as General Electric and Procter & Gamble.

The company can also be regarded as a pioneer with respect to the early adoption and subsequent development of trendsetting methods involving retailer-manufacturer interaction such as ECR, VMI or CPFR. Another key measure for achieving EDLC involves importing goods at the lowest possible prices. The desire to buy cheap import goods was stressed by Ortega (1998): "From the beginning, Walton had bought goods wherever he could get them cheapest, with any other considerations secondary." From 1989 to 2002, Walmart performed its global sourcing activities via an Asian based exclusive global buying agency called Pacific Resources Exports, Ltd. (PREL). While competing retailers had entered Asian procurement markets long before Walmart, it deliberately favored a second mover strategy.

Walmart wanted its competitors to lay the groundwork, before it stepped in and achieved a rapid expansion, choosing those Asian countries without major tariffs (Hornblower, 2004). In 2002, Walmart set up its own global procurement centre in Shenzhen (China) by acquiring PREL and merging it with its local buying offices. The new global sourcing headquarters coordinates a network of more than 6,000 global manufacturers/suppliers (a list which will be subject to a further consolidation process in due course), 80% of which are located in China (Hornblower, 2004). Walmart sends US managers to Shenzhen to train suppliers, who have to use Walmart's computer software (Smith, 2004).

Due to the huge annual import volume of Chinese goods, which is estimated to be worth about 15 billion USD and is equally split between direct imports and indirect imports via suppliers located in the USA, Walmart and China have been labelled a joint venture with massive economies of scale in purchasing (Hornblower, 2004). Some economists even credit Walmart with lowering the US rate of inflation because of the high amount of imported goods at lowest possible prices (Zentes, Morschett, and Schramm-Klein, 2007).

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## **KEY TERMS AND DEFINITIONS**

**Composting:** Is the decomposition of materials that originated from animals and plants.

**Ethics:** Captures the values that form the basis of individual and social relations, norms and rules as a philosophy of discipline.

**Operations Management:** Aims to organize the process to ensure the work to be done correctly and regularly.

**Retailing Business:** Is about the selling of goods and services to the end consumer through a business gradually.

**Supply Chain Management:** Examines the effective management of supply chain operations.

**Sustainability:** Defines the ability of an organization to endure.

# Chapter 3

## Sustainable Supply Chain Practices in Multinational Organizations

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### **ABSTRACT**

*Sustainable supply chain practices have been adopted by numerous organizations around the world and continue to grow by selecting innovative solutions coupled with modern technology to achieve a greener environment while maximizing costs. Supply chain management includes multiple functions ranging from forecasting and demand management to transportation operations and customer service. The following chapter explains each function along with a case study to depict how various strategies have improved the profits of a firm while trying to save the environment.*

### **INTRODUCTION TO SUPPLY CHAIN**

Organizations rely on supply chain management to sustain themselves in the market. The unpredictability and the rate at which markets evolve has defined how important it is for firms to improve their supply chains. Each business aims at maximizing its performance by fabricating a strong supply chain and focusing on improving its core competencies and collaborating or outsourcing the other functions. This enables a firm to have a significant advantage in the market while gaining a clear understanding on how various business activities can be implemented in a better way.

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## **WHAT IS A SUPPLY CHAIN?**

A supply chain consists of a network that involves various people, processes, resources, and technologies that coordinate together to deliver products or services to the consumer. It comprises of multiple independent functions within a firm that begins with a business plan and ends only after the products and services have been delivered to the end user.

## **EXAMPLE OF A SUPPLY CHAIN**

All global firms have a supply chain department that works collectively to deliver products and services to a customer. For example, a consumer may go to an electronics store to buy a desktop computer. Here, the supply chain would start by forecasting the sales for a computer. From this forecast, a strategic demand plan is created to manage supply and procure the required raw materials across multiple tiers of suppliers. These raw materials would include parts for the software materials, packaging items and other requisites. After procurement, these items are then stored as inventory in warehouses until the manufacturing process begins. Once a final product has been produced, they are packaged carefully for shipment to warehouses for storage and then delivered to wholesalers, retailers, or end consumers.

## **WHAT IS SUPPLY CHAIN MANAGEMENT?**

Prior to the 1980s the term supply chain management did not exist. Instead, organizations used the phrase “operations management” and “logistics” to define the entire network of supply chain. During the old days, logistics referred to functions such as procurement of raw materials, the maintenance of the products, distribution of products as well as management of inventory whereas modern supply chain management can be defined as a combination of the traditional logistics and introduction of new functions such as marketing of final products, research and development of new products, order management, finance and managing good relations with all suppliers and customers alike.

Supply chain management can be briefly described as the coordination and integration of multiple individual functions, processes and departments that must be linked together to ensure the supply chain gives the firm a competitive advantage while assuring the right product with the right price has been provided to the customer for their satisfaction.

The individual functions of a supply chain that ensure products have been transformed into final goods and services are mentioned below:

1. Demand Planning and Forecasting
2. Procurement Operations
3. Inventory Management
4. Warehousing Operations
5. Transportation Operations
6. Customer Service Operations



## **EVOLUTION AND HISTORY OF SUPPLY CHAIN MANAGEMENT**

Supply chain and its management have existed from the day individuals began trading goods and services. Supply chain management and logistics have evolved together with technology making it easier for organizations to improve their competitiveness. The history and evolution of supply chain management will be presented in the form of a timeline:

- 1919 – The Syracuse University is known to have the first version of a supply chain program where a business degree with specialization in Traffic and Transportation was provided
- 1927 - Henry Ford manufactured cars by following the concept of ‘mass production’ to achieve a consistent evolution of operations in a supply chain management.
- 1952 - Barcoding System was invented by Norman Woodland and Bernard Silver and patented in the year 1952.
- 1957 – The APICS was established to develop and improve the knowledge of the population in operations management
- 1963 – The Council of Logistics Management was established under the name of National Council of Physical Distribution Management
- 1969 – Few individuals such as J.F. St G. Shaw, Partner, Preece, Cardew and Rider researched and understood the relationship between a customer and a supplier
- 1971 – The concept of reverse logistics is discussed by William Stanton and William Zikmund.
- 1985 – A research paper was presented about Third-Party Logistics in the Council of Logistics Management Annual Conference by Ken Ackerman and Dean Wise
- 1988 – The term ‘Lean Manufacturing’ has been introduced
- 1997 –. A technique has been devised to reduce the overall impact of the bullwhip effect by Hau Lee, V. Padmanabhan and Seungjin Whang.
- 2001 – The concept of Green Supply Chain Management has been introduced. This is the first version of the Green House Gas Protocol, carbon accounting tool for supply chain has been released.
- 2010 – The profession of supply chain has been classified as a job by O\*NET known as Supply Chain Managers
- 2011 – The supply chain leader, Tim Cook, of Apple Inc. has been named as the CEO of Apple

## **SUPPLY CHAIN MANAGEMENT PRINCIPLES**

Supply chain management includes multiple functions such as demand management, procurement operations, inventory management, warehouse management, transportation operations and customer service operations. Various firms across the world have incorporated a sustainable approach to their supply chain department after analyzing, understanding, and implementing it. The following section talks about each function along with a case study to show how different procedures in each function has improved the profits of a company while trying to help save the environment. It is pertinent to note that the firms have implemented sustainable practices in creative methods to suit the goals of the organizations which include but not limited to Panasonic, Ikea, DHL, Walmart, Amazon, Maersk, and Flipkart (Parent company Walmart).

## **Demand Planning and Forecasting**

Demand planning is considered as one of the critical functions of a firm's supply chain because of its dependence on data analyzed from previous sales, consumer feedback, marketing strategies while involving the manufacturing operations, inventory management systems and distributors to forecast the demand of a product as precisely as possible.

The strategies to manage demand include three criteria such as management of demand, planning for the demand and then using previous sales to forecast future demand. There are a lot of difficulties that the team responsible for demand management must overcome such as the absence of coordination between the different departments of a supply chain, giving less importance to strategies and focusing more on the forecast information provided. Ikea adopted creative strategies to suit the needs of the firm.

Ikea was established in Sweden in the year 1943 and stands for Ingvar Kamprad Elmtaryd Aggunaryd. The founder of Ikea originally sold watches and pencils and then widened its scope of work to home furniture. By the year 1956 Ikea ventured into manufacturing its own furniture. This decision enabled the team to transport furniture in flat packages which saved transportation cost and minimized the damage risk of the furniture.

Ikea forecasts the demand of all their 30000 items where each product has a demand forecast on a global level and is later segregated into regional levels. There are 2 strategies that Ikea follows: 1. Every 5 years Ikea builds a strategic plan where the predicted sales are determined for each product manufactured by Ikea. 2. Ikea has a global presence and collects researches and analyses data about the total number of sales and customer feedback.

Ikea uses tactical planning to forecast for the products. The system used is based on the history of the purchases and the index during the seasons which can be calculated for 84 weeks only. After the data is analyzed for the past 84 weeks it predicts the sales for the next 84 weeks and so on. After this, the forecast is only modified once to include the changes in demand based on the current market conditions.

If a product is being launched for the first time the strategy for demand forecasting changes. A business plan is created 2 years before the product can be made public for buying to the consumers and the first forecast for the new products are made 18 months before the selling date. The team collects and analyses the data obtained from the business plan, commercial pricing, and statistics for sales. A few months before the product is released, an initial forecast is received globally and for all the regions separately.

Ikea use KPIs to test the accuracy of their forecasts. It is segregated into two parts: the gross weeks and the net quarters. The KPIs are used to calculate for three different categories of forecasts for all products such as the active items, the new items and the discontinued items. The gross weeks is calculated only for a week i.e. on a weekly basis whereas the net quarters are calculated at every quarter of each year.

Ikea has implemented a strategy which categorizes their products into 4 different levels like the first service level consists of products that are high in demand and are always available, whereas the second service level contains other products that are in demand but lesser than the ones in service level 1. The third level contains items that are ordered intermittently i.e. lesser than service level 2 when compared and the last level includes items with a low demand only.

## **Procurement Operations**

Procurement can be defined as a combination of operations to procure all items that are required for manufacturing goods and delivering the final products and services to the end consumers. Procurement

functions consist of obtaining the goods and services after demand planning and forecasting to maximize efficiency after prudently selecting a variety of suppliers.

This function plays an important part in supply chain management due to its presence in each function to ensure a smooth movement of goods and services from one department to the other while minimizing costs, maintaining the levels of quality, and reducing the risks involved in a supply chain.

The gains of procurement include the minimization of cost, providing products and services with improved quality which also results in improving the technology of its products.

Procurement personnel cooperate with suppliers spread across the world, the various departments in a supply chain including internally and externally. They liaise with departments such as the operations team, the engineering team, the marketing team, the quality control team, and the financing team.

While collaborating with the operations department, they plan the items and services that will be required to ensure complete consumer satisfaction. The goods to be procured can either be used for manufacturing of the final products or for sourcing of packaging materials whereas the information technology department could assist in providing services.

The development of innovative and more efficient products is done with the partnership of the procurement and the engineering team. This team also helps in selecting the key suppliers for supplying the materials and services required to create the end product.

The marketing team collaborates with procurement by providing them with new ideas for inventing innovative products. The procurement team is then responsible for ensuring that the items are available and are obtained for the manufacturing department to manufacture at the appropriate time. These marketing professionals are also responsible for forecasting sales.

Procurement also involves the quality control team to ensure that the suppliers offer good quality of products and the finance team is responsible for managing the accounts payable systems for the procured goods and materials. The procurement team looks forward to the finance team for related advice on the prices of items and whether to convert it into a purchase. The Panasonic Group follows strategies to suit the needs of the organization.

The Panasonic Group has issued the Green Procurement Standards that mentions the importance of procuring only from the suppliers who actively follow environmental regulations and minimize their effect on the environment. They have also teamed up with their stakeholders to implement the Green Plan 2018 to minimize their carbon footprint, to recycle items, to conserve water and biodiversity and to minimize the impact of chemicals.

The firm has set guidelines that suppliers must support and co-operate to work with them. Some of the guidelines include the use of an efficient environmental management system that maintains an in-depth analysis on the management of its chemical substances, to improve the speed of recycling its resources, conserving biodiversity and water resources and to minimize greenhouse gas emissions to the extent possible. These procedures enabled them to endorse the eco-conscious procurement.

The guidelines are a part of the Green Procurement Standards and comprise of three segments:

1. The environmental sustainability management of Panasonic deals with the minimization of the effects on the environment through all the functions of their supply chain
2. The green procurement standards where the firm appeals to the suppliers to follow the guidelines set by their business units. These requests are different from the green procurement standards created because of laws, rules of the country where the suppliers are situated, and the requests made by the consumers.

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3. The manual for green procurement operations consists of strategies to supervise and examine the suppliers' feedbacks.

The goal of the green procurement standards of the Panasonic group is to promote green procurement where goods and services are obtained without affecting the environment. The goods and items include the products and parts that have been purchased for building the final product. The objectives can only be accomplished by establishing a few policies such as the establishment of the supplier groups that only supply the items that comply with the environmental policy of the organization. The firm gives suppliers an equal opportunity based on following of environmental laws, choosing products of good quality, the prices of the items, and their delivery dates. However, priority is given to suppliers who take initiatives in reducing the greenhouse gas emissions, promote recycling of products and water, conserving of biodiversity, a detailed analysis on the management of chemical substances with the help of an effective system for environmental management. The selection process for choosing the right materials is also a very strict process where apart from providing good quality products with various functions and at an affordable price, the firm accepts materials that also fulfil the necessary laws and mention the items for which the chemical substances are cleared and do not contain any harmful or banned items. Materials are also selected in terms of decibel levels, its vibration levels and odors, the materials that have a lesser effect on the environment after its disposal and the ones that can be recycled and reused. Also, the materials that are used for packing the items are preferred based on their recycling practices, minimization of the volume and the chemicals used.

## **Inventory Management**

Inventory can be of multiple types from raw material to work in progress items or even finished goods. Although inventory is stocked in warehouses and distribution centers, its management requires the entire chain. Inventory starts from the moment purchase orders are placed by the procurement department after demand planning and forecasting and ends only after the final product has reached the end consumer.

The management of inventory can often be described as the activity of monitoring and handling raw materials, work in process items or finished products to minimize cost, improve efficiency and maximize customer satisfaction. The team responsible for managing the inventory system interacts with personnel from all departments of a supply chain ranging from the demand forecasting team to the customer support team.

Inventory can be managed effectively only if the practices followed are not random but instead should include excellent data analytics, accountability, and robust practices. Inventory management systems can only be extremely efficient if it is well-coordinated and there is absolute visibility across its functions in a supply chain. Amazon adopted creative strategies to optimize inventory and meet the goals of the organization.

Amazon's founders established Amazon.com by venturing into online distribution of books and eventually built an empire by providing products from various categories such as electronics, clothes and accessories, automotive and industrial services, beauty and health, groceries, and other general items.

Amazon's mission has always been to offer "Earth's biggest selections" and cater to consumers and ensure maximum customer satisfaction by minimizing costs and providing a large variety of products and choices.

Amazon decided to increase the number of warehouses to store their inventory by 6 in the year 1999 with an efficient computerized inventory management system. These warehouses were built to stock all products that consumers could purchase during the holidays to ensure that a consumer could purchase whatever they required and avoid the loss of a client to a competitor. Therefore, it can be concluded that Amazon focused on maximizing satisfaction by increasing the availability of products which was made possible by increasing its inventory. Inventory could only be increased due to the additions of more warehouses thereby reducing the total distance covered to deliver the products to consumers in a timely and appropriate manner. However, in 2001 the company faced massive losses and decided to improve its strategy.

Amazon implemented the practices to improve their inventory management for the following year by focusing on the uncertainty of demand and minimized its inventory on its basis, increasing its selection of goods and services, planning their logistics network and increasing productivity by arranging inventory across all distribution centers based on demand in those particular regions, outsourcing all activities that required the shipping of products from one place to another.

E-commerce is a major part of Amazon and therefore could not be outsourced. Therefore, the team decided to outsource its management of inventory which shifted their focus on improving the other factors of its business while gaining expertise from their partners.

The strategy adopted by Amazon involved outsourcing of products that were not of high demand and could be delivered directly by their own distributors. This resulted in high turnover.

Another method that Amazon used is called the drop ship inventory. Drop ship inventory can be described as the deliveries of products are sourced directly from the manufacturer. In this method, Amazon does not deliver the products and only accepts the purchase requests made by the consumers. This introduces another concept of partial centralization of inventory from the manufacturers and can be viewed as advantageous for the both the parties. Amazon saves the transportation cost of delivering these products to the consumer. The problem arises when customers order multiple products which must be sent independently.

For example, Amazon collaborated with Ingram Micro to manage orders for electronics. This enabled Amazon to reduce the risk of running out of stock while managing a low inventory along with the holding cost and increased the efficiency of delivering products to customers on time ensuring maximum customer satisfaction.

The next strategy that Amazon implemented was to increase its selections of products by collaborating with its competitors and offering their products to consumers. The wider range of products aimed at providing the consumers multiple choices which also resulted in consumer satisfaction and gave Amazon a chance to increase the availability of a product as well as variability. This enabled the consumers to compare the products of Amazon and its competitors without visiting multiple websites. This also added to the previous strategy of holding lesser inventory and reducing the cost of holding stock.

## **Warehouse Operations**

Warehousing operations start the moment the products are delivered by suppliers to warehouses and distribution centers. In the next step, these products are thoroughly checked for any damage incurred and are then carried on to the storage area and are only retrieved whenever there is a demand for it. The items could range from raw materials for manufacturing to finished goods that can be delivered to the consumers.

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Manufacturing complexes can also be used as warehouses where one side of the complex can be used for storing raw materials, the other for unfinished products and the last part for finished goods to further the movement of inventory during the manufacturing phase. There are many organizations that use warehouses and distribution centers just for receiving, storing, and distributing of the goods and materials.

Distribution centers cater to practices such as cross-docking and kit assembly. Cross-docking can be described as a process where the products are unloaded and then loaded to outbound trucks which remove the need to store these products in warehouses as inventory whereas kit assembly can be described as the process where various items are kept together in a container so that the final manufacturing procedure can run efficiently. Walmart adopted creative strategies to suit the needs of the firm such as building numerous distribution centers and warehouses that required proper planning and execution for best results.

Walmart has many distribution centers throughout the United States of America. The total of 158 distribution centers and are arranged into various categories such as there are 42 distribution centers just for general products, 42 for groceries, 7 for the clothes and cosmetics, 11 for import, 26 for Sam's club, 25 for specialty items and 19 for cross docking purposes only. Walmart strategically positioned its stores near all the distribution centers. Walmart has also placed 9 disaster distribution centers pan America to assist in case of a natural disaster.

Every distribution center can provide items to 75-100 stores and consists of conveyor belts that are 8km long to keep the centers operational 24x7. Another strategy was adopted by Walmart to optimize time. The plan involved storing the fast-moving products in close proximity to the retail stores and the slow-moving products are kept at farther distribution points.

The grocery distribution centers of Walmart are divided into multiple facilities such as the full line grocery is designed in the shape of an L and the dry groceries section is a square shaped area whereas a rectangular area has been built for the perishable products. The area for the perishable items is developed to implement the cross-docking strategy for various products.

The fashion distribution centers are also complexes with a rectangular shape and cater to more than 1000 stores. The distribution centers used for importing are located near sea ports and are used to collect the products and then redistribute them to the various distribution centers.

Walmart is known for its famous cross-docking operations at its various distribution centers. The practice of using the cross-docking method has led to restock inventory efficiently and reduced the overall time it takes to transport items from one place to the other. This helped to reduce their costs significantly.

## **Transportation Operations**

Transportation operations can be defined as the movement of people, goods, and services from one end to the other. It connects the warehouses with the associates that are geographically present in two different parts of the world but are connected through a common supply chain. Transportation operations usually involve the consumers, the distribution centers and warehouse facilities, the traders, and the department stores. It basically helps with the movement of inventory from the warehouse to the consumers through any of the 4 transportation modes i.e. Air, rail, truck, sea. Maersk Line has adopted strategies that enabled them to obtain a sustainable supply chain.

Maersk Line had to overcome the problem of high pollution caused by their vessels used while shipping goods and services as part of their goal for sustainability.

The frequent use of shipping vessels in the transportation and freight industry has led to high pollution in the environment. The main cause for this is the emissions from the exhausts of a ship that have motors that consume a high amount of fuel to power the entire ship. The advantage of using ships to transport goods and services is that it can carry tons of products together helps minimize the cost, but the industry is so vast that effect of pollution seems to multiply and worsen the environment.

The Maersk group is a group of companies with influence in the oil and gas industry, the supermarket and department industries as well as banking and shipping industries. In the early 1960s, Maersk introduced the use of containers that were of uniform size for shipping goods and services. Maersk also acquired 17% of the whole world's operating fleet. The shipping vessels that were used were more contemporary when compared to that of its competitors and made approximately 70000 port calls to approximately a clientele of 100000 annually. One of the challenges faced by them when using these modern vessels was that the large container vessels were not suitable for offloading at the smaller ports of call. Maersk found an alternate using the intermodal network and feeder connections.

Maersk always focused on customer satisfaction because of their awareness on the factors that the consumers rely on. The factors include the consistency of the schedule for delivering the products and services, going digital with their process for ordering products, clearing the customs, and finally tracking the order. Maersk had no problems with maximizing costs at the expense of providing efficient services to customers.

In the year 2008, the Maersk group introduced the strategy for sustainability for maximizing profits for the group. Maersk had three goals to reduce the impact its practices had on the environment. They were as follows: 1. To be the global pioneer for shipping products by reducing their carbon footprint 2. To move forward in the industry by reducing the Sulphur dioxide emissions between 0 and 3. To minimize the impact shipping had on the marines and the environment.

Maersk introduced the process of slow steaming where the shipping containers sailed by reducing the full load on the engines. This strategy was inculcated with all its competitors of the industry and therefore became a shared practice for transporting the goods and services to consumers.

This process helped Maersk complete two of its three environmental goals. It helped in reducing the total consumption of fuel while reducing the carbon footprint emitted from the engines of the ships thereby reducing its effect on the marines. This also helped expand unwavering quality of administration.

However, Maersk had to overcome the challenges that came along with adopting this strategy. The difficulties included the extra costs that came along with the additional shipping containers that were used to adjust to their delivery schedules. This strategy also added to the aggregate time it took to ship all the orders. The team faced these challenges by minimizing the time it stays in-ports and reducing the port calls on a few routes.

Some of the other efforts the Maersk line has taken to improve environmental conditions include:

1. The operations research team optimized the routes to minimize fuel consumption. This was done by supplying data to the captains at regular intervals for regulating the speeds and routes. The vehicles used costly low Sulphur fuel just to reduce the Sulphur dioxide emissions in the entire transportation industry.
2. They collaborated with research organizations to promote its research on reduction of the impact on marine environment. Maersk then installed a technology for chemical free water across each freight vehicle used by the company and discard waste in the safest manner possible.

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3. They also incorporated the fleet by keeping their end-of-life in mind while designing their cargo vehicles. This resulted in reduction of carbon dioxide emitted from the vessels and improved the efficiency of the fuel used. The drawback of using these vehicles were the size and a few ports across the world could not accommodate it. Maersk forecasted this problem earlier and deliberately arranged the fitting of its existing vehicles to reduce the consumption of energy and minimize the emissions of carbon dioxide.
4. Maersk Line discarded their fleet in an environmentally responsible way even if it escalated their costs.
5. They also used biofuels while performing test runs to further their advancement towards a sustainable future.

## **Customer Service Operations**

Supply chain professionals have realized the importance of customers and its services in a supply chain due to its presence in all the functions in a supply chain. Customer service can be used as a competitive advantage only if the customer is completely satisfied. Consumers deserve the best quality of products with varied choices at an affordable price and quick delivery. This consumer satisfaction can be achieved after the needs and requirements of the consumers have been recognized through problem solving, surveys and feedback and are met only after identifying the demand forecasts, the stock levels, order management, logistics and transportation to make sure that the final product is delivered to the customer at the right time and at a suitable price. This entails that all the functions of a supply chain are involved in ensuring customer satisfaction before, during and after the products have been delivered.

Customer Relationship Management is a term commonly used to define the relations between the consumer and the company. A CRM system is usually a part of the ERP systems used by organizations, along with the status of the inventory levels of the products, management of sales and consumers.

For example, the CRM system contains historical and analytical data of all the old and the prospective suppliers. The next steps involve matching the requirements of the consumers with the specifications of the product. This helps the company to improve their sales along with maximizing customer satisfaction. DHL has assisted organizations to improve their customer service by making creating solutions to their challenges that benefitted consumers as well as the organization.

The company faced multiple challenges such as the delivery of perishable items was never on time. This inconsistency affected the sales margin as well as the fill rates of the products were also reduced. This in turn affected the relationship between the consumers and the organization. Products with high demand were never stocked on shelves on time, leading to the loss of sales. This created unpredictable flow patterns. These challenges were recognized as major barriers to the growth of the company. This is when DHL was contacted to modify the delivery performance of the product thereby increasing sales and improving customer relations.

DHL created solutions that focused on maximizing consumer satisfaction and increasing the profits of the company. The strategies were:

1. Improve the relations with suppliers for improving the order-to-deliver availability



The team at DHL collaborated with vendors, designed new policies focusing on availability and delivery of fresh and daily products in mind. A remarkable success could be seen in terms of the quality and availability of the products.

2. Customer service also saw significant improvement after the staff and associates of the company were satisfied that the quality and cost of service has improved day in and day out.

Trainings were held at regular intervals to help create awareness on the effect fill rates have on the business. The training usually discussed the common issues that drivers face such as safety and parking difficulties.

3. A new team was created with the corporates of the company, store-level associates, and DHL representatives to address all the challenges faced by the company. The complaints could be provided from a toll-free number. These representatives answered all questions raised by clients always ranging from quality to the freshness of a product.

These strategies saw significant improvement in fill rates by 4% and assisted the company in handling their inventory effectively. The improved relations with suppliers increased the supply of perishable products to the store leading to excellent customer satisfaction. The new team created helped DHL Supply Chain address the challenges and concerns regularly which helped boost their confidence levels.

DHL Supply chain has expanded and now handles 10 similar operations for this store. These operations are known to serve 65% of the company's stores in the United States. The strategies implemented by DHL have helped the company's supply chain management and the assistance needed to expand its network.

## **OTHER PRACTICES**

Other practices that are commonly followed by firms include the effective management of supplier relationships and reverse logistics.

### **Supplier Relationships**

Supplier relationship can be defined as the relationship between the firms and its suppliers. The relationship is strengthened when a partnership is formed between the buyers and the suppliers leading to the development of products and more transparency while sharing information. This collaboration is becoming a common practice among organizations to improve their core competencies.

To achieve the targets, set by the firms, a strategic relationship is formed with suppliers. This alliance influences the different potentials of both the sides to accomplish the goals set forth by the firms. Supplier relationships can be classified into 3 different categories such as the distributor, the desired supplier and their exclusive partners. The difference can be seen based on the different contracts for each category, their schedule for delivery and the type of information shared between the two.

Global supply chains have more partners at a global level which helps firms to reach out to the various regional markets and therefore the strategies involve the addition of multiple suppliers. This strategy minimizes the risks involved in a supply chain.

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The partnership formed has improved the quality of merchandises provided to the consumers, minimized cost, and paved the way for joint development of new products. Such changes provide a competitive advantage to the suppliers as well as the firms, improves the efficiency of the supply chain and its core competencies.

Supplier involvement has also increased in the recent years. Their contributions help the firms utilize the maximum potential of the suppliers to distribute the items with a competitive advantage. Planning effectively with the help of suppliers also minimizes inventory and lead time. It also helps smoothen the manufacturing process of the items. Walmart understands the relations it should have with its suppliers to discover the maximum potential of a supply chain.

The supplier sustainability program of Walmart evaluates the information provided by the suppliers on the effect the products have on greenhouse gas emissions, the waste produced from those products and the quality of the items provided. It also reviews the information about raw materials and its procurement.

Walmart requires transparency to determine, analyze the environmental impacts and improve the information shared with the suppliers. Walmart has collected information about the components of its products, country of manufacturing or sourcing of the products and the suppliers of the suppliers of each product under its private brand. The scorecard is created for suppliers and contains questions about transparency, on carbon footprint and management of waste. The benefits of using scorecards to evaluate supplier performance helps Walmart assign business to the preferred suppliers, and helps decide which suppliers require assistance for improvement and which suppliers can be collaborated with at a more strategic level.

## **Reverse Logistics**

Reverse logistics refers to a group of strategies to aid in the movement of goods and services in the opposite direction, that is from the customer to the manufacturer. Earlier firms believed that reverse logistics added to the expenditure of the company. However, due to the latest rules for the conservation of the environment and maximizing consumer satisfaction has led these companies to focus on the quality of the goods and services provided and improved the life cycle of the product.

Reverse logistics takes place only when a product needs to be exchanged, returned, repaired, or recycled. For example, an item can be returned whenever a consumer does not need it or when it is damaged, or when a distributor decides to stop the distribution of products that do not move fast in the market, or when the manufacturer creates new regulations and plans for packaging the items.

Reverse logistics can also be defined as the process of designing, executing and monitoring an efficient flow of goods, inventory and final products and data from manufacturing to the suitable discarding of the items.

The advantages of implementing reverse logistics in a supply chain include the improvement of income made from minor sales, the cooperation with shareholders increases due to the current social and environmental obligations, minimization of the cost used for operations due to recycling and reusing of products.

The challenges faced by firms include the inconsistency that comes with returning of products like the timing and the quantity of the items that are returned to the warehouses, absence of efficiency while measuring the performance of the whole process involved in reverse logistics, the absence of inspecting and evaluating the returned items. Flipkart has organized its reverse logistics to minimize cost and improve the efficiency of returning products without any hassle.

Flipkart categorizes its reverse logistics into three groups:

1. **Replacement:** The damaged products are returned to the supplier and the new products are delivered to the customers by Flipkart.
2. **Store Credit:** Store credit is given to customers who were unsatisfied by the product
3. **Actual Cash-Back:** Online payments are compensated in the form of cash

Flipkart is known for its return policies that lasts up to 30 days. It was originally created to strengthen the trust between Flipkart and its consumers but led to consumers deceiving Flipkart. However, Flipkart has developed its data management systems to detect such tricks.

Returns are only possible if the suppliers cannot deliver the products to the clients or if they do not accept the product. If the product has been invalidated by the consumer while the delivery is in process, the orders are annulled only after it is delivered to the customers. The clients must get in touch with the customer service representatives at Flipkart and courier it back to Flipkart. The delivery cost is borne by Flipkart themselves.

## **CONCLUSION**

Organizations have begun to take serious actions in order to incorporate eco-friendly practices in the supply chain departments. The aforementioned practices have enabled these firms to have a positive impact on the environment while increasing their profits and their customer base. Newer technologies have assisted them to take preventive measures to the best of their abilities and save the environment in whatever manner possible.

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# Chapter 4

## Lean Supply Chain Management and Sustainability: A Proposed Implementation Model

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### **ABSTRACT**

*Lean supply chain management is one of the emergent fields of interest among academics and practitioners. Many organizations are using Lean principles in their supply chain. However, the success of the initiatives is mixed. The purpose of this chapter is to evaluate existing literature on Lean supply chain management and sustainability to construct a model for sustainable implementation of Lean supply chain management through an integrative review. An integrative review methodology is followed to review the existing 39 literature to construct a sustainable LSCM model. This chapter further discusses the integration philosophy of eight pillars of Lean supply chain management with sustainability using the triple bottom line approach. This is the first chapter as per the knowledge of the author to discuss the issues of sustainability in Lean supply chain management.*

### **INTRODUCTION**

In the last four decades, Lean Management (LM) has been one of the most popular business strategies for the manufacturing and service organizations (Goetsch and Davis, 2014; Rotter et al., 2018). The researchers have been continuously studying and updating the various facets of LM (Miller et al., 2010; Hajmohammad et al., 2013; Biazzo et al., 2016; Narayanamurthy and Gurusurthy, 2016; Resta et al., 2016; Martínez-Jurado and Moyano-Fuentes, 2018; Narayanamurthy et al., 2018). The input dimensions of LM is the human effort, production space, investment in tools, engineering hours to develop a product, the needed inventory etc. on the output side, it is delivering the value with reduction in defects, etc. (Womack et al., 1990; Narayanamurthy and Gurusurthy, 2016). LM implementation is a continuous process and journey without an end state (Liker, 1997) and therefore, the impact on LM has to be monitored on various dimensions, to suggest the future course of action. The stakeholders

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of organizations usually monitor the business performance for judging the efficacy of any new system (Venkatraman and Ramanujam, 1986; Arellano et al., 2017). The supply chain is critical for the success of the organization (Sezen and Erdogan, 2009). Therefore, organizations are using many methods to improve the supply chain. The LM principles and practices have been applied across the supply chain. This has been applied right from the suppliers to the customer with intention to create more value for the customers. The LSCM thus made possible elimination of waste, improving quality, reducing costs, and increasing costs at all the stages of supply chain (Womack et al., 1990; Womack and Jones, 1996). LSCM advocates a culture of collaboration with clients and works together to accomplish common goals. To cite an example Toyota communicates with customers and suppliers for considering any change in supply chain activities (Sezen and Erdogan, 2009). Nevertheless, many organizations have struggled to implement Lean Supply Chain Management (LSCM) programs, due to lack of awareness or improper implementation procedures (Jasti and Kodali, 2015a). Besides, LSCM requires a different set of business models wherein improved profits are as a result of cooperation rather than competition. The integration of LSCM is not simple and has much to evolve in order to better comprehend the adaptation of Lean approaches within the supply chain (Shamah, 2013; Tortorella et al., 2018). Sustainability of results achieved in the supply chain is also another concern. Different approaches such as lean, resilient or green are used by companies to improve the sustainability of supply chains (Azevedo et al., 2012; Govindan et al., 2014). Yet, the studies on the impact of these practices on sustainability are scarce (Ruiz-Benitez et al., 2018). Accordingly, there is a need for a study which evaluates the existing literature on LSCM and sustainability to integrate and develop a conceptual model for implementation of sustainable Lean supply chain. This study is purported to fill this academic gap.

## **BACKGROUND THEORY**

### **Lean Supply Chain Management**

The physical distribution system of goods is very important for organizational productivity, quality and profits in the modern era (Jasti and Kodali, 2015b). This led to various developments in the field of supply chain management (SCM). SCM is defined as "...the management of the interconnection of organisations which relate each other through upstream and downstream linkages between the different processes that produce value in the form of products and services to the ultimate consumer..." (Williamson et al., 2004). The SCM and manufacturing activities are related to each other. SCM is one of the key areas to determine the success of each organization (Cirtita and Glaser-Segura, 2012). LM is one of the most widely used business improvement philosophy in the last four decades (Sony, 2018, 2019). The LM approaches have improved financial, operational, social performance and environmental performance of the organization (Henaio et al., 2018). The LM when used in an organization, reduces waste, arrests variation in the process, add value to customers and improve performance on various dimensions (Lewis, 2000). The successful companies are expanding and linking their internal processes with external customers and suppliers. Thus, the supplier and customer integration form an important strategy to establish a competitive advantage for the organization. The classical supply chain perspectives include the flow of goods from supplier through manufacturing and distribution chains till the end user (Wong et al., 2018). Therefore, the focus of SCM must shift from functional and independent to general and integrative initiatives. The principles of LM can be used in the supply chains. LM has developed

from simple practices at the workstation level to a supply chain level or value systems across multiple organizations as a natural development process which led to expanding the knowledge boundaries (Hines et al., 2004). The increasing competitive pressure for shorter lead times, lower costs and better quality has resulted in supply chain integrative approaches. The Lean from just a production technique has developed into a manufacturing philosophy. The success of Lean in organizations has encouraged its applications beyond the organizational boundaries. The supply chain is an important area for the success of organization. This resulted in LM procedures, techniques, practices and tools were used in SCM. Lean usage has resulted in improved responsiveness to demand variations and reduced operating costs (Lewis, 2000). The Lean supply chain practices is defined as a set of organizations directly connected by upstream and downstream flow of products, services, information, and funds that collaboratively work to reduce cost and waste by efficiently pulling what is needed by the individual customers (Vitasek et al., 2005). The LSCM is an improved business model which results in improved profits which results from cooperation rather than bargaining or imposing power over supply chain partners (Naim and Gosling, 2011). LM principles have been used in supply chain management and resulted in benefits for the organizations. Nevertheless, LSCM results in a supply chain network, that results in tightening relations among the supply chain links in order to provide value for the customers. It means the customers will get products at minimum cost, shortest time and good quality. The supply chain optimization is always difficult due to the involvement of many organizations. In the modern era, the supply chain has become very complicated, complex and prolonged supply chains (Chopra and Meindl, 2007; Jasti and Kodali, 2015b). As a solution to the management of the modern-day supply chains, researchers have proposed that LM principles can be used effectively in the management of supply chains (Ariff and Ahmed, 2005; Martínez-Jurado and Moyano-Fuentes, 2014). Many organisations which have to implement LM principles in the supply chains have benefitted from increased output with a specific level of input. However, the use of LM practices in supply chain management is not a simple process, because, (i) waste is easier to be identified in a shop floor than in a supply chain (ii) the manufacturing process can be easily controlled by the top management (Marodin, Frank, et al., 2017), however, the supply chain is a conglomeration of many entities controlled by different management, hence it is a challenge.

### **Pillars of Lean Supply Chain Management Framework**

Jasti and Kodali (2015a) developed an LSCM framework which consists of eight pillars. Each pillar had a sub-element within it. The eight main pillars on which the framework is built were top management commitment, supplier relationship management, customer relationship management, information technology, JIT manufacturing, elimination of waste, continuous improvement, and logistics management. These are pillars are self-explanatory in the supply chain. The sub-elements with each of the pillars are tabulated in Table 1.

### **Sustainability and Triple Bottom Line Approach**

World Commission on environment and development has defined sustainability as “Development that meets the need of the present without compromising the ability of future generations to meet their needs” (WCED (World Commission on Environment and Development), 1987). This is a macroeconomic definition is difficult for the organizations to implement because it does not specify how to implement it. Secondly, there is some vagueness in this definition as regards to how to identify present and future



Table 1. Pillars and Sub-elements of LSCM framework proposed by Jasti and Kodali (2015b)

Sr. No	Main Pillars	Sub-elements
1	Information Technology Management	EDI usage to communicate between departments Centralised database for documentation Enterprise resource planning system Information technology employed at customer base Effective and transparency information flow throughout supply chain Use of bar coding and scanner in logistics systems Electronic commerce Modelling analysis and simulation tools Computer-aided decision-making supporting systems
2	Supplier Management	Strategic supplier development Supplier evaluation and certification Long-term supplier partnership Supplier involvement in design Supplier feedback Supplier proximity Single source and reliable suppliers or few suppliers Cost-based negotiation with suppliers Manage suppliers with commodity teams joint decisions towards cost savings
3	Elimination of waste	Standard products and processes Standard containers Focused factory production Design for manufacturing Flexible manufacturing cells or U-shape manufacturing cells Visual control Single minute exchange of die Andon 5S Point of use tool system Seven wastes throughout supply chain
4	JIT production	JIT deliveries throughout supply chain Single piece flow Pull production Kanban Production levelling and scheduling Synchronised operational flow Plant layout Point of usage storage system Pacemaker Small lot size
5	Customer relationship management	Specification of value in terms customer point view Post sales service to customer Customer involvement in design Continuous evaluation of customers feedback Customer enrichment Concurrent engineering Group Technology Delivery performance improvement Takt time Quality function deployment Failure mode and effect analysis
6	Logistics management	Time windows delivery requirements or tight time windows Effective logistics network design Consultants as logistics managers Consignment inventory or vendor managed inventory Advance material requirement planning and scheduling structure Use of third-party logistics for transportation system Milk run or circuit delivery Master the demand forecasting process Postponement A, B, C material handling Elimination of buffer stocks
7	Top management commitment	Create vision and objective to lean supply chain Employee training and education in LSCM Organisation structure and associated relationships Cross-enterprise collaborative relationships and trust Joint planning of processes and products with suppliers Resources allocation Develop learning culture specific organisation Holistic strategy for integrating system or organisational policy deployment Employee empowerment Stable and long-term employment Leadership development
8	Continuous Improvement	Multi-skilled workforce Built in quality system Value stream mapping through supply chain New product development Statistical process control Quality improvement teams or quality circles Cross functional teams within the organisation Use of flat hierarchy value engineering

## ***Lean Supply Chain Management and Sustainability***

needs, what are the technologies that will allow to meet those needs, and how to effectively balance organizational responsibilities between the stakeholders (Hart, 1995; Starik and Rands, 1995; Gimenez et al., 2012). In principle analysis of WCED definition transpires that it integrates economic, social and environmental aspects. This concept is operationalised through a triple bottom line (TBL) approach. The TBL approach is a framework that incorporates three dimensions of organizations performance. This concept is developed by Elkington (1998) in the book *Cannibals with Forks: The Triple Bottom Line of the 21st century*. It captures sustainability by measuring the organization activities around the world in these three dimensions. Economic sustainability is a term which does not create much confusion compared to social and environmental aspects of performance. Economic sustainability for example at a plant level could be operationalised as production or manufacturing costs (Cruz and Wakolbinger, 2008). A plant level conceptualization of environmental sustainability could result into a reduction in waste, energy efficiency, reduction pollutants, a decrease in consumption of hazardous, toxic, and harmful materials etc. In other words, environmental sustainability tries to reduce the footprints that companies leave behind in the environment (Gimenez et al., 2012). The environmental focus is integrated into business at different levels such as planning, design, manufacturing, distribution, use and disposal. The social sustainability focusses on internal and external stakeholders. The internal stakeholders are employees, etc., and external stakeholders are those that are outside the organization (Pullman et al., 2009). Social sustainability means an organization providing equitable opportunities, encourage a diversity, promote connectedness within and outside the organization, ensure quality of life, provide democratic processes, and accountable governance structures (Elkington, 1994). Many firms indulge in corporate social responsibilities to enhance their social reputation (McWilliams and Siegel, 2001). The triple bottom line suggests that firms should be viable in social, economic and environmental aspects to be sustainable in the long run.

## **FOCUS OF THE CHAPTER**

The increased competitive pressure for shorter lead times, lower costs and better quality, lead organizations to include the principles and practices of Lean Management in all the elements in the supply chain (Cudney and Elrod, 2010; Marodin, Tortorella, et al., 2017). LSCM is a extremely efficient way to manage the supply chains to generate more products and services with less use of resources. The implementation of LSCM warrants a strategy based long-term commitment to supply chain partners, with a cooperative and systematic waste elimination along the supply chain rather than a mentality where the profit targets are short term and highly dependent on market prices and the ability to negotiate strongly. Many organizations have struggled to implement LSCM in their supply chains (Marodin, Frank, et al., 2017). Thus, the main focus of the chapter (1) to discuss the evidence in the literature related to LSCM and Sustainability, (2) to develop a framework for implementing Sustainable LSCM (3) to describe the future research directions.

## **INTEGRATIVE REVIEW METHODOLOGY**

An integrative review of the literature is a non-experimental design. Here the information from primary search sources is systematically categorized (Ganong, 1987). The past research is summarised and overall conclusions are drawn from previous studies (Whittemore, 2005). The potential of integrative review is

“to build the science, informing research, practice, and policy.” The review is conducted to create a contribution of knowledge in the field of LSCM and Sustainability. In addition, this integrative perspective further aims to collate and analysis relevant articles in the domain of LSCM and Sustainability thereby generating future research directions. The integrative review is a creative process which helps to organize a body of knowledge. It is conducted and reported as though it is primary research (Ganong, 1987).

## **Research Question**

Two primary questions guided this review:

**RQ1:** *How to implement LSCM Sustainably?*

**RQ2:** *How future research should be directed at given the findings?*

## **Data Sources**

In order to conduct an integrative review, a methodological review process was undertaken. The first step was intended to search electronic databases. The search criteria employed for this research was Lean Supply Chain Management and Sustainability, Lean Supply Chain Management and Economic performance, Lean Supply Chain Management and financial performance, Lean Supply Chain Management and Environmental performance, Lean Supply Chain Management and Social performance, Lean Supply Chain Management and Society, Lean Supply Chain Management and Employees. The scope was restricted to last 20 years i.e. 1998 to 2018. The databases which were included in the study include was Academic Source Premier (EBSCO), Google Scholar, Business Source Premier (EBSCO), Emerald, IEEE Xplore Digital Library, JSTOR, ProQuest Dissertations and Theses, Science Direct, Taylor & Francis and World Public Library. Though some authors have concluded that conference proceedings should be excluded (Scott-Findlay and Estabrooks, 2006), how conference proceedings offer some insights in an emerging research area like LSCM and Sustainability. Hence, conference proceedings by reputed publishers were included.

## **Inclusion and Exclusion**

The screening process for the literature review followed a goal of finding articles which were focused on LSCM and Sustainability. Editorial, opinion, theoretical and qualitative and quantitative studies were included in this review. The screening criteria were that articles had to be published in English between 1998 and 2018 and other criteria were it should be focused specifically on LSCM and any of the measures of sustainability. The articles were excluded if they did not focus on LSCM and any of the measures of sustainability or if the research design was poor or argument which was presented was not clear or if the journal was included in list of predatory journals by Beall (Beall, 2012; Berger and Cirasella, 2015).

## **Screening**

This research used a 3- step process to obtain the final sample of articles. The first step was a broad search of the literature to identify abstracts that met the inclusion criteria. The titles and abstracts were printed. It helped in removing the duplicates. the remaining abstracts were screened using the inclusion/

exclusion criteria which was earlier stated. The full articles were then read to meet the inclusion / exclusion criteria. The reference list of articles was read to further improve the search criteria.

## **Data Analysis**

There is no well-set standard for analyzing the integrative review data (Conn et al., 2003; Whittemore, 2005; Burke and Hutchins, 2007; Smith et al., 2009). As the primary goal of this research was to study the LSCM and Sustainability, it was intended to be accomplished by determining the patterns, directions, similarities and differences within the sample of literature reviewed. To bring in methodological approach a framework was used (Whittemore, 2005; Smith et al., 2009). The methodology was

1. The retained articles were read to determine the quality of the writing, to reduce and compare data within the articles and to analyze and synthesize themes and patterns within the literature sample.
2. The quality of each group of the articles was assessed by evaluating the focus and reasoning of authors in relation to LSCM and Sustainability.
3. Quality of the theoretical articles was determined by the description LSCM and Sustainability and by the quality of the article's writing in relation to scholarship.
4. The scholarship determination was guided by the ability to communicate ideas effectively and clearly in an unbiased way (Kitson, 2006).
5. In addition, the research articles' quality was based on design, sample characteristics, measurement, statistical analysis and relevance to knowledge development.

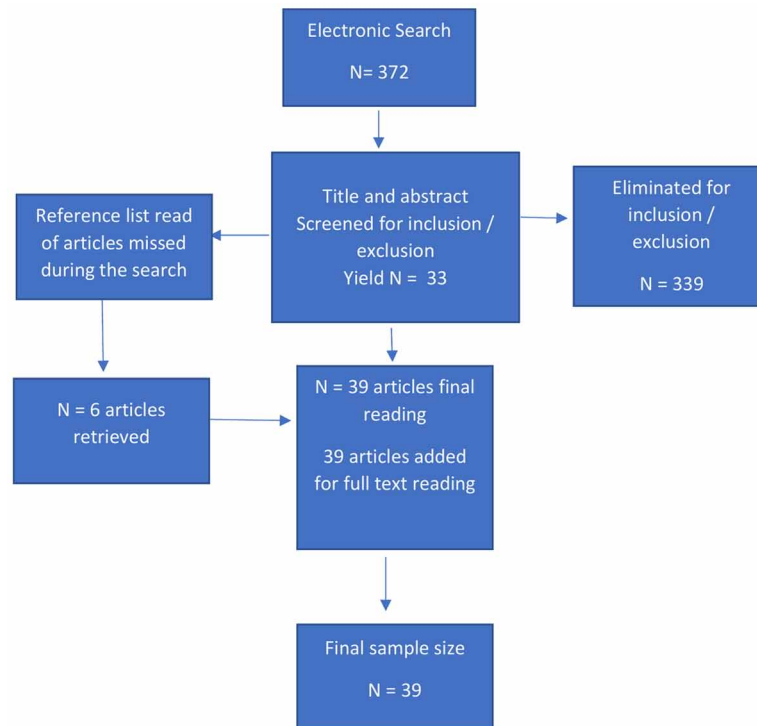
The data from the final group of articles were reduced to a controllable complete form as follows. The Editorial/opinion and theoretical articles were summarized in writing. After that, they were then synthesized and coded by theme to reduce data and establish patterns and themes in a comprehensive and systematic manner. As regards the empirically based articles, they were read, coded, summarized and synthesized to determine types of research studies completed to date. The theoretical, opinion and editorial articles were read for themes and ideas and were then categorized and synthesized to determine patterns among the group. The entire sample was then critically analyzed to gain an understanding of the state of overall knowledge in relation to LSCM and Sustainability. After studying all the papers, it was identified approximately 39 articles. That were relevant. The articles was analyzed and ultimately categorized as follows. The diagrammatic depiction is elucidated in Figure 1

## **SOLUTION AND RECOMMENDATION**

### **Lean Supply Chain Management and Environmental Sustainability**

The environmental pollution can be generated in all stages of a product life cycle and integrated vision is the need of the hour to reduce the ill effects of the product life cycle on economic performance (Zhu et al., 2008). The LSCM has spread the lean principles and practices across the supply chain. This has resulted in the reduction of wastes, improving quality, reducing delivery times, improving customer service and reduce costs (Lamming, 1993; Womack and Jones, 1997). Another group of studies have highlighted that the Lean supply chains can result in facilitation of adoption of environmental practices

Figure 1. Literature review search strategy



and innovations among supply chain members (Florida, 1996; Simpson and Power, 2005; Corbett and Klassen, 2006). The close relations among supply chain members will help in facilitation for the greater cooperation in design and development of environmentally friendly products (Florida, 1996). LM concepts result in the selection of environmentally capable suppliers as such resulting in environmental capability of the supply chains (Simpson and Power, 2005). The Lean supplier strategy is developed by taking into consideration the needs of customers and it was found that it had positive environmental influences on supplier selection (Simpson and Power, 2005). Further studies on supplier lead time transpired that implementation of LSCM has the potential to reduce supplier lead time. The reduction in the supplier lead time can further help by the reduction in geographical concentration of the suppliers due to reduced lead time. The geographical concentration can further reduce the supplier base resulting in the reduction of CO<sub>2</sub> emissions (Azevedo et al., 2012). The supplier involvement is a major factor when disassembly and assembly are envisaged as a waste reduction technique. This is because supplier should take an upper hand in designing parts which can be easily disassembled and assembled (Gunasekharan et al., 2014) leading to better logistics management. One of the successful LM practices is to design an award which can bring in drastic change in the supply chain such as waste, energy, emissions, water management (Campos and Vazquez-Brust, 2016). These awards can serve as a token of appreciation among the supply chain members. Another indirect impact of Lean in supply chain is that Lean environment can act a catalyst for the implementation of Green practices which will further reduce the environmental impact on the organization (Dües et al., 2013).

## **Lean Supply Chain Management and Social Sustainability**

Supply chain management possesses several social challenges. These challenges are multi-dimensional such as complexity, conflicting goals with various types of stakeholders, regulations etc. In order to optimise on social dimensions, it calls for the trade-off between short term losses and long term benefits (Besiou and Van Wassenhove, 2015). The impact of LSCM on social performance would be that on the stakeholders (i) directly related to the organization and (ii) the community that are indirectly impacted by it. The situation boils down to impending trade-offs between society, environment, and financial performance. Previous studies are limited on this front because there is quiet ambiguity in the assessment process when it comes to social performance. The ambiguity arises due to many reasons. What constitutes a desirable social responsibility level which an organization or a supply chain should try to achieve is difficult to answer (Besiou and Van Wassenhove, 2015). The metric for assessment for social performance are either uncommon or incomparable (Slaper and Hall, 2011). However, since social performance is concerned with the wellbeing of human beings measures such as workers safety, long-term health, psychological wellbeing, etc., can be used (Pagell and Shevchenko, 2014; Henao et al., 2018). There are few studies on the impact of LSCM of social performance. The LSCM reduces the supplier lead time, there the geographical concentration on the supplier is avoided and hence there is growth in different geographical pockets. Furthermore, LSCM implementation creates jobs and thereby creates welfare for the local communities (Azevedo et al., 2012). Different types of the supply chain can impact society in a multitude manner. To cite an example the humanitarian supply chain is receiving increasing interest from both the academics and practitioners due to the dramatic increase in both natural and manmade disasters. The Lean principles if incorporated in the humanitarian supply chain can result in efficiency and effectiveness in the such emergency supply chains. In addition, the LM principles can be applied in different stages of humanitarian supply chain and can be more effective in the recovery or reconstruction stage (Cozzolino et al., 2012). Therefore, depending on the type of supply chain can impact the society in a multitude manner

## **Lean Supply Chain Management and Economic Sustainability**

Lean practices such as value chains can be used continuously and sustainably deployed to improve the supply chain results such as cost reduction, quality enhancement and lead time reduction (Wee and Wu, 2009). A case study depicts that implementation of LSCM resulted in efficient and cost-effective supply chains (Mistry, 2005). Accordingly, a properly implemented LSCM will result in economic savings. A framework was developed to measure the financial and non-financial measures of the supply chain in an integrated manner. This framework was implemented in a Portuguese SME and it depicted that LSCM produces financial and non-financial profits (Afonso and do Rosário Cabrita, 2015). In another case study, it was found that the application of VSM can shorten production lead time by 80%. It leads to a reduction in total cycle time by 21.3% and an increase in value added by 293.33% leading to financial benefits for all the supply chain partners (Boonthonsatit and Jungthawan, 2015). In another study, it was shown that VSM supports the lean supply chain and identifies potential opportunities for continuous improvement to eliminate waste (Wu and Wee, 2009). There are also some issues with LSCM. The first is that LM principles are applied to only first-tier suppliers as such the sustainability of results throughout the supply chain is difficult and cannot be generalised (Arkader, 2001). The second issue is that there are only a few studies on benefits of implementation of LSCM in the downstream supply chain

(Reichhart and Holweg, 2007). The third point is that for the results in the LSCM to be sustainable, the logistics and distribution systems need to be improved, ICTs implemented to integrate customers and suppliers, and cooperative relationships with customers and suppliers continuously improved which are sometimes difficult in a supply chain (Comm and Mathaisel, 2008).

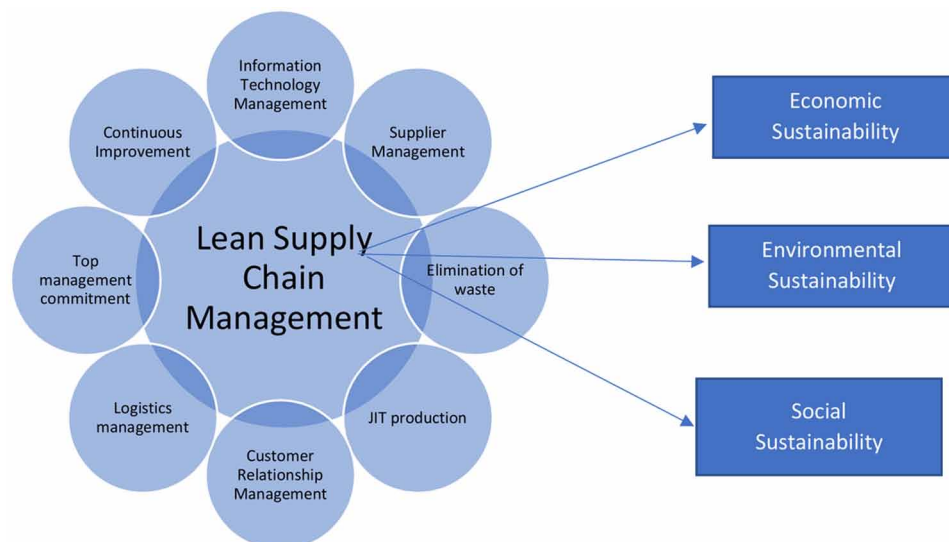
## Conceptual Framework

Figure 2 depicts the conceptual model for LSCM for sustainable performance. The eight pillars of Lean Supply Chain model (Jasti and Kodali, 2015a) should be intended to perform in a sustainable manner on economic, environmental and social dimensions. The model should be implemented in totality as these pillars may not only create a direct impact on the sustainability dimension, but in addition to it, there may be indirect impact through other dimensions. To cite an example the top management commitment towards Lean Supply Chain will impact all these eight pillars. Similarly, continuous improvement culture within the supply chain members will impact other dimensions. The eight pillars are highly interconnected; therefore, the implementation of LSCM should be carried along all the pillars, in addition, the performance should be measured as a totality on economic, social and environmental dimensions

## DISCUSSION

The evaluation of the literature on LSCM and sustainability, has enabled us to classify the literature to develop a conceptual model for sustainability. The top management commitment is essential for the success of any initiative such as LSCM (Jasti and Kodali, 2015a). The action of top management should be directed towards the implementation of LSCM in totality and the strategies for economic, environmental and social performance should be established and further deliberated upon by the management. The relationship with the supplier is important for the success of the organization as it will

*Figure 2. Conceptual model of LSCM and sustainable*



help to manufacture and deliver high-quality products for the customer needs (Chin et al., 2004). The relationship with the supplier assumes paramount importance. All the initiatives designed for supplier relationship should take into consideration the LM principles and thereby the impact on the economic, social and environmental impacts. The customer relationship management (CRM) plays a major role in understanding the customer its role in enhancing customer value and, as a result, shareholder value is further increased (Payne and Frow, 2005). LM principles should be meticulously applied in CRM and it should further consider the sustainability dimensions while designing CRM strategies. The supply chain will be successful due to the implementation of information technology as it is the most important prerequisite for the control of the supply chain. LM principles can be efficiently implemented so that waste of information can be eliminated. Due care should be taken by incorporating the needs of information by taking into account the economic, social and environmental aspects while designing information systems in the supply chain (Choon Tan et al., 2002). The Toyota system used a JIT system as a part of the delivery system (Krafcik, 1988). Most of the frameworks use JIT as an element of LSCM (Jasti and Kodali, 2015a). JIT has been successfully deployed in the supply chains to attain success by reducing the inventory and lead time (Cook and Rogowski, 1996). JIT principles, when implemented in a supply chain, should consider the social, economic and environmental impact and design strategies to make it feasible. Continuous improvement (CI) is one of the initiatives to improve the organization performance by increasing the success rate and reducing the failure rate of activities in the organization (Juergensen, 2000). The products, services and processes are improved with the help of teamwork over a period using CI philosophy. CI is one of the overriding philosophies to improve all the activities in the supply chain. The CI in a supply chain should consider the economic, social and environmental impacts while designing the CI improvement strategies. Logistics management is a vital component in supply chain management. It is the management of flow of things from the point of origin to the point of consumption in order to meet the requirements of customers (Christopher, 2016). Lean principles are used in logistics management to deliver material and goods in an efficient manner (Baudin, 2005). The implementation of logistics management should incorporate LM principles and analysis should be directed towards the economic, social and environmental performance of the supply chain. The sustainable performance of LSCM warrants that all the pillars of the LSCM should be oriented for success in terms of economic, social and environmental dimensions.

## **SCOPE FOR FUTURE RESEARCH**

Sustainable performance of LSCM is one of the important areas for research. The eight pillars of LSCM (Jasti and Kodali, 2015a) may be studied in different types of supply chain models and different contexts. This is because from such studies we would able to identify the suitability of LM in different supply chains. The classification for the use of LM tools in each of the pillars for implementation of LSCM with respect to economic, social and environmental dimensions will be an interesting area of future research. Case studies may be directed at analysing the impact of LSCM on each of the sustainability dimensions as a direct and indirect impact. There are many case studies on the impact of LSCM on economic and environmental dimensions. However, there are very few studies which analyse the impact on social dimensions. Besides, there is a need for studies which analyse the impacts of LSCM in all three dimensions at a time (Henao et al., 2018). This is important because the interactions of sustainability dimensions will offer interesting results. Another area of research could be applying the LSCM in humanitarian supply



chains for sustainability of performance. Developing countries have institutional barriers and constraints. One requires supply chain innovation models to make it a sustainable supply chain for the bottom of pyramid markets (Bendul et al., 2017). The Lean principles can be used in such bottom of pyramid supply chains and the design should consider social, economic and environmental issues.

## CONCLUSION AND LIMITATION

The implementation of LSCM can result in many benefits for the supply chain partners. However, the sustainability of these benefits is a major concern. This chapter has reviewed literature through an integrative review framework on sustainability and LSCM to develop a conceptual model for its integration. This model can be used by the organizations to implement LSCM in their supply chains to achieve sustainable performance. The eight pillars of LSCM developed by Jasti and Kodali (2015) are used to analyse its impact on social, environmental and economic dimensions. With regards to the limitations of this study, being of conceptual nature the study through literature review has not given conclusive evidence as regards the impact of LSCM and sustainability. The review is limited by the databases accessed, the search criteria's, method of searching, inclusion and exclusion criteria and the time constraints.

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## **ADDITIONAL READING**

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## **KEY TERMS AND DEFINITIONS**

**Lean Supply Chain Management:** Is defined as a set of organizations directly connected by upstream and downstream flow of products, services, information, and funds that collaboratively work to reduce cost and waste by efficiently pulling what is needed by the individual customers.

## ***Lean Supply Chain Management and Sustainability***

**Supply Chain Management:** Is defined as the management of the interconnection of organisations which relate each other through upstream and downstream linkages between the different processes that produce value in the form of products and services to the ultimate consumer.

**Sustainability:** Is defined as “Development that meets the need of the present without compromising the ability of future generations to meet their needs.

**Triple Bottom Line Approach:** It is a framework that incorporates three dimensions of organizations performance. The three dimensions are economic, environmental, and Social Performance.



## **APPENDIX**

### Abbreviation

**LM:** Lean Management

**SCM:** Supply Chain Management

**LSCM:** Lean Supply Chain Management

**JIT:** Just in Time

**TBL:** Triple Bottom line approach

**VSM:** Value Stream Mapping

**CRM:** Customer relationship management

**CI:** Continuous Improvement

# Chapter 5

## The Necessity of Sustainability in Operations Management in Terms of Various Sectors

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### **ABSTRACT**

*The purpose of this chapter is to explain the necessity of sustainability in operations management processes. Sustainability in all areas is a key factor for long term successes and operations management is the baseline for nearly all other business units. Thus, the sustainability of operations management becomes critical for all business units in an organization. The chapter starts with a brief description about the both concepts sustainability and operations management then continues with the strong relationship between them. The applications in the work area are analyzed and real-life examples are also proposed. Health, Retailing and Banking sectors are analyzed on the basis of the previous studies from the literature. The contribution aim of this chapter to the literature is to take attention to the strong relationship between sustainability and operations management.*

### **OPERATIONS MANAGEMENT AND SUSTAINABILITY**

Operations management should be at the center of all institutions, whether they work in the service or manufacturing area, or they work for profit or non-profit. The right products and services are possible thanks to the fast, cost-effective design, production and delivery of operations that guarantee customer satisfaction. Having expertise in the operations makes it possible to successfully maintain general or emergency health services and other human and social activities. In fact, the operation function defines the basic purpose of an organization. For example, the aim is to produce glass products for a glass manufacturer whereas for a hospital, the main aim is providing treatment for patients.

On the other hand, some decision areas within the concept of operations management are listed as follows:

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- Designing innovative products
- Choosing the best processes to offer services or produce products
- Providing high quality products and services
- Deciding the best locations for facilities
- Planning optimal capacity
- Designing an efficient layout at work
- Finding the right sources worldwide and ensure that they are properly supplied
- Managing and controlling raw material and final product stocks
- Ensuring workplace safety regulations for employees

Such decisions in an organization have significant impacts on cost, profit, product quality and diversity. Today, success in this global business environment is changing rapidly (Gencer and Akkucuk, 2017); it is not only about how companies manage their internal operations in the best way, but also how well they manage all supply chain management and networks by integrating all stages from suppliers to end customers (Ozcan, 2011).

The processes from logistics to marketing of a company's product or service until it is offered to your consumer can be evaluated in the area of operations planning. There are certain force that make companies to be sustainable in their strategies (Sozuer, 2011). While some of these forces originate from the financial concerns of companies, others have a sense of social responsibility, which is considered necessary in the formation of an institutional identity (Yildiz, 2008). Whereas it is obvious that when the companies are approached from the economic point of view; there are many factors that force companies to be sustainable, but ultimately these companies are commercial enterprises and the primary purpose of all business organizations is profit. Furthermore, these companies want to feel responsible for the prevention of environmental degeneration, to make changes in the changing consumer habits with their innovations especially in production and marketing processes, or to exhibit a sustainable vision in order not to fall back from other competitors in the global formation; consequently, which is aimed at maximizing profit. The late 20th century and the century we are in has led to a change in what the objectives of the enterprises should be. As the business is a business organization, the understanding that accepts all kinds of activities towards increasing the accounting profit has been replaced by the acceptance and implementation of the values that put forward the activities that increase the economic profitability of this organization (Elitas and Seker, 2017). In other words, especially the financial expectations of the past have been replaced by expectations of the social context. In fact, financial expectations have not been fully lost; businesses that protect the social, environmental and social values, take care of responsible and responsible practices but the competition in the new order has increased (Akkucuk, 2011).

Although sustainable development is considered as a concept that includes both ethical, social and technological problems in the modern world; it is rarely considered a corporate problem (Hoverstadt and Bowling, 2005). However, since sustainability brings the concept of longevity, it is essential that the institutions involved in the creative dimension of economic activities are long-lasting and that they must make a living structure with the decisions they make. In the literature examining the relations between businesses and competition, two fundamental questions are generally sought: (1) Why does the competition of some organizations are more successful than others? (2) What can organizations do to make their competitive advantages sustainable? (Kusat, 2012). Teece et al. (1997) argue that strategic literature, including Porter's competitiveness approach, focuses on competition and strategic disputes, and therefore they are more successful than others and do not help organizations to improve their sus-

tainable competitive advantage. However, Killen et al. (2008) emphasizes that organizational advantage models or resource-based views can be used instead of externally oriented suggestions to understand the competitive success of enterprises (Kusat, 2012).

## **OPERATIONS MANAGEMENT APPLICATION AT WORK**

### **Operations Manager**

Operations Manager is defined as the person who is responsible for the management of certain employees and the specific departments of the operations related with the business. Operations manager can work in different sectors such as logistics, retail, security, telecommunication or apparel but the main procedures are generally similar.

The operations manager is assigned to manage one or more operations. Therefore, their duties and responsibilities vary according to the managed operation. The main tasks of the operations manager can be listed as follows:

- Manage operation and operation plan
- To follow targets given by the management and to set goals
- Periodically assess the situation of the company
- Determining the operation budget
- Preparing routine analysis and reports on operational processes
- Contribute to product development processes

Operations managers work under intense stress. For this reason, employers want the operations managers to make the right decisions even if they are under heavy pressure. Apart from this, operations managers should be knowledgeable about logistics, procurement and production, and also be appropriate to team work, and be knowledgeable about planning and organization related businesses (Gencer, 2017).

### **Why Operations Management Is Important?**

The operation unit is responsible for a large part of an enterprise's investment and human expenses. Operations managers also play a big role in the profitability of the company by managing operations wisely. The field of operations offers expertise in a wide range of areas that are decisive for the ultimate success of a company. In fact, many of the major companies have been distinguished among others by their operational excellence. For example, Toyota is known for its Full-Time Production system, which offers high quality products with zero inventory. As another example, Zara is considered one of the most successful global retailers thanks to modernized supply chain operations.

### **Operation Managers' Work Areas**

Those who prefer to specialize in operations management; have knowledge and skills in many fields such as manufacturing, transportation, logistics, banking, retail, hospitality and health. On the other hand, some occupational groups associated with operations management include:

- Process, product and service design
- Purchasing and supplier management
- Inventory planning and control
- Production planning and programming
- Quality assurance
- Distribution and logistics planning
- Warehouse operations
- Supply chain management
- Business process improvement and restructuring
- Support activities in the service / financial sector
- Revenue management

## **Operations Management Planning**

The operation and management plan for a sustainable business plan should be well-organized (Gencer and Akkucuk, 2016). This is also provided by the operation plan. All processes from logistics to marketing are evaluated within the operational plan until the product or services are produced and presented to the consumer. The risks to be taken by the managers are included in the operation plan. The operating expenses table, capital requirements table and product / service sales costs are added to the operation plan. The operation plan is also deemed to be the business plan of a company that sells products / services. This business plan consists of two phases:

- **Organizational Structure:** How a business is run is directly related to its organizational structure. The organizational units of this organizational structure vary according to the nature of the product or service and the target audience are as follows:
  - Marketing and sales (including customer relations and services)
  - Production (including quality control)
  - Research & Development
  - Management

At this point, it may be necessary to start with a small team in the search process. What is important here is to be able to convince the companies that will do the work, that this team is qualified and that they have the powers to realize the project in question.

- **Management Summary:** The section where the company executives are introduced is called management summary. In this section, people seek answers to the following questions:
  - Where did the team members work before?
  - What have they accomplished before?
  - What are their reputation in the business community?
  - How realistic are team members together and alone?
  - What knowledge, skills and special skills will they bring to work?
  - How loyal are they to this undertaking?
  - What are the motivation resources of the team members?

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Team members should be introduced in detail. However, it should be tried to show how appropriate it is to teamwork and create synergy while doing the business operations.

The point that should be underlined when talking about what the team members have been working before, should be a career goal. It is an advantage to talk about what can be done together, to highlight the complementary features of the team and to show how much they depend on this initiative. In the book *Business Plan (2017)* by Harvard Business Review, the way to describe a good team that can manage risks and benefit from opportunities is described as follows:

- Tell the strengths of the team.
- Understand and understand the weaknesses of the team.
- Promote the management philosophy of the team.

### **Operations Management Implementation**

Sustainability of operations management depends on the success of the strategic implementation of operations management requirements. In time, it is of great importance to implement an effective operations management in accordance with changing company structures, technological developments and changing needs and demands. Organizing multiple channels, managing mixed campaigns, and working with and trusting an external partner make the modern enterprise operation process complex and difficult for management. In order to keep up with the changes and developments, it is necessary to develop and optimize the operations management practices. The best planned operational management practice will positively affect the company's harmonious working conditions and profitability ratio. The steps to be taken for an effective operation management application are as follows:

- Ensure that each unit and employee move in the same direction. First, it is very important to determine the objectives of the enterprise. Clear and decisive goals are seen as the firm's most powerful leadership tool. A working area should be defined and it should be understood where the most important impact can be achieved. After successfully completing this situation, it should be made visible and people should be responsible. Monthly status interviews and concurrent data are shown as the most important methods for achieving this.
- Decision-making structure and operational structure should be defined. Individual roles should be identified in the working skeleton and potential conflicts and unnecessary resource consumption should be avoided (Gencer, 2018). People should clearly state their responsibilities. In this way, the determined targets can be easily tracked and a stronger team can reach these targets. Operations management is carried out with more than one team. It should also be decided whether the units are to be managed by a central decision making system and whether the local teams will have autonomy to take more tactical decisions.
- Efficient design and adaptive processing should be used. In order to move as smoothly as possible, every aspect of the marketing plan should be guided by a process that includes decision-making, appropriate resources, technology and internal and external policies. Some experiments and errors are also needed to design an efficient process. Therefore, it is necessary to be prepared for this trial and errors when necessary.

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- Data should be used to measure marketing performance. The most applied field of operations management systems is marketing. Data-driven marketing enables continuous measurement of performance and strategy organization. In this way, it is always on the right track to reach the target. However, the time spent on the issues to be discussed has been reduced. It is necessary to determine the performance indicators of the companies and to ensure that they are close to the sales and business objectives (Akkucuk, 2016). For this, it is necessary to work with the people who have shares in the enterprises. It is necessary to increase the impact of data-driven marketing by automating the report generation process.
- Use of technology. Although it is not always recommended to pursue the next possible goal, technology is seen as a case that can help businesses in this area. Tools such as Adobe Creative Cloud, Basecamp, Google Docs, and Dropbox allow easy and time-consuming tasks to be done easily. Annual examination of the main software used in the company is also very beneficial. Because old vehicles to manage operations can slow down the company and the team.

A successful and efficient company requires detailed information and pragmatic operation management. Ensuring communication between teams and employees is a good way to start. In this way, problems can be identified and opportunity areas can be determined. Central management, automatic management and financial reporting tools can be adapted to provide the company managers with more time for strategic and creative thinking. Implementation of a data-driven approach to the management of the company is of utmost importance so that targets can be set and performance can be monitored in terms of quantity.

## **OPERATIONS MANAGEMENT'S BENEFITS FOR COMPANIES**

Processes such as product design, product development, supply chain management, production planning, implementation and control, quality management, technology management are all covered by operations management. The purpose of operations management is to present the product to the consumer as expected. In doing so, companies must also consider their own level of profitability. Therefore, they should look for ways to benefit from the resources they have and use effectively. The company's motivation at this point should be to simplify the process and reduce waste and cost, and perfect the result. In order to perform operations management, production targets must be determined first. Then the business plans according to these goals.

The organizational structure of the enterprise should be arranged in such a way as to control whether there is a deviation from the targets while the production is in progress. Without this control and coordination structure, which ensures the control of production, stock, cost and quality, operation management cannot be mentioned. Companies with operations management analyze and process the status of the stocks, the demands of customers, and the details of the delivery of the products are monitored on a single system. In this way, both practicality and time to use more effectively. Operations management has many benefits in terms of business. These benefits can be listed as follows

- Reports whether the goods and resources are used most effectively, and provides opportunities for improvement in possible situations, thus ensuring the product and services to be efficient. Helps to use scarce resources in an effective and solution-oriented manner. This situation has a positive effect on efficiency.

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- Sustainable operations management, which provides the necessary analyzes and planning for the determination of the production of goods and services in line with the consumer's wishes, also provides the benefit of determining how and in what manner the existing machinery and equipment in the enterprise will be correct, maintenance and costs (Gencer, 2019). Final product storage and product preparation, logistics management and after-sales services, as well as details on recycling, ethical and environmentally friendly production are also within the scope of operations management (Akkucuk, 2018).
- The most important feature of its relations with other departments is that it has a mediator and a coordinating role without direct authority. The operation management program, which helps in the execution of important stages such as quality and stock control and ensures that both orders and stocks are carried out in a healthy order, becomes to act as an enterprise who thanks to these benefits.
- It allows the company to see the front. It is determined whether the resources are used efficiently. In this way, deficiencies and errors can be detected and necessary improvements are made in the time required.
- Improves communication with the customer. It enables the analysis of whether the products and services are what the customer wants. The purpose of management is to provide products and services as expected by the customer. For this reason, these product controls are of great importance for businesses. In this way, customers and expectations are better understood, both customer loyalty and sales rate are increased.
- The efficiency of the machinery and equipment of the enterprise is measured. It is seen whether the machinery and equipment used are efficient. Thus, it is known whether maintenance and repair are required for existing machines. Cost calculation is done for new machine needs.
- Quality of products is improved. With stock and order control, processes are better planned and better-quality products are produced.

## **EXAMPLES OF OPERATIONS MANAGEMENT APPLICATIONS TO DIFFERENT SECTORS**

### **Operations Management in Health Sector**

It provides the powerful tools and technology needed to provide quality and advanced care services through modern applications and services related to health care. In addition, operations management, with its strong analytical capabilities, encourages the organization to focus on innovation and saves time and controls costs.

While management of operations is provided in health care facilities, applications are examined in three groups: providers, insured persons and, patients and customers. Provides real-time responsiveness to clinical management, with evidence-based, immediate access to disease-specific content, automatic support program and remote monitoring of hospitalized patients, and direct predictions for clinical workflows. It provides predictive analytics, personalized services, more flexibility, and stronger connections with customers, to understand and manage the health status of a population based on risk analytics and patients who share health information for insured people. For patients and customers, quick access to health information to provide proactive treatment, the ability to easily transfer data to hospital staff



and to monitor self-health to help reduce healthcare costs by avoiding hospital visits, combined health insurance providing customized user insights provides information on the plan.

## **Operations Management in Retail Sector**

Improves the approach to retail solutions. Operations management supports a consistent and customer-oriented experience in the retail industry. Increases competitiveness by providing personalized, diverse and attractive customer experiences. It provides a better understanding of customer behavior, requests and requirements. It synchronizes mobile, web and in-store data to identify models and offer timely promotions and offers, in accordance with the situation. Improves customer satisfaction by developing an experience where customer channel can be used at the point of sale and after. It optimizes your supply chain to meet the ever-changing customer needs by better understanding the trends, demographics and vendor capabilities.

It offers a responsive, cost-effective and secure infrastructure that provides instant, scalable and innovative services for a competitive advantage. Enables a hybrid model to take advantage of existing in-house systems for greater agility and cost-effectiveness. Scales quickly to meet demands and maximizes productivity by enlarging the data center. It is based on an infrastructure designed to comply with the legal regulations of the industry so that you can protect your customer information.

## **Operations Management in Banking Sector**

It provides innovative services that meet changing customer and sector demands as soon as possible. It communicates with data centers in local areas to address data dominance and high availability requirements in accordance with the requirements of legal regulations. It utilizes powerful lean hardware servers and provides the ability to mirror media in-house with the option to increase performance by using GPU processors.

It provides innovative and personalized customer experiences to increase loyalty and customer retention. It provides high performance of services and applications with the power and scalability of lean hardware servers. The application management capabilities and back-end infrastructure, supported by first-class resources and based on open platform, meet mobile application requirements quickly.

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# Chapter 6

## Governance as a Bridge to Sustainability

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### ABSTRACT

*Governance has evolved to be an extremely critical notion for the developed world as well as for the developing countries. For the developing world, novel concepts required for good governance practice may not be easily understood or widely practiced by the stakeholders of private or public corporations. Good governance is needed for numerous institutions both public and private. For public entities, good governance results in scientifically motivated policy development, an increase in accountability and transparency and finally the involvement of all stakeholders in the decision-making process. For non-governmental organizations, governance results in better allocation of resources, finding new opportunities for collaboration, and better cooperation with governmental bodies. For the private sector, governance increases the reliability of the organizations and contributes to sustainability, and a climate of trust to be established among the stakeholders. This chapter will include an extant review of the literature on how good governance and sustainable value creation come hand in hand.*

### INTRODUCTION

Governance has grown to be an extremely critical concept for the developed world as well as for the developing nations. For the developing world, new concepts required for good governance practice may not be easily understood or extensively practiced by the stakeholders of private or public corporations. Good governance is required for various institutions both public and private. For public entities, good governance results in scientifically motivated policy development, an increase in accountability and

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transparency and finally the involvement of all stakeholders in the decision-making process. For non-governmental organizations, governance results in better allocation of resources, finding new opportunities for collaboration, and better cooperation with governmental bodies. For the private sector, governance increases the reliability of the organizations and contributes to sustainability, and a climate of trust to be established among the stakeholders. This paper will include an extant review of the literature on how good governance and sustainable value creation come hand in hand.

The paper is structured as follows. First the relationship of governance and corporate governance is clarified. After that the importance of non-governmental organizations in terms of governance is discussed. Then a newly emerging trend named NGO & Business Partnership is examined. After scrutinizing the notion of governance especially in emerging markets like Turkey, the paper's final section gives the recommendations and discussion.

### **Governance and Corporate Governance**

Within the public administration domain, governance can be defined as “a government’s ability to make and enforce rules and to deliver services” (Fukuyama, 2013, p. 350). It is a term more related to executing the requests of principals rather than realizing the goals in a more efficient or effective way. For example, a democracy can be governed badly, or a despotic one can be governed well, vice versa. In this sense, good governance requires, at least, the recruitment of bureaucrats on the basis of merit or qualifications, high level of education and professionalization of bureaucrats, tax extraction, and good quality of services offered to public such as schooling, health, security and national defense (Fukuyama, 2013). Although the governments traditionally have perceived as the only interested party for the provision of public goods and social developments for long, expectations and needs of the society have exceeded the limits what governments can offer (Jamali et al., 2008). Some states have failed in providing even the basic collective goods and services for their societies (Krasner & Risse, 2014). As for maintaining the basic human rights, minority rights, democracy and similar societal interests, some still struggle. Regulations imposed by political and governmental institutions lose their influence on generating solutions for urgent social problems. This is especially troublesome in emerging markets and developing countries (Beschoner & Muller, 2007). In order to promote transparency, accountability and curb corruption, not only governments but also some interested parties such as international organizations, policy experts and NGOs have taken responsibility (Bauhr & Grimes, 2014).

In such an environment, companies, especially multinationals, have started to be criticized for their negative impacts on society; and held responsible for societal issues such as pollution and human rights violation. Besides, economic crises and corporate scandals led to questioning of the accountability, transparency and ethics of companies’ operations (Kolk, 2003, 2008). Thus, the rules and conditions of doing business have changed. In order to increase their reputations and enhance their practices, companies have started to implement some voluntary mechanisms (Beschoner & Muller, 2007) such as corporate social responsibility, sustainability and governance codes to improve their governance. Also, there have been major changes in laws, regulations and enforcements of countries as part of governmental and institutional interventions to embrace good governance in recent years (Aksu & Kosedag, 2006).

Although maximizing the shareholder value or making profit is still the main goal of corporations, new expectations from the organizations alter their performance criteria, and make nonfinancial results more important than before (Jamali et al., 2008). Along with these developments, corporate governance (CG) emerged as an important concept. It is approached by different disciplines such as economics,

management, law, political science, sociology, and culture. The definition of the term is also closely related to the relevant paradigms; but can be defined broadly as “the study of power and influence over decision making within the corporation (Aguilera & Jackson, 2010, p. 487). It “sets the tone for the organization, defining how power is exerted and how decisions are reached” (Jamali et al., 2008, p. 444). More specifically, it deals fundamentally with: “What is business for? Who should have a say in how companies are run? What is the appropriate balance between shareholders and other stakeholders? And what balance should be struck at the level of the triple bottom line?” (Elkington, 2006, p. 524).

Management scholars generally focus on relationships among different stakeholders (Aguilera and Jackson, 2010). Protection of stakeholders’ rights is at the heart of CG, whether it be shareholders’ rights or other stakeholders’ interests (Jamali et al., 2008). It is related to every managerial role and decision in a company, and aims to create synergy from the inputs of all stakeholders. There are four main principals of good governance including transparency, accountability, responsibility, and fairness (Aras, 2015) in attempts to protect different interests. Thus, CG requires companies to behave ethically and fair, to become transparent and accountable in all of their operations. While maintaining good governance, companies are also needed to meet the ethical, legal and communal expectations of the society (Jamali et al., 2008) and enhance trust, ethics, and moral values (Aras & Crowther, 2008).

The number of companies that accept CG codes is on the rise (Haxhi & van Ees, 2010), due to various environmental pressures. However, the main rationale behind good governance is economic. It leads to an increase in financial performance, especially in countries where CG is not regulated well and rather weak in protecting shareholder rights (Renders et al., 2010). Investors demand good governance practices in order to assure their returns on their investments, and some of them are willing to pay even more for such reinforcement. It is also used as an indicator of risk measurement for credit rating agencies; operational risks of companies are evaluated through CG activities. Thus, good governance brings some long-term benefits to companies such as attracting new investors and risk reduction, as well as maintenance of the balance between economic and social benefits (Aras, 2015). Following this logic, companies agree to conform good governance practices either for showing their dedication to international best practices to attract foreign investors or for changing the perceptions of their stakeholders since national regulations are not enough for protecting their interests (Haxhi & van Ees, 2010).

In recent years, corporate responsibility and sustainability have become important topics in corporate agenda. Managers who want their companies to become global and sustainable to grasp competitive advantage are interested in governance (Aras & Crowther, 2008). Business ethics, human rights, corruption, bribery and climate change topics have entered into corporate boardrooms worldwide, thus governance started to be associated with wider societal issues such as corporate social responsibility (CSR) and sustainability (Elkington, 2006, p. 522). Although the concepts of CSR, sustainability and CG are different from each other, there is a common understanding that CG is highly related with CSR and sustainability either by capturing these terms or complement or facilitate them (Jamali et al., 2008). Corporate responsibility captures both the duties of organizations towards society and the governance of these duties. It goes beyond the legal and economic obligations of the organizations (Kourula & Halme, 2008). Besides, sustainability requires economic profitability, social improvement and environmental protection from the organizations, which are again beyond the legal obligations of a company, and these issues are the responsibility of companies’ boards (Elkington, 2006). In order for an organization to become sustainable and responsible, a good governance structure is a must; it can facilitate and complement an organization’s broader societal attempts (Aras & Crowther, 2008).

Moreover, as Jegers (2009, p. 144) put, “the word corporate in CG is no longer restricted to for-profit organizations”. Non-profit organizations need good governance to be trusted and legitimate as profit-driven organizations, although their goals, operations and strategies are very different than private organizations (Jegers, 2009). The most important stakeholder for NGOs is society, together with governments and companies as important and legitimate stakeholders (Fifka et al., 2016). The effectiveness of NGOs depends upon building legitimacy from the society in which services are provided, and ensuring appropriate institutional design (Beisheim et al., 2014; Krasner & Risse, 2014), but some NGOs are not considered as legitimate (Arenas et al., 2009). In order to maintain trust and credibility for their activities, NGOs strive for legitimacy as well (Fifka et al., 2016).

### **NGOs and Governance**

The term NGO used synonymously with various organization types including nonprofit and nongovernmental organizations, civil society, and third sector. Due to globalization, various groups in the society have lost their voice (Arenas et al., 2009). As mentioned before expectations and needs of the society have exceeded the limits what governments can offer (Jamali et al., 2008), and governmental bodies lose their influence on generating solutions to urgent social problems (Beschoner & Muller, 2007). NGOs come to fill this gap by being the voice of the unheard. They aim to transform the society into a more critical and aware level (Arenas et al., 2009). They can facilitate changes in policies of organizations and governments using their influencing mechanisms; and more easily attract attention to the problems that need to be solved urgently (Guay et al., 2004).

The role of civil society, as well as private sector, has been recognized by international policy since the Earth Summit in 1992 (Harangozo & Zilahy, 2015). NGOs prove the power of civil society by “mediating the excesses of the state” (Kamat, 2002, p. 158). They are actively involved in the policy process by setting the agenda and enclosing the public problems; and provide social services with the help of public or private figures/institutions (Munoz-Marquez, 2016). Sometimes labeled as the “independent sector” (Guay et al., 2004, p. 129), they have started to replace other prominent organizations such as trade unions and associations in representing the interests of the broader society (Kamat, 2002). Due to this advocacy role, they can claim a legitimate right in decision-making processes as one of the viable stakeholders (Guay et al., 2004). In developed countries, the difference and distance between public and private sector has become vague, and since these two cannot cover all social groups, there emerge a third sector between them: NGOs. This complementary sector is expected to enhance social and financial capital, autonomy and independence, transparency, and good governance (Fuertes-Fuertes & Maset-Llaudes, 2007). On the other hand, while aiming to serve similar interests, NGOs have become especially effective agents of development in environments where governments cannot fulfill certain economic, social and environmental standards (Fifka et al., 2016).

Global governance is “the process of creating a legitimate political order in the absence of supranational authority or world government. Here, legitimacy refers to the overall quality of the social order – the institutions, norms and rules rather than the actors” (Risse, 2004 as cited in Backstrand, 2006). Transparency, accountability, problem-solving capacity, and participatory decision-making processes determine the quality of governance (Backstrand, 2006). Global governance literature focuses on how the power is transferred from the state to non-state actors. According to most of the studies on global

governance there is an assumption that power is a zero-sum game, and increase in power and influence of non-state actors leads a decrease of authority and power on the part of governments (Sending & Neumann, 2006). However, in some cases, non-state actors are even supported by the governments through funds. From a Foucaultian view, Sending and Neumann (2006) argue that the power held by civil society has not increased in recent years, but the logic and rationality of government has transferred from seeing civil society as a passive object to a valuable subject and object of government. Thus, an increase in one's saliency and power does not affect the others'; on the contrary they operate together side by side in the modern society.

Parallel to the developments in the world, stakeholder participation has changed from top-down and formal processes to bottom-up and voluntary approaches. This shift has also changed the position of NGOs. New hybrid governance models bring governmental and non-governmental institutions together, and there emerged an image of civil society "as a force for democratizing global order" (Backstrand, 2006: 469). In these new models, the primary change agents become NGOs, not bureaucrats, since they are the most influential organizational form in the implementation of this bottom-up development (Kamat, 2004) as "representatives of public good" (Backstrand, 2006, p. 469). They are seen as democratizing agents of the society, and thus "promoting civil society" and "extending good governance" eventuate as two fundamental pillars of being a contemporary NGO (Frewer, 2013, p. 97). On the other hand, contrary to the common misperception in global governance literature, involving non-state actors into the decision-making processes increase the legitimacy of government. Although not all parties' interests are completely satisfied, connecting with different stakeholder facilitate the acceptance and implementation of policies (Börzel & Risse, 2010).

Forming coalitions and developing relationships with powerful allies to facilitate the communication between society and institutions become a key task (Fuertes-Fuertes & Maset-Llaudes, 2007). In order to bring about good governance to all aspects of society, NGOs have started to play an important role alongside governments. Three sectors, NGOs, public and private organizations come together to enhance and evaluate governance practices (Kourula & Halme, 2008). In recent years, the discourse of global attempts on sustainable development put a huge emphasis on NGOs' participation toward a more transparent and accountable public policy (Backstrand, 2006). In a similar vein, NGOs are seen as the most important stakeholder in CSR (Arenas et al., 2009). In areas where good governance is the key to success, NGOs are needed for their ideas and expertise. With this aim, some international institutions such as United Nations Commission for Sustainable Development strive to enhance dialogue with non-state actors (Backstrand, 2006).

## **Business and NGO Partnership**

Businesses and NGOs are traditionally seemed to be "adversarial foes" (de Lange et al., 2016: 1198). NGOs are committed to societal and environmental progress; they try to force companies to make environmental and social investments. On the other hand, companies are profit-driven, and resist the desires of NGOs since they think such investments bring costs and reduce profits (de Lange et al., 2016). Thus, NGOs are generally perceived as opponents of companies (Kourula & Halme, 2008) or anti-business (Arenas et al., 2009) because of their confrontational strategies against companies such as placing pressure on companies through demonstrations and media, lobbying or participating in legislative processes, and

## ***Governance as a Bridge to Sustainability***

influencing customers through boycotts. To some extent, these strategies solve some of the problems of the society, but long-term and fundamental development of society goes through cooperation and collaboration with companies (Harangozo & Zilahy, 2015). NGOs have realized this fact, and new forms of engagement has started with a combination of confrontational and cooperation strategies. On the other hand, various organizations realize the importance of NGOs, and started to involve them in their stakeholder dialogue. NGOs now engage with companies by providing assistance, offering certifications and audits, designing standards on CSR, management and reporting processes without making concessions on their advocacy role (Arenas et al., 2009).

The underlying rationale behind business-NGO partnerships is “utilizing the complementary resources and capabilities” of these two (Bitzer & Glasbergen, 2015, p. 35). Companies can provide material resources to the society; however, they may not know how to employ them for the greater good. On the other side, NGOs are able to provide their knowledge and expertise on decreasing the detrimental effects of business operations and improving social conditions (Harangozo & Zilahy, 2015). Thus, companies generally support their partners financially, whereas NGOs offer reputation and know-how to the relationship (Hansen & Spitzack, 2011). The most common way for these partnerships is sponsoring activities in a variety of subjects. Partnership between companies and NGOs take the form of sponsorships, consultation, certification, employee training, common projects, systematic dialogue and personal ties between them (Baur & Schmitz, 2012; Kourula & Halme, 2008).

Although some trade-offs are required, they complement each other by working together (de Lange et al., 2016). Entering into partnerships create tremendous opportunities to NGOs including financial resources, managerial access, deeper understanding of company operations and processes, and more influence on industrial practices; while confrontational moves only yield the enforcement and development of fair rules. On the part of the company, such collaborations mean credibility and reputation, expertise and know-how, new market opportunities and less criticism against them (Harangozo & Zilahy, 2015). NGOs help dissemination of social services; companies increase the legitimacy of businesses (Teegen et al., 2004). Thus, interaction among them creates win-win situations (Baur & Schmitz, 2012).

Through collaboration, civil society organizations can increase the awareness about the positive relationship between economic profits and social/environmental developments (Harangozo & Zilahy, 2015). When companies are still reluctant for partnership and exclude NGOs from their stakeholder dialogue, they become owners of the company to have a say in decision-making. A recent trend in NGOs to change corporate practices with partnerships is called shareholder activism. In this type of activism, NGOs buy considerable amounts of stocks from the companies they want to negotiate a concern, and thus find a way to raise their concern and communicate with them by sitting in boards or committees with other investors and senior managers. Since they partly own the company, they put pressure on companies to adopt ethical practices. They have a voice in boardrooms, and voting rights on important issues related to CG and conduct (Guay et al., 2004; Ivanova, 2016).

## **Governance in Emerging Markets and Turkey**

The importance of governance issues has risen all around the world. In developed countries, this interest mostly stems from the corporate scandals they experienced. Although developing countries also faced with similar corrupt business practices, there are more fundamental reasons under the rationale for em-



bracing good governance: “Historical experience of the countries” and “structural changes in the global political economy” (Reed, 2002, p. 228). Developing countries have undergone major economic changes for years, tried different solutions and models to prosper. However, most of them faced huge economic difficulties rather than development, and forced to get loans from international financial institutions such as IMF and World Bank. These organizations required intense liberalization measures that also require increased governance reforms. Besides, globalization forced countries to shift from an interventionist policy to market-oriented policy, which resulted in opening up to foreign investment. Thus, in such an environment, both operating more effectively to compete with transnational companies and gaining investors’ confident increased the significance of governance (Reed, 2002).

Therefore, in emerging economies, the desire for good governance stems from the need for sources of financial capital (Ararat & Uğur, 2003). Due to their fast growth, they need more external capital (Aksu & Kosedag, 2006). Since national banks no longer provide lucrative funding opportunities, and portfolio investors require good governance; companies have made commitment in CG reforms in order to compete globally. However, CG issues are much deeper than agency problem of the developed countries (Ararat & Uğur, 2003). Primary agency problem is not between owners and managers, but between majority and minority shareholders (Bektas & Kaymak, 2009; Reed, 2002). A majority shareholder manages all aspects of the company, while the voice of minority shareholders is omitted. Due to weak institutional environments and cultural characteristics, emerging markets suffer from this expropriation problem in which the majority shareholder, which are usually influential founding families, become dominant in decision-making over minority shareholders (Ararat & Uğur, 2003; Bektas & Kaymak, 2009).

Early comparisons of CG systems especially focus on the differences between two broad systems: Anglo-American and Continental European. The dichotomy of these systems is characterized by short-term equity vs. long-term debt financing, dispersed vs. concentrated ownership, strong vs. weak shareholder rights, active vs. inactive markets for capital control, and flexible vs. rigid labor markets, respectively. Although this classification captures some essential realities, its explanatory power is limited to western contexts. Especially emerging markets are ruled out, and their unique characteristics lead to questioning of whether western systems of CG can be applied to these countries (Aguilera and Jackson, 2010).

There is no universal prescription of good governance. Although studies try to find the best system that fits for successful financial outcomes (Aguilera and Jackson, 2010), every country’s business framework is shaped by its cultural, legal and economic environment that CG models differ in each (Aras, 2015). Corporations are shaped by the economic and social exchanges of owners, managers, employees etc. These actors have different identities, interests and priorities, which affect the power relations and influence within the firm (Aguilera and Jackson, 2010). Moreover, CG has a cognitive and cultural dimension as well; cultural orientations affect the choice and implementation of governance practices. Thus, conflicting governance forms emergence within different contexts (Aguilera and Jackson, 2010). Culture determines the perceptions of different stakeholders and how companies engage with these social actors (Arenas et al., 2009); a country’s regulatory stance against governance, the scope and implementation of CG practices (Aguilera & Jackson, 2010; Haxhi & van Ees, 2010).

In the global economy, developing countries generally need to adopt the governance models and reforms that developed countries established. They have little or no voice in forming or advancing them (Reed, 2002). Managers face with a dilemma on deciding which CG practices suits best. While they feel the pressure of convergence due to globalization and their will to become global; they also need to diverge

from them due to their unique cultural characteristics and thus different expectations of shareholders (Kaymak & Bektas, 2008). Although developing countries have different organizational and legal structures, and culture, when they introduce reforms, they stick to the practices of Anglo-American model. The reason for this similarity may be their historical ties, and thus, the adoption of their legal system; or their aspiration of mimicking a successful system to be safe. On the other hand, International financial institutions that they got loans mostly adopt Anglo-American models; and their requirements for loans include some structural changes on governance in line with their system (Reed, 2002).

In emerging economies, enforcement of laws is problematic due to the lack of expertise and resources. So, investors demand better governance practices, especially in such weak institutional environments for risk reduction (Ararat & Uğur, 2003). CG leads to a higher increase in financial performance of companies in countries where regulations in protecting shareholder rights are weak than in countries where CG is highly regulated (Renders et al., 2010). Several studies provide empirical evidence on the positive effects of CG practices on companies' financial performance in developing countries (Aras & Crowther, 2008).

As part of an emerging economy, Turkish companies also strive for good governance. In light of OECD principles, Capital Markets Board of Turkey introduced its first Corporate Governance Principles in 2003. Although it is mainly based on OECD principles of transparency, accountability, responsibility, and equality, there are some country specific practices that needs to be considered by Turkish firms. These principles aim to bring financial and non-financial standards up to international standards, protect minority shareholder rights for information and participation in decision-making, and maintain independence of the board. It includes detailed explanations as to board of directors, stakeholders, transparency, disclosure and shareholder rights; and it is mandatory for listed companies to publish an annual compliance report. (Nilsson, 2007).

Although it seems like Turkish governance practices converge with Anglo-Saxon governance systems, a closer look reveals some major differences (Kaymak & Bektas, 2008). Turkish CG practices are characterized by highly concentrated, pyramidal, family-based ownership structures in which the agency problem stems from the domination of majority shareholders and asymmetric information. Holding companies also own their banks. Size of the board is very small, and the boards contain insiders (Aksu & Kosedag, 2006; Ararat & Ugur, 2003; Ararat & Yurtoglu, 2006; Bektas & Kaymak, 2009; Kaymak & Bektas, 2008; Nilsson, 2007; Orbay & Yurtoglu, 2006; Sahin et al., 2011). CEO duality exists, and "when CEO is not a family member, he is usually a long-term acquaintance of the family" (Ararat & Ugur, 2003, p. 67).

According to Ararat and Ugur (2003), there are three main issues of CG in Turkey: 1) minority shareholders' and creditors' rights; 2) enforcement of law and regulations; 3) ambiguities and weaknesses in legal/regulatory framework. Legal and institutional arrangements are in favor of majority shareholders (Kaymak & Bektas, 2008), and legal system is complicated, slow and costly (Ararat & Uğur, 2003). Because of the concentration of ownership in the hands of a few powerful families and French legal origin, Turkey becomes slow to embrace CG and transparency and disclosures (Aksu & Kosedag, 2006). Due to these reasons, investor confidence is weak, and investment is risky due to lack of strong legal and regulatory framework. (Ararat & Uğur, 2003). Macroeconomic volatility of Turkey also lowers the quality of CG standards (Ararat & Yurtoglu, 2006).

## RECOMMENDATIONS AND DISCUSSION

Sustainability in all disciplines has been under investigation by different researchers for a long time. Logistics, Supply Chain and Recycling are among the areas most frequently visited by sustainability researchers (Akkucuk, 2016; Gencer, 2016; Gencer & Akkucuk, 2016). Akkucuk and Sekercioglu (2016) demonstrate a case where an NGO is working to foster sustainable ecotourism in Turkey. Seckin-Celik and Seckin-Halac (2018) investigate the aspect of labor relations and sustainability. Seckin-Celik (2017) has looked into the reporting aspect especially in the Turkish business context. Sustainability in governance relationship is also a growing area of interest. This paper contributes to this area by providing a comprehensive review of the literature on governance and sustainability.

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## **KEY TERMS AND DEFINITIONS**

**Corporate Governance:** Is the structure of rules, practices and processes by which a company is directed.

**Corporate Social Responsibility:** Abbreviated as CSR, this term is a business approach that contributes to sustainable development by bringing economic, social and environmental benefits to all stakeholders.

**Emerging Market:** An emerging market is a country that has some characteristics of a developed market but does not live up to some standards to be called a developed market.

**Governance:** The framework of rules and practices to ensure accountability, fairness, and transparency in an institution's relationship with its all stakeholders (customers, management, employees, government, and the community).

**NGO:** Non-governmental organization.

**NGO Business Partnership:** These new coalitions help to reinforce the legitimacy and social acceptability of companies. In addition, they make essential goods and services accessible to a broader population.

**Sustainability:** The quality of causing little or no damage to the environment and therefore being able to continue operations for a long time.

**Turkey:** A country with a population of 80 million lying on both the Asian and European continents.

# Chapter 7

## Ethics, Ethical Leadership, and Supply Chain Management

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### ABSTRACT

*To analyze ethics and sustainability in supply chain management: ethics, business ethics and ethical leadership are briefly explained. Ethics is important for the business in 4 aspects: customers, suppliers, competitors and employees. In this chapter, supply management will be given a more detailed examination with sustainability and an ethical point of view. Besides the governmental regulations, big companies also feel social responsibility and take action for the procurement of their supplier's conditions. Sustainability, ethics, ethical leadership are the main problems for a successful supply chain management system.*

### INTRODUCTION

Ethical and sustainable supply chain management in a global context forced companies to re- think their behaviors in accordance with their suppliers. Nowadays organizations, even the NGOs apply ethical codes from board members to stakeholders. In addition to this, sustainability issues forced companies to reorganize their relations with suppliers and way of doing business. Importance of ethics and sustainability in supply chain management encourage companies behave with moral values than price sensitive. Studies claim that consumers ready to pay more over settled price if they sure about the product is ethically produced. Companies tend to produce values rather than end products.

Economic, political, even religion-based conflicts over the world forced people to think and behave more ethical on featured issues. Usually developed countries have laws governing ethical business practices but immoral companies attempt to have benefits over the suppliers from developing countries. On the other side, moral companies forced suppliers to have ethical features.

Suppliers who refuse to the new policy risk losing their supply contracts all together.

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Clearly there are other reasons for implementing an ethical supply chain, many of which produce recognizable utility for a company's balance book. Furthermore, if one of your suppliers has a problem whether it's a problem of ethics or a problem of quality, consumers will hold you responsible for that defect. End users do not need to know the source of the problem. Brand management is another major subject for the companies. Their dignity, credibility and respectability could be affected by a supplier in anytime, anywhere. Therefore, companies should take precautions before the eruption comes. Openness and accountability are very important for every company which takes part in the supply chain. In this chapter, importance of ethics and sustainability in supply chain management discussed in accordance with business ethics, ethical leadership, sustainability and ethical standards.

## **MATTER OF ETHICS AND ETHICAL LEADERSHIP**

### **What Is Ethics?**

Ethics, defined as the discipline dealing with what is good and bad and with moral duty and obligation in Webster Dictionary (<https://www.merriam-webster.com/dictionary/ethics>) is becoming more important in every aspect of our life. Also, in another definition, the Oxford English Dictionary, the science of morals; the department of study concerned with the principles of human duty. Ethics is the evaluative study of what actors ought to do, rather than the descriptive study of what they have done, or are doing (Baylis, Smith & Owens, 2008). Although every single human has his or her own moral values however doing the right thing for the goodness of the entire universe is the core point of the ethics. In spite of globalization brings similarities in ethical codes different cultures have different ethical values.

The FLA, Fair Labor Association, aims to implement core labor standards of the International Labor Organization in firms operating in developing and newly industrializing countries. The FLA was founded in 1997 and grew out of the Apparel Industry Partnership (AIP) initiative of the Clinton administration to protect workers worldwide and to provide public information to consumers. The Partnership was composed of apparel and footwear companies, human rights groups, labor and religious organizations, and consumer advocates. The FLA now represents a multi-stakeholder coalition of industrial companies, colleges and universities, and NGOs. Its mission is to combine the efforts of these stakeholders to promote adherence to international labor standards and improve working conditions. In order to achieve this mission, the FLA developed a code of conduct which addresses core labor issues such as forced labor, child labor, harassment or abuse, discrimination, health and safety concerns, freedom of association and collective bargaining, wages and benefits, hours of work, and overtime compensation. Several companies from the apparel and footwear industries sourcing from more than 3,000 suppliers in 80 countries have signed up to the FLA and implemented the code. The FLA is governed by a multi-stakeholder board of directors (Marx, 2008).

### **Business Ethics**

Business ethics is a collection of principles and rules of conduct based on beliefs about what is right and wrong business behavior, a system of "ought" based on written laws and unwritten laws as moral codes of a society (Reinecke, Gary, & William, 1990). Ethical codes, formal, published collection of

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values and rules that is used by business, non-profit organizations, institutions, etc., aimed to upgrade and guide to the behaviors.

Ethics is important for the business basically in 4 aspects: customers, suppliers, competitors and employees. In our study, we will give more details about supply management. According to the Institute of Business Ethics (IBE), although global business ethics has a positive impact on the environment still corporate governance subject, enforcement fees, bribery and corruption remain a source of concern (Business Ethics Landscape, 2017). Forgery damages the reputation of an enterprise and this can lead to loss of business and reputation among the world (Vozar, 2013).

Today, ethical principles reflect the expectations of an organization's customers and the public. The changing and developing socio-cultural structure increased social sensitivity. Due to the awareness of societies and changing social needs, the importance given to ethical values has increased. The fact that the leaders act in accordance with ethical values and principles is considered as an important success criterion and the discussions have been raised in this issue (Sayan, 2018, & Akkucuk, 2015).

Although the ethics and compliance perceptions are largely positive, some challenges remain. Four basic metrics are often used to indicate the risk of ethics and compliance: organizational standards (also an important indicator for the potential threat), the observed misconduct, misuse of reported duty and retaliation against reporters. While ethics is increasingly debated at the board level, all stakeholders do not consider management effectiveness important. Ethics programs show the importance of good governance in surveys and the role of committees in looking at corporate culture and their long-term role in the business world are consistent in helping to fulfill the requirements of an ethical corporate culture. However, there is often difficulty in balancing competitor priorities for different stakeholder groups. Companies are committed to supporting an ethical culture in supporting an ethical environment. Values and culture are regular items on the agenda of many boards and show that companies are busy with the notion of setting the tone from the summit. The most common elements of an organization's ethical program are ethics, ethical training, speech mechanisms, and internal reporting tools, and many companies include compliance with the company's code of employment contracts. Although the global ethical landscape seems to be developing, although there are positive trends from board evaluations and more open risk and strategic reporting, efforts to move away from compliance, at least to a minimum, to keep values alive confidence is expected to have a positive impact (Business Ethics Landscape, 2017).

Business ethics practices also play an important role in regulating the working conditions of employees. Remuneration, career system, performance evaluation and others are covered by ethics. In other words, business ethics is a dynamic factor in regulating the processes in working conditions and making the relations fluid and smooth. Therefore, business ethics practices should not be ignored in organizing the functions and operations in the enterprise (Bektaş & Köseoğlu, 2008).

Today's competitive environment, globalization, technology development and limited resources strain institutions to change. In the information age, esteemed institutions are considered with excellent financial indicators as well as factors such as ethics, social responsibility, job satisfaction and quality of life of employees (Kandemir, 2012). Social order occurred the ethical concepts that form the basis of the rules have been a necessity for organizations and leaders.

### **Ethical Leadership**

A common metaphor about leadership and ethics are much like two sides of the same coin has been mentioned by a wide variety of scholars across many fields and applies in public administration, educa-

tion, business, religion, and interpersonal daily living (Caldwell & Anderson, 2017). In recent years, Enron, WorldCom, Parmalat and similar scandals experienced in business life have led to the ethical behavior of the leader examined within the scope of charismatic and transformational leadership and the role of the leader in shaping ethical behavior has been discussed (Arslantaş & Dursun, 2008; Tuna, Bircan & Yeşiltaş, 2012). Ethical leader is a style of leadership based on moral strength to influence his subordinates. Ethical leader is a person who has a strong influence and has a moral perspective on himself and his task, taking into account individual needs, being unbiased and impartial, defending the rights of employees and acting fairly and helping employees to achieve their organizational goals. In order to create an ethical climate in the organization, the leader should exhibit ethical behavior and be a role model for the members of the organization (Arslantaş & Dursun, 2008).

However, not every leader can bring success to every organization. Leaders are expected to have some qualifications according to organization needs. Unavoidable of these qualifications are the provision of justice in organizational environment and commitment to moral values. Disagreements in human relations, developments in social and economic life change the perspective of leadership and bring new tasks and responsibilities to leaders. As a result of these new responsibilities, some ethical principles are expected to be implemented by the leaders in the organizational environment. Above all, it is expected that moral values will be taken into account at the level of individuals, groups and organizations. In this respect, the leader should adopt different approaches to both internal and external organizations dealing with ethics and justice (Aytan, 2018).

The leaders face a number of ethical problems, such as ensuring the balancing of organizational and individual benefits, and the fair, impartial, honest and consistent use of the authorities and resources (Öztürk, 2014). Ethics leader is a leadership style that influences the moral power of his/her subordinates. Definitions related to ethical leadership are:

- Ethical leadership is the introduction of such behaviors to followers through normative appropriate behavior through personal actions and interpersonal relations and bilateral communication, empowerment and decision making (Brown, Treviño, & Harrison, 2016).
- Ethical leadership is to follow the ethical rules of followers and groups under the leadership of the leader (Küçükoğlu, 2012; Waldman, Wang, Hannah & Balthazard, 2012).
- Ethical leadership is a strong and effective leadership that reduces the negative characteristics of work environments such as unethical behavior and conflict of interest and contributes to the positive characteristics of the work environment (Neubert, Wu, & Roberts, 2013).

In order to promote ethical behavior in organizations, the general policies of the organization should be determined according to ethical standards. In organizations that implement ethical standards, their trust in the organization and its leaders will develop, and its commitment to the organization and citizenship behaviors will increase (Öztürk, 2014). Therefore, the relationship between leader and ethics is quite encountered (Tuna et al., 2012).

The value of the ethical leader is reflected in his / her behavior within the organization because ethical behavior has an impact on ethical institutionalization. A leader who is not ethically inclined may have difficulty in accepting himself for members of the organization as he cannot form an organization with an ethical structure. Therefore, the ethical leader must fulfill his ethical responsibilities in his actions and decisions in order to have full control and respect for the employees (Arslantaş & Dursun, 2008).

The judicial proceedings of the ethical leaders, their decisions and their penalties are observed and followed by their followers. Ethical leaders, in addition to drawing attention to ethical rules, provide detailed explanations to their followers with examples. They punish unsuitable behavior when rewarding ethical behaviors as well as explanations. Ethical leaders create an organizational culture that supports this situation by creating the right conditions for promoting the development of ethical behavior (Arslantaş & Dursun, 2008). Ethical culture begins with the initiative of managers but healthy development and institutionalization of ethical leadership practices in the institution, institutionalization of the employees takes place with the belief and support of the employees (TÜSİAD, 2009). The basic principles are the behaviors that should be found in all leaders. As the basis of universal ethical principles, being honest, being fair, attitudes and behaviors provide equality and justice within the organization. These characteristics of ethical leaders enable employees to trust and respect their leaders.

The leader is the model of his behavior. The research carried out by the senior management of the work in the organization of the importance of strengthening the ethics. In a sense, the ethical understanding of the leader is quite effective (Tuna et al., 2012).

Ethical leaders determine clear ethical standards and follow the implementation of these standards. They use reward and punishment methods when necessary. Ethical leaders are honest and reliable. In addition, they take fair and principled decisions and act ethically in personal and professional lives n people. Researchers describe this aspect of the leader as a moral and ethical aspect. Ethical leaders apply what they say and are proactive role models in ethical behavior (Brown & Treviño, 2016). Ethical leader's behavior and attitudes can be attributed to ethical principles and ethical values are placed in organizational culture and rewarded by employees who exhibit ethical behaviors. This creates a positive outlook on ethical principles and trust among the employees.

Ethical leaders make detailed statements to their followers as well as paying attention to ethical rules. They punish unsuitable behavior when rewarding ethical behaviors as well as explanations. Ethical leaders create an organizational culture that supports this situation by creating the right conditions for promoting the development of ethical behavior (Arslantaş & Dursun, 2008). In order to establish an ethical organizational culture, employees and managers must comply with the ethical principles and those who do not comply with ethical principles should be properly warned or punished. These practices ensure that ethical principles are established in organizational policies and activities. Thus, an ethical corporate identity wins.

Ethical organizational culture begins with the initiative of the leader. Ethical leadership practices are carried out with the belief and support of employees (Berkman & Aslan, 2009). Ethical leader treats his followers consistently, impartially, honestly and fairly (Robbins & Judge, 2015, p. 394). Ethical leader takes responsibility for the services and activities provided with the understanding of responsibility and accountability. Accountability and responsibility principles reduce the danger of bad use of power (Yılmaz & Çevik, 2011). For this reason, in order for ethical principles to be applied in organizations, written rules should be applied and if these rules are not followed, necessary sanctions should be applied.

Unethical behaviors in organizations adversely affect employees. The ethical behavior of the leaders positively affects the employees (Valentine & Fleischman, 2004). For this reason, focusing on the ethical values of the leaders and the inclusion of the employees in this process ensure the assimilation of ethical behaviors within the organization and the development of the ethical culture (Northouse, 2016).

For example, the transformative nature of the transformer is also present. This leadership structure is only in one region and another in the region (Tuna et al., 2012).

Five principles form the basis for the development of ethical leadership: These basic principles are respect, service, justice, honesty and social structure (Northouse, 2016).

**Serving Others:** Serving leaders care about the well-being of their followers. In organizations, activities such as service principle, guidance and empowerment behaviors, team building, and citizenship behaviors have gained importance. Servant leaders have a social responsibility and strive to eliminate inequalities and social injustices. Leaders who implement the service principle act in a way that benefits others (Northouse, 2016; Aslan, 2013).

**Respect for others:** Leaders who respect others feel that they are valuable and establish close relationships with individuals. Respect for the existence and personality of individuals means that a leader is close and empathetic to his followers. When a leader respects his followers, his followers can feel competent in their work. In short, leaders who respect other people have a positive impact on their followers (Northouse, 2016).

**Acting Fairly:** The fair decisions of ethical leaders are assessed by their followers. Ethical leaders treat their followers equally. Justice is the lack of special treatment of leaders in their decision-making except in special circumstances. When people are treated differently, their justification should be clear and reasonable and should be based on moral values (Sayan, 2018).

**Honesty:** Being honest is not just about telling the truth. It has nothing to do with being open to others and telling the truth as completely and completely as possible. Sometimes there are times when saying the full truth can be destructive or inefficient. The challenge for the leaders is to create a balance between being open and sincere, while in a particular situation they need to be outspoken. Most of the time, there are organizational restrictions that prevent leaders from disclosing information to their followers. It is important for the leaders to be authentic, but it is also important that they are sensitive to the attitudes and feelings of others. To be honest to the leaders in the organization means “don’t promise anything you can’t do, don’t make false statements, don’t avoid accountability” (Sayan, 2018).

**Community Creation:** An ethical leader deals with the common interest in the broadest sense. Leaders should take into account the goals of both themselves and their followers when working towards the objectives that are appropriate for both. According to Burns, leadership as a result leader-follower relationship based on personal relations. Leaders must participate in the aims and objectives of the community (Sayan, 2018).

## **SUPPLY CHAIN MANAGEMENT AND SUSTAINABILITY**

### **Governance of Supply Chain Management**

Increasing population, scarcity and the allocation of the resources made us re-think about sustainability in a global context. Although the earliest definition found in the sample dates from 1996, the articles published prior 2000 do not explicitly define SSCM (or Green SCM) as an integrated concept but rather provide a definition of SCM (or related aspects) and a description of the environment or environmental impacts as a separate variable. Seuring and Müller (2008), define SSCM as: the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements. Green SCM defined as integrating environmental thinking in to supply chain management including product design, material

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sourcing and selection, manufacturing processes, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life (Srivastava, 2007).

We define supply management ethical responsibility (SMER) as managing the optimal flow of high-quality, value-for-money materials, components or services from a suitable set of innovative suppliers in a fair, consistent, and reasonable manner that meets or exceeds societal norms, even though not legally required (Eltantawy, Fox, & Giunipero, 2009). An efficient supply chain is responsive to changing priorities by keeping costs in line, schedules on time and, more importantly, giving companies the room to scale for growth. Global Supply Chain Forum define Supply Chain Management, is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders (Lambert, Cooper & Pagh, 1998).

For successful implementation of supply chain management include:

- Executive support, leadership and commitment to change.
- An understanding of the degree of change that is necessary.
- Agreement on the supply chain management vision and the key processes.
- The necessary commitment of resources and empowerment to achieve the stated goals (Croxtton, Garcia, Lambert, Rogers, 2001).

## **Importance of Sustainability in Supply Chain Management**

It is very important how the concept of performance, which is of equal importance to efficiency and strategic plans, both in terms of financial and human resources, is essential in order for enterprises to achieve success in the critic issues such as sustainability, continuity and profitability (Aytan, 2018).

Sustainability is high on many companies' agendas. Organizations are dealing with sustainability goals, such as lowering carbon footprint and improving working conditions through value chains. Every organization should control its supply chain mechanism for unpredicted threats. Consumers vote every day with the products they purchase, and so do corporations offered to use IT based solutions such as supplier risk assessments based on 21 criteria across environment factors, fair labor practices, ethics/fair business practices, and supply chain. The objective is to help procurement scale sustainability efforts for prevent risk factors. Program check suppliers as long-term innovative partners and score them according to risk analysis. If the supplier doesn't score well company should take the risk for improvement or decide to break the chains (Galer, 2018).

Carter and Rogers (2008) introduce the concept of sustainability—the integration of environmental, social, and economic performance of the firms within the concept of supply chain management. Strategy, integration with the concept of sustainability influence all the aspects of environmental performance both individually and overall organization's sustainability strategy. Organizational culture with high ethical standards, basically accepted with all the co-workers brings organizational citizenship behaviors. This will lead to high social performance as a result sustainability consciousness for all the attendants. Upstream and downstream risk management is also important for the economic performance of supply chains. Transparency is another issue important for the stakeholders. Authors define sustainability as the strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systemic coordination of key inter organizational business processes for improving the long-term economic performance of the individual company and its supply chains (Carter & Rogers, 2008).

Furthermore, pressures and incentives from legal, social and environmental factors force organizations re-think about sustainability while supporting factors also provide wide range of applications to supply chain management. Seuring and Müller (2008) summarize number of papers about pressures and incentives and supporting factors in Table 1 and Table 2.

Table 1 shows pressures and incentives for sustainability in supply chains (Seuring & Müller 2008).

Table 2 shows supporting factors for sustainable supply chain management (Seuring, Müller 2008).

## **ETHICAL STANDARDS IN SUPPLY CHAIN MANAGEMENT**

ISM, Institute for Supply Management derive standards of supply management with the values of integrity in your decisions and actions, value for your employer and loyalty to your profession. According to ISM standards are listed as follows (Derry, 2016):

- **Impropriety:** Prevent the intent and appearance of unethical or compromising conduct in relationships, actions and communications.
- **Conflict of interest:** Ensure that any personal, business and other activities do not conflict with the lawful interests of your employer.
- **Influence:** Avoid behaviors or actions that may negatively influence, or appear to influence, supply management decisions.
- **Responsibilities to your employer:** Uphold fiduciary and other responsibilities using reasonable care and granted authority to deliver value to your employer.
- **Supplier and customer relationships:** Promote positive supplier and customer relationships.

*Table 1. Pressures and incentives for sustainability in supply chains (Seuring & Müller 2008)*

<b>Pressures and incentives</b>	<b>Number of papers (N¼ 191)</b>
Legal demands/regulation	99
Customer demands	96
Response to stakeholders	90
Competitive advantage	71
Environmental and social pressure groups	38
Reputation loss	30

*Table 2. Supporting factors for sustainable supply chain management (Seuring, Müller 2008)*

<b>Supporting Factors</b>	<b>Number of papers (N¼ 191)</b>
Company-overlapping communication	89
Management systems (e.g., ISO 14001, SA 8000)	69
Monitoring, evaluation, reporting, sanctions	68
Education of purchasing employees and suppliers	40
Integration into the corporate policy	38

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- Sustainability and social responsibility: Champion social responsibility and sustainability practices in supply management.
- Confidential and proprietary information: Protect confidential and proprietary information.
- Reciprocity: Avoid improper reciprocal agreements.
- Applicable laws, regulations and trade
- Agreements: Know and obey the letter and spirit of laws, regulations and trade agreements applicable to supply management.
- Professional competence: Develop skills, expand knowledge and conduct business that demonstrates competence and promotes the supply management profession

The Global Professional and Ethical Standards according to RICS, Royal Institution of Chartered Surveyors, summarized as follows (RICS, 2019):

- Act with integrity, means being honest and straightforward in all that you do.
- Always provide a high standard of service, means always ensuring that your client, or others to whom you have professional responsibility, receive the best possible advice, support or performance of the terms of engagement you have agreed.
- Act in a way that promotes trust in the profession, means acting in a manner, both in your professional life and private life, to promote you, your firm or organization you work for and the profession in a professional and positive way.
- Take responsibility, means being accountable for all your actions – don't blame others if things go wrong, and if you suspect something isn't right be prepared to do something.

Also, FLA, the Fair Labor Association, another organization which regulates ethical codes in supply chain management. When Apple participates in the Fair Labor Association (FLA) agreed to abide by the FLA's Workplace Code of Conduct throughout its supply chain. The FLA quickly launched a series of independent investigations of Foxconn's factories in Shenzhen and Chengdu, China. Result of the report inevitably forced Apple to concern about suppliers working conditions:

"We believe every worker has the right to a fair and safe work environment free of discrimination, where they earn competitive wages and can voice their concerns freely," Apple CEO Tim Cook said after their participation to FLA. "Apple's suppliers must live up to this to do business with Apple." Apple, as a responsible company, refuse to let any of its suppliers cut corners in the future and will soon reveal new workplace standards for its entire supply chain. Furthermore, Apple planned number of fringe benefits for the supplier's workers such as English language lessons (Guthrie, 2012).

## **CONCLUSION**

To sum up, we could briefly say that, companies like Apple could bring higher standards not only for customers/end users also to worldwide workers and suppliers. Beside governments and written regulations, large scale firms have power to effect of doing the right thing for the benefit of the all. However, when customers face with a problem with the purchased equipment, they do not know if it's the fault of the main company or the supplier. Similar issues divert Brand Management departments to solve this in time.



Ethics and sustainability in supply chain management is one of the main problems that companies deal with after environmental and economic aspects. Rapidly growing population, high-tech industrial solutions, new acts and regulations change the behavior of “doing business” from SMEs to large scale industries. Although worldwide ethical standards influence the behavior in business, all agree that without an ethical leader companies couldn't direct their way to convertible supply chain management. Sustainability issues enforce firms to think more about ethics and drive them to deal with ethics also in their suppliers. Unethical behavior has irreversible effects to a business's future prospects.

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## Chapter 8

# Consumer Awareness and Degree of Engagement With Circular Economy Practices: Evidence From Turkey

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### **ABSTRACT**

*Transforming into a circular economy (CE) requires cooperation and support from all actors within the society. Consumers, as a main actor, can significantly support or obstruct a CE transition through their market power. This chapter attempts to understand the awareness and engagement degree of Turkish consumers regarding the concept and practices of CE. Per results of the survey conducted online, it can be concluded that Turkish people have some awareness (64%) of the concept of CE. However, 61.2% believe CE focuses on recycling whereas 48.2% believe it is about saving. Of the respondents, 25.9% are entirely unaware of the benefits of CE; 95.7% of consumers are not open to buy second hand, hire or reuse as an alternative to traditional ownership. A majority of Turkish consumers practice selective waste management and believe they protect the environment through saving energy and water.*

### **INTRODUCTION**

Circular economy (CE) is a tool to attain sustainable development. Promoted as a new economic model, the CE concept favors increased or optimal resource efficiency to foster a harmony between the environment, economy, and society (Kirchherr, Reike, & Hekkert, 2017; Preston, 2012; Roos, 2014).

The Ellen MacArthur Foundation works with governments, businesses, and academia to build a framework for CE. The foundation defines CE as:

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## **Consumer Awareness and Degree of Engagement With Circular Economy Practices**

*Circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural and social capital (Ellen MacArthur Foundation, n.d.).*

Through the adoption of CE principles, it is estimated that overall benefits of €1.8 trillion can be achieved by 2030 across Europe. The average disposable income for European Union (EU) households can increase by 11% higher than the current development path (Ellen MacArthur Foundation, 2015a).

The shift from a dominant linear economic model to CE is almost ineluctable with an increasing world population and decreasing availability of natural resources. Technological innovations and urbanization will lead to a growth in living standards and consumption levels. However, the transformation from the current economic model to CE is not effortless. The transformation requires cooperation and support from all actors of society.

According to the CE transformation's business perspective, new business models must be designed. Ernst & Young (2016) identified five business models to help companies prepare for a CE transformation. The first model, circular supplies, stops companies from putting pressure on limited stocks by shifting to renewable, biobased, and biodegradable resources. The resource recovery model recovers remaining value from products that have attained their end-of-life cycle. The product life extension model extends a product working condition via remanufacturing or repair. Through the sharing platform model, users partner to create value out of otherwise underutilized products via sharing. Finally, the product as a service model allows customers to rental or pay for a product rather than own it.

The public should also be aware of how they will be directly impacted by the CE concept. The Ellen MacArthur Foundation (2015b) reported that consumers should be informed about the added value of circular products that will bring to their lives such as improved quality of life and decreased financial costs. On top of education of consumers; labeling of products, pricing policies, consumer incentives, and other initiatives can be implemented to support the transition to CE. The report also recommended that the transition's early stages through the educational stages should focus on concepts like environmental protection and cost savings rather than the complex details of CE (Ellen MacArthur Foundation, 2015b).

The primary purpose of this study is to understand awareness and engagement levels in the practice of CE among Turkish consumers. Therefore, global principles and implementation of CE will not be discussed in detail within the scope of this chapter. However, briefly, it can be said that the literature defines CE through the 3Rs: (1) reduction; (2) reuse; and (3) recycle (Reh, 2013; Sakai et al., 2011). Europe, Japan, and the United States are likely to define CE as linked to waste management (Sakai et al., 2011). The literature review shows that the implementation of global CE is in the initial stage and successful cases prove that the transition involves all social actors (Ghisellini, Cialani, & Ulgiati, 2016).

## **TURKISH CONTEXT**

According to gross domestic product (GDP) figures in 2016 (Invest in Turkey, n.d.), Turkey ranks as the 17<sup>th</sup> largest economy of the world with an annual average real GDP growth of 5.6% (2003-2016). The Organisation for Economic Co-Operation and Development (OECD) forecasts Turkey's economy to be one of the fastest growing among members of OECD countries for the period 2015-2025, with an estimated annual average growth rate of 4.9% (Invest in Turkey, n.d.).

The population of Turkey increased to 80.8 million in 2017 (TUIK, 2017). Economic and population growth led to a change in consumption and production patterns, putting pressure on Turkey's environmental and natural resources. For example, per sustainable development indicators by TUIK (2010), domestic material consumption doubled from 2000-2010, reaching more than 990 million tons in 2011.

The General Assembly of Parliament's Tenth Development Plan, which has been in effect since July 2013, provides the foundation for all relevant strategies, programs, and action plans addressing Turkey's natural resources (The General Assembly of Parliament, 2013). The plan's Priority Transformation Programs set several targets for natural resources, including the Program for Enhancing Productivity in Manufacturing, the Program for Increasing Domestic Savings and Avoiding Waste, the Program for Reducing Import Dependency, the Program for Improving Energy Efficiency, and the Program for Enhancing Water Efficiency in Agriculture. In addition to the Tenth Development Plan, other programs and strategies include the National Watershed Management Strategy (2014-2023), the Energy Efficiency Strategy Paper (2012-2023), and the National Recycling Strategy and Action Plan (2016-2023). There are also laws and regulations to set policy objectives for material resource efficiencies across the country, including the 2011 Regulation on Packaging and Packaging Waste, the 2015 By-Law on Waste Management, and the 2007 Energy Efficiency Law (European Environment Agency, 2016).

The responsibility of resource efficiency is distributed among various institutions in Turkey like the Ministry of Environment and Urbanization, the Ministry of Energy and Natural Resources, the Ministry of Economy, and the Turkish Statistical Institute (European Environment Agency, 2016).

Per CE practices, waste generation and waste management are a priority for Turkey. Municipal solid waste (MSW) management has been a pressure point for Turkey as a candidate country for EU membership (TCA, 2007). Out of 28.6 million tons of MSW generated in 2014, 28 million tons (90% of total waste) were collected. Approximately 99.1% of this collected waste was landfilled in sanitary landfills (61.07%) or dumpsites (28.25%), while around 11% was recovered (European Environment Agency, 2016). For comparison, the recovery rate is 42% across the EU. Per the National Recycling Strategy and Action Plan (2016-2023), Turkey must recycle 35% of its waste. Its landfill rate should decrease to 65% by 2023. Currently, Turkey recycles only 13% of its municipal waste. Its current landfill rate is 87%.

In 2005, ÇEVKO, a nonprofit organization established in 1991, was the first authorized institution for all packaging in Turkey. TUKCEV, authorized by the Ministry of Environment and Urbanization in 2010, is the second authorized institution for packaging in Turkey. Others include PAGÇEV (authorized in 2014) and AGED (authorized in 2015). In accordance with related national and EU legislation, Turkey is targeted to build a waste management system to diminish waste, ensure recycling and reuse, and establish necessary waste treatment facilities and transfer stations (European Environment Agency, 2016).

In addition to efforts by the government and its organizations as summarized above, the European Bank for Reconstruction and Development (EBRD) started a program in Turkey in 2015. The program is expected to fund up to 12 investments for US\$125 million to minimize waste and increase resource efficiency (SKD Turkey, n.d.).

Moreover, the Business Council for Sustainable Development Turkey (BCSD Turkey) was founded under the leadership of 13 private sector entities to increase the awareness of businesses concerning sustainable development (BCSD Turkey, n.d.). BCSD Turkey, as a local partner of the World Business Council for Sustainable Development (WBCSD) in Turkey, shares knowledge on sustainability with its members and stakeholders through the activities of its sustainable consumption and innovation working group. According to BCSD Turkey (n.d.), group activities include the Turkey Materials Marketplace Project (a digital platform creating economic and environmental value through cross-industry materials),

the DO! Project (promoting energy and materials savings in the workplace through “Sensitive People”), the Innovative Sustainability Solutions Contest (rewarding valuable sustainability solutions to highlight good practices), the *Waste to Wealth* book (prepared by Accenture explaining five main CE business models to attain resource efficiency), and the *Guide on Eco-Labels for Sustainability* (increasing awareness about eco-labels and enhancing knowledge accumulation).

Recently, in June 2017, the Ministry of Environment and Urbanization initiated the Zero Waste project. As a first wave, Zero Waste targeted public buildings, educational and military institutions, terminals (i.e., airports, train stations, and bus terminals), shopping centers, entertainment facilities, and large-scale workplaces. This project will expand nationwide upon success of the first phase.

## **CE AND CONSUMERS**

Through their market power, consumers can significantly support or obstruct a transition toward CE. Despite that fact, consumer behavior has been an unexplored area in CE academic literature (Schotman & Ludden, 2014).

Current literature identifies behavioral barriers and motivating factors of consumer acceptance of CE business models (Chamberlin & Boks, 2018). As stated in the previous section, the current and initial stage of global CE focuses on recycling. Vanner et al. (2014) commented that “limited consumer [...] acceptance” would be one explanation regarding CE’s limited implementation (p. 5). Similarly, Kirchherr et al. (2018) found that “lacking consumer interest and awareness” is a key barrier in the transition toward CE (p. 269).

The literature is rich in studies to understand the pro-environmental behavior changes of consumers (Lucas, Brooks, Darnton, & Jones, 2008; Steg & Vlek, 2009). Consumer responsibility and involvement are very important for increasing the consumption of more sustainable products (Geng & Doberstein, 2008). One key challenge is how to change consumer habits to prevent unsustainable activities, particularly due to the possibility of a rebound effect (Kollmuss & Agyeman, 2002; Souza, 2012). That is, resource-efficient products can have greater accumulative environmental impacts by engendering increases in consumption (Polimeni, Mayumi, Giampietro, & Alcott, 2009). Therefore, focusing on resource and material efficiency in products may threaten the sustainability of CE.

More importantly, the CE approach is often seen as appropriate to recycling or waste management. As Ghisellini et al. (2016) pointed out, such limited thinking may lead CE practices to fail because recycling or reuse options may not be appropriate for all situations. Moreover, using biotechnology or green chemistry as conversion alternatives may be more expensive than traditional technology (Ghisellini et al., 2016).

In summary, as stated by Kirchherr et al. (2017, p. 229), “CE must be understood as a fundamental systemic [innovation] as opposed to a twisting of the status quo.” A transition toward CE requires shifts in current consumption habits. Changing current consumption patterns calls for behavior change among consumers.



## **AWARENESS AND DEGREE OF ENGAGEMENT TO CE PRACTICES IN TURKEY**

The Tenth Development Plan targets a transition to more sustainable consumption patterns across Turkey. This plan targets to increase awareness in all parts of society (including consumers) for avoiding and minimizing waste, recycling, and promote the use of more sustainable resources. Without addressing consumption categories, need for change in consumer behavior for the sake of economy and environment is also highlighted within the Plan. As discussed under the above sections, although many initiatives were taken by public and private organizations in Turkey, CE still remains a relatively new concept for Turkish consumers.

From an academic point of view, an inadequate amount of literature studies CE awareness and engaged practices of Turkish consumers. As a result of the literature review, it can be stated that most of the literature regarding sustainable growth/development surrounds the awareness, attitudes, and behavioral tendencies of Turkish consumers on green consumption, environmental protection, pollution, recycling, and waste management.

For example, Aracıoğlu and Rezan (2009) studied the consciousness level of consumers regarding environmental pollution and its effect on purchasing behaviors. They found discrepancies between what consumers declare and what they do in their daily lives. Of the 360-participant survey:

- 72.5% did not make a selective waste collection
- 48.1% read the environmental information on product packaging or labels
- 91.1% knew newspapers are recyclable
- 83.9% knew magazines, catalogs, and books are recyclable
- 67.5% knew metal containers are recyclable
- 23.6% knew bulbs are recyclable
- 36.7% knew nylon bags are recyclable

The Investigation of Consumers Attitudes Towards Green Products by Karaca (2013) surveyed 362 people in Sivas in central Turkey. The results showed that:

- 47.5% of participants declared it is important to protect forests by purchasing products made from recycled paper
- 41.4% of respondents stated they could identify environmentally friendly products through signs and symbols on packaging
- 38.7% of respondents liked to create value out of otherwise underutilized products

Umut, Topuz, and Velioglu (2015) analyzed Turkish consumers' awareness, attitudes, and behavioral tendencies for environmental protection and recycling. Their results illustrate that consumers may have various interpretations for the environment. In addition, consumers may not know that their environmental protection behaviors may have an impact on pollution.

Gündüzalp and Güven (2016) studied consumers' waste management and recycling behaviors. They found that 41.4% of participants were concerned with the harmful effects of environmental pollution on themselves and their families. In addition, 46.4% of participants believed that Turkey faces a severe and substantial waste problem. Due to the ratio of consumers preferring environmentally friendly or recycled products, Gündüzalp and Güven (2016) declared an increase in consumers' environmental awareness.

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However, consumers are still not fully aware of how to control and evaluate waste. In fact, some believe that recycled products are more expensive than other products.

In summary, there is a gap in literature on understanding the awareness and engagement of Turkish consumers to the concept and practices of CE in Turkey. As Ferdousi et al. (2016) and Kates (2000) argued, a successful implementation of CE requires a paradigm shift in the way products are produced, distributed, and consumed. As central actors in CE implementation, the consumption patterns of consumers' economic activities must profoundly change. This change will lead to significant shifts in individual decisions and behavioral patterns.

## Methodology

In this study, an online questionnaire presented questions on "Awareness of CE" group and an "Engagement to CE" group with a total of 10 items (Table 1). Following a literature review for Turkish context, questions regarding consumers' awareness for benefits of consuming green products and selective waste collection were integrated to the questionnaire under the "Awareness of CE" group. This was done for comparison purposes because these are the most common concepts mentioned by Turkish consumers regarding sustainable development and growth.

Questions for sociodemographic variables were also included in the survey. The questionnaire was pretested on 25 consumers from July 24-July 28, 2018. The consumer selection was a nonrandom process.

Table 1. Questionnaire items

<b>1. Awareness of CE</b>
Q1. Have you heard of CE?
Q2. What do you understand about the concept of CE? Options include recycling, substitution, savings, less resources used, and/or reuse.
Q3. If you heard of CE, which media source shared the information? Options include Internet, printed and visual media, brochures, family and friends, product packaging, television public spots, informational meetings (conference, panel, seminar), or other.
Q4. Indicate your level of information on the benefits of CE. (5 = very high; 1 = none)
Q5. Indicate your level of giving importance to intentionally buying green products. (5 = very important; 1 = not important at all)
Q6. How often do you intentionally purchase green products? (5 = always; 1 = never)
Q7. Do you think that selective waste collection is important in preventing the depletion of natural resources? (5 = very important; 1 = not important at all)
Q8. How often do you practice selective waste collection? (5 = always; 1 = never)
Q9. Which method do you use to buy a mobile phone, camera, computer, or any other durable goods? Options include buy new, buy second-hand, rent, or other.
<b>2. Engagement to CE</b>
Q10. Indicate whether and frequency you perform the following activities: <ul style="list-style-type: none"><li>• I use public transportation.</li><li>• I carpool/share with colleagues/friends to go to work/school.</li><li>• I separately collect paper waste.</li><li>• I separately collect plastic waste.</li><li>• I separately collect glass.</li><li>• I collect used cooking oil.</li><li>• I take batteries to collection centers.</li><li>• I prefer to repair/change defeated parts of durable goods rather than buy new.</li><li>• I place value on conserving energy, water, and gas.</li></ul>

## Consumer Awareness and Degree of Engagement With Circular Economy Practices

These consumers were not included in the final sample. Changes, including rephrasing and question omissions, were applied to the survey following the pretest.

The final questionnaire was distributed on accessibility bias via Google forms from August 1-September 14, 2018. The final number of respondents was 145. Six responses were incomplete. Therefore, the final number of respondents was 139, representing a 95.8% response rate. The detailed sociodemographic categorization of the sample is listed in Table 2. According to the survey, 41% of respondents were within the 40-49 age group, 65.5% of respondents were women, and 67.6% were university graduates. In addition, 59.7% of participants declared they have fair income; 33.1% declared high income.

*Table 2. Sociodemographic composition of sample*

	Frequency	%
<b>Gender</b>		
Female	91	65.5
Male	48	34.5
<b>Age</b>		
20-29	22	15.8
30-39	20	14.4
40-49	57	41.0
50-59	35	25.2
60-69	4	2.9
Over 70	1	0.7
<b>Marital Status</b>		
Married/In a relationship	99	71.2
Single	40	28.8
<b>Education</b>		
Primary	-	-
Secondary	15	10.8
University	94	67.6
Graduate (MA, MBA, PhD)	30	21.6
<b>Income</b>		
Too low	3	2.2
Low	5	3.6
Fair	83	59.7
High	46	33.1
Too high	2	1.4
<b>Occupation (more than one answer may be given)</b>		
Working	92	66.2
Not working	16	11.5
Retired	34	24.5
Student	10	7.2

**Results**

Per the first group (Awareness of CE), results illustrate that 64% of participants are aware of the concept CE (see Table 3). The composition of respondents who are aware of the CE concept are majorly females (68.5%) and from age group older than 40 years (73%).

In response to the question on the media sharing the information, 69.7% of respondents stated they heard of it from the Internet, 58.4% from printed and visual media, and 34.8% from family and friends (see Table 4). It should be noted that multiple answers were accepted for this question. Only participants who stated they were aware of CE (Q1) were asked for a response.

Participants were asked to respond to what they understood about the concept of CE regardless of their awareness level. Most popularly, 61.2% of respondents understood recycling, 48.2% referred to saving, and 47.5% referred to less resource use (see Table 5).

Per the level of information regarding the benefits of CE, 28.8% of respondents stated they have a fair level of information and 25.9% were entirely unaware of the benefits of CE (see Table 6).

Per the survey, 91.4% of respondents found it very important or essential to intentionally buy green products (see Table 7). The percentage of respondents who frequently or always buy green products was 58.9% (see Table 8). When examined, the composition of respondents who found it very important to intentionally buy green products was 64% females, with 68.6% from the group older than 40 years (see Table 7).

More than 93% of respondents from 20 to 59 years considered selective waste collection very important to prevent depletion of natural resources (see Table 9). However, 39.9% of respondents always chose selective waste collection (see Table 10). Across respondents considering selective waste collection as very important, the majority were females (66.2%); 70% were from the age group older than 40 years (see Table 9).

*Table 3. Awareness of CE*

	Frequency	%
<b>Q1. Have you heard of CE?</b>		
Yes	89	64.0
No	50	36.0
<b>Q1. Have you heard of CE? Answer: Yes Gender and Age Split</b>		
Female	61	68.5
Male	28	31.5
Total	89	100
20-29	11	12.4
30-39	13	14.6
40-49	37	41.6
50-59	26	29.2
60-69	2	2.2
Over 70	-	-
Total	89	100

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*Table 4. Source of information for CE*

	Frequency	%
<b>Q3. If you heard of CE, which media source shared the information?</b> <i>Multiple choice</i> If selected “no” in Q1, respondents were asked to skip to Q4.		
Internet	62	69.7
Printed and Visual Media	52	58.4
Brochure	6	6.7
Family and friends	31	34.8
Information on product packaging	11	12.4
Public spots on TV	11	12.4
Information meetings (conference, panel, seminars)	19	21.3
Other	25	28.1

*Table 5. Responses to what participants understand from the CE concept*

	Frequency	%
<b>Q2. What do you understand about the concept of CE?</b> <i>Multiple choice</i>		
Recycling	85	61.2
Substitution	17	12.2
Saving	67	48.2
Less resources used	66	47.5
Reuse	23	20.0

*Table 6. Level of information on benefits of CE*

	Frequency	%
<b>Q4. Indicate your level of information on the benefits of CE.</b> <i>5 = very high, 1 = none</i>		
None	36	25.9
Low	20	15.1
Fair	40	28.8
High	30	21.6
Very high	12	8.6

Per responses to the question of purchasing a mobile phone, camera, computer, or any other durable item, 95.7% of respondents stated they will buy new. Only 3.6% of participants stated they would purchase a second-hand product (see Table 11). The reuse option was not selected.

Per results of the Engagement to CE questions, nine activities were considered in this study. The frequencies were measured on a 5-point response scale (5 = always; 1 = never). It should be noted that

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Table 7. Importance given to buying green products

	Frequency	%
<b>Q5. Indicate your level of giving importance to intentionally buying green products.</b>		
Not important at all	-	-
Low important	1	0.7
Neither important nor unimportant	11	7.9
Important	41	29.5
Very important	86	61.9
<b>Q5. Indicate your level of giving importance to intentionally buying green products. Answer: Very Important Gender and Age Split</b>		
Female	55	64.0
Male	31	36.0
Total	86	100
20-29	12	14.0
30-39	15	17.4
40-49	31	36.0
50-59	28	32.6
60-69	-	-
Over 70	-	-
Total	86	100

Table 8. Frequency of buying green products

	Frequency	%
<b>Q6. How often do you intentionally purchase green products?</b>		
Never	-	-
Rare	6	4.3
Sometimes	51	36.7
Frequently	59	42.4
Always	23	16.5

the responses show consumer behavior concerning engagement to CE. The distribution of attitudes and answers to that question is summarized in Table 12.

The highest scores related to CE engagement practices include conserving energy, water, and gas on a frequent basis or always (88.5%). According to the survey, 69.1% of respondents declared they frequently or always prefer to repair or change defeated parts rather than buy new.

Separate collection of paper, glass, and plastic waste was done by 68.3%, 66.7%, and 63.3% of respondents on a frequent or consistent basis. Taking used batteries to individual collection centers also rates higher, with 62.6% of participants always or frequently doing it. Relative to the other activities, used cooking oil collection rated were low, with only 43.9% of participants doing it on a frequent basis.

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*Table 9. Importance of selective waste collection*

	Frequency	%
<b>Q7. Do you think that selective waste collection is important in preventing the depletion of natural resources?</b>		
Not important at all	-	-
Low important	-	-
Neither important nor unimportant	2	1.4
Important	7	5.0
Very important	130	93.5
<b>Q7. Do you think that selective waste collection is important in preventing the depletion of natural resources? Answer: Very important Gender and Age Split</b>		
Female	86	66.2
Male	44	33.8
Total	130	100
20-29	19	14.6
30-39	20	15.4
40-49	52	40.0
50-59	35	26.9
60-69	3	2.3
Over 70	1	0.8
Total	130	100

*Table 10. Frequency of selective waste collection*

	Frequency	%
<b>Q8. How often do you practice selective waste collection?</b>		
Never	1	0.7
Rare	14	10.1
Sometimes	38	27.3
Frequently	43	30.9
Always	43	30.9

*Table 11. Methods used for the acquisition of a mobile phone, camera, computer, or durable goods*

	Frequency	%
<b>Q9. Which method do you use to buy a mobile phone, camera, computer, or other durable goods?</b>		
Buy new	133	95.7
Buy second-hand	5	3.6
Rent	1	0.7
Reuse an unused item from family, friend, and others	-	-

## Consumer Awareness and Degree of Engagement With Circular Economy Practices

Table 12. Share and frequency of engaging in CE practices

	Never	Rarely	Sometimes	Frequently	Always
<b>I ... Activity/Single Choice</b>	%	%	%	%	%
Use public transportation	29.1	16.4	17.2	11.2	26.1
Carpool/share with colleagues/friends to go to work/school	39.7	20.6	19.8	10.3	9.5
Separately collect paper waste	6.5	10.1	15.1	23	45.3
Separately collect plastic waste	7.9	9.4	19.4	20.1	43.2
Separately collect glass	4.3	7.2	21.7	21.0	45.7
Separately collect used cooking oil	25.2	14.4	16.5	13.7	30.2
Take batteries to collection centers	18.0	10.1	9.4	14.4	48.2
Prefer to repair/change defeated parts of durable goods rather than buy new	5.0	5.8	20.1	28.8	40.3
Place value on conserving energy, water, and gas	2.4	2.1	7.9	26.6	61.9

Public transportation was frequently or always used by 37.3% of respondents. Carpool/sharing was done on a more frequent basis by only 19.8% of respondents.

## CONCLUSION

Results from this survey have significant implications for both design and implementation of CE programs aiming to make consumers aware of the concept, benefits, and practices of CE.

Per the survey results, it can be concluded that Turkish people have some awareness (64%) of the concept of CE. However, most individuals believe CE is about recycling (61.2%) or saving (48.2%). The distinct concepts of CE and recycling are not synonymous. CE focuses on designing long-lasting, easy-to-repair products. On the other hand, through the process of recycling, materials lose much of their value after mixing in the waste stream. Moreover, the process recycling itself consumes a large amount of energy to clean and convert waste into usable products.

There is a poor understanding of the benefits of CE, with only 30.2% of participants having a high or very high level of information. Consumers stated they learned about CE from the Internet (69.7%) or printed and visual media (58.4%). Only 12.4% of participants learned about it from information on the product; 12.4% learned from public spots on TV. It is clear that consumers need adequate and reliable product information. This can be achieved via programs such as an eco-label or declarations on the product. Furthermore, public spots can be prepared and broadcasted on television with high media exposure targets.

Although 91.4% of people found it very important to purchase green goods, only 16.5% always select green products. This shows that consumers do not always translate their environmental concerns into purchasing behaviors (Connell, 2011; Henninger & Singh, 2017). The relationship between attitudes and behavior in consumer decisions has been studied widely across marketing literature and explained



by Ajzen and Fishbein's (1980) reasoned-action theory (Cordano, Welcomer, Scherer, Pradenas, & Parada, 2010). According to the reasoned-action theory, an individual's behavioral intention affects their actual behavior. Per the reasoned-action theory, this study found that positive attitudes about buying green products are expected to translate into an intention to purchase behavior. However, as indicated in the literature, individuals' high concern for the environment does not necessarily or always guide their decision-making process (Bonini & Oppenheim, 2008). This can be explained by the knowledge-action gap (Frederiks, Stenner, & Hobman, 2015). That is, what people say they do and what they know can differ from their actual behavior.

Per results, Turkish residents have a positive attitude toward selective waste collection, with 98.6% pointing out that selective waste collection is very important or important and 61.8% choosing selective waste collection always or most of the time. Separate collection of paper, glass, and plastic waste was indicated by 68.3%, 66.7%, and 63.3% of respondents on a frequent basis or always, respectively. Taking used batteries to individual collection centers also rated high, with 62.6% of participants making it always or on a frequent basis. Relative to the other activities, used cooking oil collection rates were low, with 43.9% of participants doing it on a frequent basis.

According to Thomas and Sharpe (2013), people recycle based on knowledge and the provision of and access to recycling centers. Education programs can also expand the public's recycling behaviors. For example, Saphores, Nixon, Ogunseitán, and Shapiro (2012) found that public education programs for younger adults have increased their willingness to recycle electronic waste.

Highest scores for CE engagement practices included savings from energy, water, and gas consumption on a frequent basis or always (88.5%). 37.3% of respondents use public transportation frequently or always and carpool/sharing on a more frequent basis by 19.8% of respondents. These results show that participants' priority remains on their individual health and safety or economic and psychological benefits rather than the global environment.

Barr, Gilg, and Ford (2001) pointed out differences between the reuse behavior and the recycling behavior. They explained that the reuse behavior focuses on environmental values. The recycling behavior concentrates on the acceptance of normative behaviors, knowledge, and perceived benefits of recycling. Therefore, recycling is not a value-based behavior. In turn, waste minimization and reuse behaviors are undertaken by a minority of the public (Barr et al., 2001). Similarly, per the results of the survey, 69.1% respondents declared that they frequently or always prefer to repair or change defeated parts of durable goods rather than purchase a new item. Respondents (95.7%) preferred to buy a new mobile phone, camera, computer, or other durable good rather than buy second-hand or rent. Thus, traditional views on ownership should be challenged. Turkish consumers must be made aware of the benefits of other ownership methods such as reuse, trade-ins, and hiring.

Global economic growth is fragile in a postrecessionary environment. Consumers are more careful about their spending as conspicuous consumption replaces conscious consumption. With the new consumerism stream, consumers are reevaluating their values and priorities, focusing on "getting the most out of life." Consumers are now expected to be increasingly open to re-use, trade-ins, and durable goods and this means a transition to a new culture.

Regarding demographics, consumers' CE awareness has a positive correlation with the level of education. The environmental protection behavior of Turkish consumers is positively correlated to their age. Therefore, programs to promote proenvironmental behaviors should target younger age groups.

## **Consumer Awareness and Degree of Engagement With Circular Economy Practices**

In conclusion, Turkish consumers practice selective waste efforts as they protect the environment through energy and water savings. As mentioned, although public authorities, private organizations, and non-governmental organizations set goals and promote CE; Turkish consumers do not have a clear understanding of CE or how they can contribute to its promotion. However, the critical success factor for a successful transition to CE is to increase public awareness for the concept CE and to inform consumers about the benefits and the reasons of the need for the change from the dominant economic model. Authorities should carefully define strategies to increase consumer awareness as to how their consumption behaviors impact both the environment and the economy. Special focus should be given to address CE is not primarily about recycling and/or waste management. Other CE practices including rentals, substitutes, and repairs should be brought to the attention of consumers. Government policies will only attain success with the public's support for the transition to a new culture of CE. This study attempted to understand where consumers—the pivotal actors of the marketing domain—stand in the process of supporting and building this new culture.

As Akkucuk (2017) indicated, aspects of sustainable development relate to many disciplines, including politics, ecology, economics, and management. Thus, there will be an inevitable need to integrate issues of sustainability with traditional areas of management (Akkucuk, 2017). However, this brings new challenges. To support the CE transition, marketing academicians and professionals must revisit, and if there is need, must redefine basic marketing concepts related to exchange, identity, loyalty, desire, trust, and value.

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## **KEY TERMS AND DEFINITIONS**

**Consumer Awareness:** The buyer's knowledge of a particular product or company.

**Circular Economy (CE):** An economy designed to keep products, components, and materials at their highest utility and value.

**Green Products:** Products that have less of an impact on the environment and human health than their equivalents.

**Reasoned-Action Approach:** A framework for the prediction and change of human behavior.

**Recycling:** To treat or process (used or waste) materials for reuse.

**Sustainable Development:** An economic planning approach to foster economic growth while ensuring quality of environment for future generations.

**Waste Management:** Collection, transportation, and disposal of waste products.

## Chapter 9

# Accounting Perspective for Sustainable Supply Chain Management: Focus on Sustainability Reports

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### **ABSTRACT**

*Growing interest in sustainability has gained momentum due to increased globalization. Especially the proliferation of international trade has reinforced the importance of sustainability in supply chains. Internal and external stakeholders are also willing to be informed about these sustainability practices. Accounting provides a proper communication media with sustainability reports. Hence, accounting ensures its relevance in preparation of reports with the inclusion of required information. Additionally, uniformity is brought among sustainability reports that increase comparability and understandability of them. The aim of this chapter is to reveal how companies represent their sustainable supply chain practices in sustainability reports. At the result of the research on companies in Borsa Istanbul it is found that preference for local suppliers, sustainability assessment for suppliers, raw material sustainability, product safety and quality and stakeholder engagement are commonly represented practices that are related with sustainable supply chains.*

### **INTRODUCTION**

Sustainability has become increasingly vital for companies. It is clear that health of a company is tightly bound to well-being of stakeholders, community and environment. Companies understand that taking sustainability into their agenda is a must both for long-term success and for creating value for the community they live in. Globalization has a significant role in spread of sustainability concerns among companies. This is a two-way role. Because reasons for raising sustainability concerns majorly aroused due to globalization race of companies. And on the other side in fast spread of sustainability, globalization has an undeniable effect.

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## ***Accounting Perspective for Sustainable Supply Chain Management***

Globalization and proportionately boosted international trade have also increased dependency on supply chains. Owing to increasing sustainability concerns and high impact zone of supply chains on sustainability, “sustainable supply chains” are getting much interest recently. According to the commonly cited definition of Seuring and Muller (2008) sustainable supply chain management (SSCM) is defined as “the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements.” Companies which are taking action regarding sustainability pursue improving their social and environmental performance for both products and processes besides economic performance. Through sustainable supply chains companies aim to create value for all stakeholders who are involved in any stage of production, consumption, and supply of goods and services to customers. Value created may be environmental, economic or social. Also, it should be noted that companies need to care for protection and improvement of long-term value as well as creation of value. Securing sustainability in supply chains also provide company transparency and legitimacy in their operations.

Informing related parties about sustainable chain management practices is important as well as engaging in these kinds of activities. Positive and negative impacts of companies should be transparently disclosed to stakeholders. The aim of this study is to emphasize the role of accounting in reporting sustainable supply chain practices of companies.

Accounting’s main function is to provide relevant financial information to the related parties to be used in their economic decision-making process. As a result of globalization and ever-changing company environment, scope and process of accounting have been evolving. Most recently stakeholders demand information regarding social and environmental performance of the company as well as economic performance. Also, competitive pressure and some other motivations make managers more willing to share this information. Accounting needs to fulfill these requirements in order to retain its relevance. (Buritt and Schaltegger, 2014).

Terms such as corporate social responsibility reporting (CSR reporting), triple bottom line, social responsibility reporting, and some other synonymous terms may be used instead of sustainability reporting. They are representing basically the same thing. Also, all of these reporting efforts may be seen as a vital part of integrated reporting that joins together both financial and non-financial information. Sustainability reports provide means that a company may convey valuable information for decision making or accountability considerations regarding economic, social and environmental aspects of company activities (Elkington, 1988). These activities involve all goods, processes, governance models, value creation. Sustainability reports are vital tools for communicating either for positive or negative practices about sustainability. Additionally, it provides some advantages for company; such as measurement of social, environmental and economic performance before reporting to the related parties. Measurement brings a better understanding of practices and undesirable or unfavorable practices may be managed more effectively.

This paper aims to set out the significance of sustainable supply chain practices within sustainability reports or more broadly within integrated reports. Hence there are two main concerns in this study. Initially, sustainability reports that are devised to communicate economic, environmental and social practices and impacts will be analyzed. Then significance of sustainable supply chains will be held in depth. In line with the affinity of companies towards sustainability, sustainable supply chain practices have also increased distinguishably. It is important for companies to prepare sustainability reports faithfully, to reflect positive and negative impacts transparently and present them to stakeholders. There are



some substantial efforts that would help companies to prepare and present this valuable information. Despite the increasing number of companies that prepares these reports, these kinds of reports are not mandatory in many countries and any of these efforts may not be named to be as commonly accepted. In this study, it will be attempted to provide a framework that would help academicians and practitioners regarding sustainable supply chains.

## **BACKGROUND**

Inhabiting for millions of human being and other creature for thousands of years, our poor earth has been exhausted very much. In recent years, particularly in last 60 years, damage caused by human beings is overwhelming. As a result of concrete and worrying environmental and social shocks (such as climate change), it has been started to be realized that earth with its limited resources is falling short of meeting our greedy expectations. Besides fast depletion of natural resources, allocation of these resources may not be labeled as “fair”. Subsequent to these concerns about consumption of resources, sustainability issues started to be held at global scale.

The term of sustainability initially mentioned in the declaration of United Nations at “World Charter for Nature” that aims to revise previous resolutions which target “...recognition of the supreme importance of protecting natural systems, maintaining the balance and quality of nature and conserving natural resources, in the interests of present and future generations.” Sustainability is referred in the form of “sustainable productivity” as in the following phrase: “Ecosystems and organisms, as well as the land, marine and atmospheric resources that are utilized by man, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they coexist.” It can be seen that sustainability is indicated as protection and maintenance of nature. Therefore, it can be inferred that the initial proposition of sustainability was aiming environmental concern besides economic development.

Being formed on the notion of scarcity of resources, economics naturally deals immensely with topic of sustainability. Hence sustainability is usually being used interchangeably with sustainable development. Brundtland Report (1987) which is prepared by World Commission on Environment and Development (WCED) is the most notable work that drew attention towards sustainable development and proposes measures against sharing a common world in welfare.

According to Brundtland Report (1987), conceiving historical development of the concept, sustainable development is mentioned as in the following: “Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Kuhlman and Farrington (2010) state two major developments regarding sustainability since Brundtland Report. One of these developments is indicated as strong and weak sustainability. Weak and strong forms of sustainability depend on the views that exhaustion of some natural resources is inevitable therefore some man-made solution should be developed in replacing these natural resources and natural resources should not fall below a limit that is essential for survival. Former view is named as weak and the other one is named as strong form of sustainability. For instance, exhaustion of fossil fuels is not a matter of problem as far as new energy sources. This is an example of weak sustainability. Beside some natural resources should not fall below a given level. Hence, these two akin terms point out two dif-

ferent aspects of the same concept. If strong sustainability is standing for “a space delimited by (such) thresholds”, weak sustainability is “yardstick by which policy outcomes within that space are judged.”

The other major development is about the content of sustainability. While preliminary concerns were around environmental issues and nature, today economic, environmental and social dimensions are counted in. A three-dimensional view of sustainability is devised by Elkington (1998) in the form of Triple Bottom Line (TBL) Reporting as a mean for informing related people about sustainability activities of companies. Hence operationalization of sustainability by companies occurred in the name of “corporate sustainability.” It is hard to assert that there is one, ideal model of corporate sustainability that would fit all type of companies.

Companies develop and introduce values and back these values with complementary organizational structures related with sustainability, depending on the development phase, awareness and ambition level of companies. Newly emerging challenges are held with a similar pattern and appropriate new strategies are developed that lead up to a sustainability development sequence (Marrewijk and Werre, 2003: 107). Depending on these arguments Marrewijk and Werre (2003) make a broad and may be a vague definition of corporate sustainability as follows: “a company’s activities – voluntary by definition – demonstrating the inclusion of social and environmental concerns in company operations and in interactions with stakeholders.” Under this definition, a three-dimensional view is underlined giving a huge room in operationalization of sustainability depending on capabilities and motivations of companies.

This broad definition given above can be made more practical for practitioners and academicians to better understand sustainability efforts and to measure sustainability performance properly with a multidimensional definition and framework. Amini and Bienstock (2014) propose this multidimensional view that depends on a concentrate literature review. It is composed of (1) company level application and communication; (2) scope of organizational focus; (3) sustainability-oriented innovation; (4) economy/ecology-environmental/equity- social emphasis; and lastly (5) compliance stance. These five dimensions are organized in order of four levels of sophistication, where, for a given, dimension level 1 represents little or no efforts towards sustainability and level 4 high compliance with requirements. For instance, for the first dimension (company level application and communication) a company categorized in the most unsophisticated level does not have and need any communication means that would be used for internal or external purpose as there is nothing notable to be reported. However, for the other end of the line, companies at the most sophisticated level provide highly detailed information that would be communicated to internal and external users (Amini and Bienstock, 2014, pp. 15-16).

Attainment of sustainability at corporate level is highly related with embracing strategic management processes for keeping a balance among economic, social and environmental goals and values and ensuring information flow through corporate information systems such as quality control, human resources, communication management. Some specimen measures taken by companies such as waste management or philanthropic activities and donation can be only listed within shallow definition of sustainability. Enlarged responsibility of companies for every stakeholder, which was previously limited to shareholders, requires expansion of these responsibilities to each and every process, measurement, audit, and reporting of impacts given by the company. Therefore, the mission of a company should encompass attainment of sustainability, being respectful for human rights and stakeholders, management of environmental impacts of goods and services provided, striving with any kind of corruption and incorporating stakeholders in decision making processes besides making profit (Van Het Hof and Hoşut, 2015, p. 131).

Besides many important aspects of corporate sustainability, it cannot be asserted that the process is complete unless useful information is communicated to related parties. Stakeholders get useful informa-

tion that can be used in decision making process. Additionally, sustainability performance of companies may be measured accurately by the help of sustainability reports. Sustainability accounting takes its role at this point. Findings according to the most comprehensive survey about sustainability reporting, KPMG Survey of Corporate Sustainability Reporting (2017), 60% of every sector has sustainability reporting. This survey is conducted on top 100 companies (N100) from 49 countries and 250 companies (G250) with the highest revenue in Fortune 500. Reporting rate for N100 companies has risen from 12% to 75% since 1993 to 2017 and for G250 companies, which are named as more reputable, has risen from 35% to 95% since 1999 to 2017. It can be deduced that there is a race for preparing sustainability reporting. More and more companies are integrating non-financial information to their annual reports or preparing integrated reports. New regulations, requirements of security exchange markets and investor demand for this kind of reporting has adjuvant effects. Climate related financial risk, compliance with UN Sustainable Development Goals, human rights, and carbon reduction targets are standing as trends in sustainability reporting. The role of supply chains particularly for climate change related risks and assessment of human right is underlined (KPMG, Survey of Sustainable Reporting, 2017).

There is a growing body of study on sustainable supply chains. However, the number of studies investigate the relation between SSCM and sustainability reporting or sustainability accounting is limited. One of the most comprehensive studies is conducted by Burritt and Schaltegger (2014). Broadening role of accounting for covering issues related with sustainability held in the study particularly for SSCM. Scope and terminology problems are highlighted, the need for sustainability focus and interdisciplinary teams are underlined. Foran et al. (2005) held SSCM with the framework of triple bottom line accounting. It is concluded in the study that standardization should be brought and significance of measurement of sustainability, life cycle thinking, and a narrower but deeper analysis is underlined. Meckenstock et al. (2016) calls the gap between expectation of stakeholders from SSCM and what SCCM really is as a “wicked problem”. It is attempted to fill this gap by the help of sustainability reports through suggesting practical solutions. Another extensive study is conducted by Tate et.al (2010) by devising content analysis on 100 socially responsible companies from a wide range of industries, size, and geographical region. Consequently, ten themes are identified that would be used by companies in order to improve their SSCM practices. Besides these international studies, there is no study conducted in Turkey that analyzes significance of SSCM for sustainability reports and how SSCM practices may be improved. In this study, it is aimed to contribute the literature with evidence from Turkey.

## **SUSTAINABILITY REPORTING AND SUSTAINABLE SUPPLY CHAIN MANAGEMENT**

It can be stated that less or more there is a consensus regarding definition of sustainability and corporate sustainability. However, there is relatively less harmony in how to measure, operationalize and interpret activities related with sustainability. It is apparent that concerns are rising about preservation of resources and creation of value for future generations. Interpretation of how value will be created by companies gives rise to different applications (Meckenstock et al., 2016, p. 449). Accounting can be devised in order to provide practical solutions. Basic role of accounting that encompasses supply of relevant financial information may be enlarged in a way that it will include all information related with sustainability (Burritt and Schaltegger, 2014, p. 328) Accordingly, development stages followed in sustainability accounting that are similar to conceptual development in sustainability ascertains the situation.

As a newly emerging subject, there is no commonly accepted definition for sustainable supply chain and hence its scope is also not well-defined. This provides room for development of new ideas and practices (Min and Kim, 2012). Nonetheless, it becomes difficult for stakeholders to interpret and measure companies in terms of sustainability. Accounting can be helpful in bringing uniformity.

In this section, it will be attempted to outline sustainability reporting and significance of sustainable supply chain practices in this kind of reporting efforts. Initially, sustainability accounting practices will be explained in terms of historical development, reporting initiatives and benefits of sustainability reporting. Then sustainable supply chain practices will be discussed and role of accounting in communicating these activities to stakeholders will be pointed out. Lastly, research on manufacturing companies listed in Borsa Istanbul Sustainability Index will be exhibited.

### **What Is Sustainability Reporting?**

Information has a critical role in economic decision-making process. Both investors and managers, parties who supply capital and parties who make investments with this capital need information. Rational decision can be made as far as relevant and reliable financial information is provided. However, structure and content of information in the twenty-first century have changed to a large extent in comparison to last two centuries. Previously companies were relying on physical capital that makes “valuation” approach in information provided more important. Today companies are more knowledge based. This means that they rely on more intellectual capital in generation of intangible assets. Therefore, traditional performance measures such “net income” fall short of real performance of today’s innovative companies. Since they do not represent many assets on their books and related income is forfeited until they are realized. “Stewardship” approach would be more suitable for this kind of companies as this approach takes into account all stakeholders and control for conflict of interests (Zimmerman, 2015). One view related to stewardship specifies that managers also should be concerned with stewardship of economic and social resources as well as financial resources of the company. In this context, one of tenets of stewardship becomes ensuring sustainability (Aras and Crowther, 2008, pp. 23-24).

Sustainability reporting is derived as a report that communicates concerns about sustainability. Therefore, it should encompass how companies fulfill the requirements or respond to challenges about sustainability. In this sense, a sustainability report should contain both quantitative and qualitative information regarding how effective and efficient a company’s economic, environmental and social activities (Daub, 2007). Definition of World Business Council for Sustainable Development (WBCSD) can be used as a reference point. According to this definition “sustainability reporting is defined as “public companies by companies to provide internal and external stakeholders with a picture of companies’ position and activities on economic, environmental and social dimensions.””

Following the definition, it can be deduced that it takes ground on the three-dimensional view of Elkington (1998). It is not possible to ignore how influential this view is, and it covers all aspects of sustainability that is commonly accepted today. However initial forms of sustainability reporting were not similar to recent reports. If history of sustainability reporting is examined, it can be seen that trends in content of sustainability reporting changed in accordance with the perspectives on sustainable development. Financial reporting was being supplemented with social performance indicators in 1970s. In the 1980s environmental reports that focus on waste management and emission were commonly being prepared by companies. After late 1990s context of sustainability reports broadened, and these reports

comprise of impact of companies on economic, environmental and social issues especially due to globalization (Hahn and Kühnen, 2013; Kolk, 2003).

“Sustainability reporting” term is being used throughout this study. However, companies may use different titles for their reports that encompass economic, environmental and social dimensions of sustainability. According to a survey conducted by KPMG (2013) on 100 largest companies from 41 countries (4,100 companies totally), terminology used for this kind of reports are sustainability, corporate social responsibility, corporate responsibility, sustainable development, corporate citizenship, environmental and social report, people, planet and profit, corporate responsibility and sustainability. Most commonly used ones stand out as sustainability (43%), corporate social responsibility (25%) and corporate responsibility (14%) (Frequency of given terminology in percentages are indicated in parenthesis).

Whatever name is given for the reports, it is uncontroversial that there is a trend in companies towards sustainability reporting. Reporting motivations of companies are frequently discussed specifically under two theories. They are namely legitimacy theory and stakeholder theory. Legitimacy theory specifies that companies tend to comply with what society is expecting from the company in order to change the perception of the company. According to stakeholder theory, values of the company are for stakeholders and companies use sustainability reports in order to exhibit company values and establish a strong relationship between stakeholders. There are studies that both support legitimacy theory and stakeholder theory. Hence it is not possible to state that one theory is weighing over the other one. Additionally, although many of the countries do not mandate preparation of sustainability reports number of companies that prepare these reports are increasing over time (Ching, 2014). It is apparent that there are various benefits obtained by companies in return of their efforts. Probable benefits of sustainability reporting are listed as in the following (Kolk, 2004; EY Report, 2013):

- Enhanced corporate reputation
- Refined corporate vision
- Legitimacy to operate
- Means to communicate company view about sustainability
- Decreased cost of capital and enhance credibility due to increased transparency
- Ability to monitor cost reductions, efficiency, enhance human capital, increased customer loyalty
- Increased compliance with regulations
- Better performance measurement (economic, environmental and social)

Despite benefits stated above, it can be observed that not all of the companies are preparing sustainability reports. There are some reasons that rationalize this management decision. Initially it is very time and money consuming activity to prepare these reports. If anticipated benefit of preparation of these reports do not exceeds its cost, company managers may prefer not to prepare. Managers may also doubt the benefits of sustainability reports. Lastly, managers may not be willing to damage company reputation due to inappropriate practices in order to avoid legal sanctions and not to wake up “sleeping dogs” (Kolk, 2004).

## **Sustainability Reporting Initiatives**

“Reporting” aims to communicate useful information to related parties about the performance of the company. For any kind of information to be useful under accounting practices, it should carry some

## ***Accounting Perspective for Sustainable Supply Chain Management***

qualitative characteristics. Understandability and comparability are included among these characteristics. In order to bring uniformity for sustainability reporting various initiatives are established. United Nations, Coalition of Environmentally Responsible Economies (CERES), International Integrated Reporting Council (IIRC) and Organization for Economic Co-Operation and Development (OECD) may be counted within the institutions that are involved in these initiatives. Some of them are in the form of frameworks that provide guidelines on how to report sustainability efforts and others are in the form of standards that should be followed by companies. Global Reporting Initiative (GRI) is the most commonly used framework among those according to academic studies and KPMG Sustainability Survey (2017). In this section outstanding and commonly accepted frameworks and standards will be examined in detail.

### **Global Reporting Initiative (GRI) Standards**

GRI sustainability reporting framework stands out among other guidelines as being the first and most comprehensive one. GRI is an independent organization that is formed by United Nations Environment Programme as a Collaborating Centre. It aims to help communication of sustainability issues such as climate change, human rights, governance and social well-being by governments and companies. Another aim of the organization is the creation of a common language. Until 2016, G4 was the ultimate guideline provided by GRI in which economic, environmental and social impacts would be reported. In 2016, GRI Standards were published in order to bring more clarity and a simpler language. Standards are composed of two parts; universal standards and topic specific standards. Under universal standards, there is GRI 101 which is prepared for any type of company from any sector or geographic location as a starting point. Reporting principles which define reporting content and quality are described within GRI 101. Principles that describe the reporting content are stakeholder inclusiveness, sustainability context, materiality, and completeness. Accuracy, balance, clarity, comparability, reliability, and timeliness are principles that define reporting quality. Besides GRI 101, there are also GRI 102: General Disclosures and GRI 103: Management Approach under universal standards part. GRI 102 provides contextual information on organizational profile, strategy, ethics and integrity, governance, stakeholder engagement, and reporting practice. Under GRI 103, it is reported how company identifies, analyzes and responds to economic, environmental and social actual and potential impacts. In addition to universal standards, there are topic specific standards which give information on three dimensions of sustainability. GRI 200 is prepared to report economic impacts of the company and it is composed of subsections as economic performance, market presence, indirect economic impacts, procurement practices, anti-corruption, and anti-competitive behavior. Under GRI 300 environmental impacts are reported. Materials, energy, water and effluents, biodiversity, emissions, effluents and waste, environmental compliance and supplier environmental assessment are specific topics listed according to GRI 300. Finally social impacts are reported under GRI 400 which are employment, labor/management relations, occupational health and safety, training and education, diversity and equal opportunity, non-discrimination, freedom of association and collective bargaining, child labor, forced or compulsory labor, security practices, rights of indigenous peoples, human rights assessment, local communities, supplier social assessment, public policy, customer health and safety, marketing and labeling, customer privacy and socioeconomic compliance. Each subsection under GRI 200, GRI 300, and GRI 400 has various titles that give further information. Companies may prepare sustainability reports starting with universal standards and further information may be provided with topic specific standards. Companies are required to include a corresponding claim or statement of use in their sustainability reports with a set wording in order to prove that reports are in

accordance with GRI Standards. GRI Standards are not subject to any certification or any assurance is not required. However external assurance may be provided by companies in order to enhance the reliability of the reports (GRI Standards, 2016).

### United Nations Global Compact (UN Global Compact)

UN Global Compact is a voluntary initiative set by United Nations in order to get company commitments to implement sustainability principles. Also, it aims to make companies take steps to support UN goals. UN Global Compact has two tiers. One of them is Ten Principles of Global Compact which may be named as universal principles that require companies to meet fundamental responsibilities such as environment, human rights, labor, and anti-corruption. These principles are listed in the following (UN Global Compact):

**Principle 1:** Businesses should support and respect the protection of internationally proclaimed human rights

**Principle 2:** Make sure that they are not complicit in human rights abuses

**Principle 3:** Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining

**Principle 4:** The elimination of all forms of forced and compulsory labour

**Principle 5:** The effective abolition of child labour

**Principle 6:** The elimination of discrimination in respect of employment and occupation

**Principle 7:** Businesses should support a precautionary approach to environmental challenges

**Principle 8:** Undertake initiatives to promote greater environmental responsibility

**Principle 9:** Encourage the development and diffusion of environmentally friendly technologies

**Principle 10:** Businesses should work against corruption in all its forms, including extortion and bribery

The other group of principles is composed of 17 Sustainability Development Goals (SDG) and they aim to divert companies towards UN Sustainability Development Goals by 2030. This is a multi-year development strategy that enhances awareness and actions regarding sustainability (UN, Sustainable Development Goals).

Universal Declaration of Human Rights, International Labour Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development and United Nations Convention against Corruption are origins of UN Global Compact. Companies have to be a signatory in order to declare their commitments for UN GC. Besides they may state their commitment with statements in their sustainability reports and when needed SDGs may be referred (UN Global Compact).

### Sustainability Accounting Standards Board (SASB) Standards

Sustainability Accounting Standards Board is an independent standard setting institution that aims to establish and maintain standards on sustainability. Therefore relevant, reliable and comparable information may be produced that would help stakeholder in their decision-making process. SASB has published 77 industry-specific standards that are globally applicable. In preparation of these standards, a Conceptual Framework and a Rule of Procedures are followed as in the case of financial reporting standards (such as International Financial Reporting Standards). Additionally, a materiality map is provided on SASB

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Table 1. United Nations Sustainable Development Goals (SDGs)

SDG 1	No Poverty
SDG 2	Zero Hunger
SDG 3	Good Health and Well-Being
SDG 4	Quality Education
SDG 5	Gender Equality
SDG 6	Clean Water and Sanitation
SDG 7	Affordable and Clean Energy
SDG 8	Decent Work and Economic Growth
SDG 9	Industry, Innovation and Infrastructure
SDG 10	Reduced Inequalities
SDG 11	Sustainable Cities and Communities
SDG 12	Responsible Consumption and Production
SDG 13	Climate Action
SDG 14	Life below Water
SDG 15	Life on Land
SDG 16	Peace, Justice and Strong Institutions
SDG 17	Partnership for the Goals

web site that is exhibited in the form a matrix composed of industries and general issue categories. This materiality map may ease the way in preparation of sustainability reports. Industries included are consumer goods, extractive and mineral processing, financials, food and beverage, health care, infrastructure, renewable resources and alternative energy, resource transformation, services, technology and communication, and transportation. Furthermore, additional categories are provided under these industries. Companies are expected to give information on environment, social capital, human capital, company model and innovation and leadership and governance (SASB Standards Application Guide).

### AccountAbility Standards (AA 1000)

AccountAbility is a company that operates globally in order to provide guidance for companies, governments, and multi-lateral organizations regarding sustainability matters and enhancement of long-term performance. AccountAbility publishes a group of standards named as AA1000 and a conceptual framework. AA 1000 Standards are principle-based standards. Companies which prefer preparing sustainability reports according to this set may require for assurance from a company licensed by AccountAbility. AccountAbility also publishes assurance standards that should be followed by companies providing assurance service.

Conceptual Framework published by AccountAbility covers the following titles:

- Type of organizations
- Supply chain lifecycle
- Boundaries of disclosure maintained in company reporting



- Differing definitions used
- Inter-relationships between connected AccountAbility Standards in the AA1000 series

In addition to the framework, companies should follow principles. AccountAbility Standards are based on principles of inclusivity, materiality, responsiveness, and impact. Inclusivity refers to inclusion of every stakeholder of the company in regards of the sustainability reports. All of the significant issues should be disclosed by the company in accordance with materiality principle. Responsiveness refers to actions taken by companies in response to material sustainability issues. Lastly, companies should monitor, measure and be accountable for impact of their actions in accordance with impact principle.

### **Social Accountability 8000 (SA 8000)**

Social Accountability 8000 (SA 8000) is a social certification standard established by Social Accountability International in 1997. This standard only emphasizes social dimension of sustainability and social performance of a company is reported under eight areas identifies by SA 8000. These areas cover child labor, forced or compulsory labor, health and safety, freedom of association and right to collective bargaining, discrimination, disciplinary practices, working hours, remuneration and management system. These criteria described under SA8000 reflect the provisions within Universal Declaration of Human rights and International Labour Organization (ILO) resolutions. Covering only one aspect of sustainability SA8000 is applicable by numerous sectors.

### **Carbon Disclosure Project (CDP)**

Carbon Disclosure Project is originated on measuring environmental impact given by economies, cities, and companies in order to prosper an economy for people and planet in the long run. CDP provides a platform in which participant may include their self-reporting data collectively from 50 countries. Guidance is prepared by CDP for parties who are willing to disclose environmental impact data in order to help in this exhausting process. As a result of contribution of cities and companies the largest database has been established including disclosures on greenhouse gas emissions, water use and climate change strategies. Companies are also scored in accordance with their disclosures. However, these scorings are not conclusive due to its lack in inclusivity of all of the impacts given by a company.

### **ISO (International Organization of Standardization) Standards**

ISO is an independent, non-governmental organization that is established in 1946 with delegates from 25 countries. Today number of member countries increased to 163. ISO publishes international standards for many industries such as technology, food safety, agriculture, healthcare, etc. There are 22468 standards published by ISO that bring some specifications regarding products, services, and systems in order to ensure quality, safety and efficiency. Some of these standards provide guidance on matters related with sustainability. For instance, ISO 9001 Quality Management Principles ensure that customers are receiving good quality goods and services consistently. Specifications that are included in ISO 9001 are “strong customer focus, motivation, and implication of top management, the process approach and continual improvement”. Another commonly referred standard is ISO 14001 Environmental Management Systems. ISO 14001 attempts to environmental dimension of sustainability. In this respect, topics

included in the standard are “enhancement of environmental performance, fulfillment of compliance obligations, and achievement of environmental objectives.”

## **How Sustainable Supply Chain Management Is Anticipated in Sustainability Reports?**

Under a supply chain, companies engage in collaborative activities and operations in order to provide the required good or service to final customer as a result of a value creation process (Braizotis, 2013, p. 648). Economic efficiency is main consideration for traditional supply chains. Following sustainability trend environmental and social aspects of activities and operations needed to be considered during processes. Hence SSCM concept emerged. Many perspectives may be listed in handling the issue of supply chain management in terms of sustainability. However, after a review of literature, it can be concluded that main focus is on triple bottom line view and they gather around Brundtland report. Accordingly, a comprehensive definition for SSCM is made by Ahi (2013) after an extensive literature review. The definition of SSCM is made as in the following (Ahi, 2013, p. 339):

The creation of coordinated supply chains through the voluntary integration of economic, environmental and social considerations with key inter-organizational company systems designed to efficiently and effectively manage the material, information, and capital flows associated with the procurement, production, and distribution of products and services in order to meet stakeholder requirements and improve the profitability, competitiveness, and resilience of organization over the short- and the long-term.

Owing to the newness of the concept, debates continue over its definition and context. However, this can be taken as advantage that would help development of better practices and fulfillment of emerging needs of stakeholders that change due to the perception of sustainability (Min and Kim, 2012). Moreover, beyond these discussions, companies are making efforts towards adopting SSCM either with internal motivations or competitive stimulus. At this stage depending on origin of the motivations or capabilities different strategies may be implemented. While some companies may select more elementary strategies such as recycling, waste reduction that would provide a cosmetically better view, some other companies embrace a deeper change. Companies that held the issue more seriously embrace a change including lifecycle approach for products and support with proper investments for process and other mechanisms (Shrivastava and Hart, 1995). For SSCM, two strategies are proposed by Seuring and Müller (2008). One of the strategies is named as “supplier management for risk and performance” and the other one is named as “supply chain management for sustainable products”. Companies prefer the first strategy because they fear of losing their reputation due to some problems related with supply chain. They try to comply with environmental and social standards in order to prevent any problem. Under the latter strategy companies depend on life cycle management for products that are main focus of developing a sustainable supply (Seuring and Müller, 2008).

Beske and Seuring (2014) provide a comprehensive framework that is composed SSCM practices that grouped under five categories. They are namely orientation, continuity, collaboration, risk management, and proactivity. These categories are considered as key factors in achievement of a successful SSCM. Orientation represents the willingness of the company for sustainability practices. Company culture is determinant of its orientation. Orientation may be either “Dedication to Triple Bottom Line” in which three aspects of sustainability managed in balance or “Dedication to Supply Chain Management” in which supply chain is considered in day to day activities. Under continuity, the main focus is on continuity of whole overall supply chain performance rather than performance of a single supply chain collaborator.

Supply chain partner development and selection and long-term relations are key practices under continuity category. Collaboration in a sustainable supply chain should be attained both at structural and operational levels. Enhanced communication, logistic integration, technological integration, and joint development are suggested practices. It is commonly thought that sustainability is more important for environmentally and socially risky type of companies. Therefore, in order to develop a sustainable supply chain risk management should be handled carefully. Certifications and standards are basic steps towards risk management. Besides selective monitoring may support risk management activities. Lastly, pressure groups should be closely observed in order to respond quickly. Acting proactively is very important for companies tracking sustainability. Because, continuously, they are stepping over new areas. Suggested practices are innovation, life cycle assessment, stakeholder management, and learning. In a similar study, by Dubey et. al (2017) twelve themes that would be helpful in development of a strong sustainable supply chain are listed as follows: green warehousing, strategic supplier collaboration, environment conservation, continuous improvement, enabling information technologies, logistics optimization, internal pressures, institutional pressures, social values and ethics, corporate strategy and commitment, economic stability and green product design. It can be seen that some of the criteria for building an adequate SSCM are same. However, it should be noted that success of a SSCM depends on the orientation of the company. Company culture should be consistent with the sustainability view. This may be stated as one major reason for companies being unsuccessful on their road to sustainability. SSCM should be seen as a shared value creation process rather than a “damage control” (Porter and Kramer, 2006).

There are some other studies that provide guidance on development of better practices related with SSCM (e.g. Gopalakrishnan, Yusuf, Musa, Abubakar and Anbursa, 2012). It cannot be stated that accounting is separately indicated. However, it is definite that accounting would be undeniable contributions in performance measurement, benchmarking, auditing and reporting. Some accounting types are commonly indicated as helpful tools in SSCM; such as environmental accounting, environmental management accounting, activity-based cost, material flow cost accounting, carbon accounting, and eco control, water accounting and balanced score cards (Burrirt and Schaltegger, 2014).

One of the main functions of accounting is reporting. Accountants aim to disclose all relevant and reliable information to decision makers on a timely basis. In accordance with the developments in sustainability, scope of reporting has been extent in order to meet information requirements of stakeholders. Hence accountability of company is enhanced via appropriate reporting vehicles.

Additionally, companies tend to have different approaches towards application of sustainability. This is a result of multidimensional nature sustainability that makes companies keep a balance among these dimensions. As it is not always possible to ensure a “win-win” situation, companies bundle a mix of SSCM practices that are in compliance with company culture. However, for a more SSCM may be achieved solely through sustainability metrics. A commonly accepted approach embraced by partners in supply chain would bring uniformity and comparability. A standard framework would help stakeholders in analyzing company performances. Transparency and risk of uncertainty would dramatically decrease (CERES, 2010). Moreover, decision support required by managers may be fulfilled by accountings reporting function in ambiguous, globalized, logistics oriented, and new communication settings in order to attain a sustainable supply chain (Burrirt and Schaltegger, 2014).

According to KPMG Survey of Corporate Responsibility Reporting trend topics are reporting on climate related financial risk, UN SDGs, human rights and carbon reduction targets. SSCM is not specifically listed. However, it is highly correlated with these topics. For instance, physical damaged caused on supply chain by climate change embody risks on financial system. Vulnerability of supply chains to

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weather events may endanger supply chains. Companies attempt to reduce their indirect emission through controls on supply chains. Therefore, it is important to identify and reduce sustainability related risk in supply chains such as climate chain and human rights (KPMG, 2017). Sustainability reports provide useful tools for companies and stakeholders monitor and manage these risks. SSCM should be mentioned and held in sustainability reports for more reliable and relevant information.

Some of the guidelines on sustainability reporting mention specifically about supply chain management practices. As previously mentioned, GRI Standards are composed of two parts. Under universal standards companies are expected to give general information regarding their sustainability efforts. Supply chains are mentioned under GRI 102: General Disclosures. According to the Standard:

*The reporting organization shall report the following information: A description of the organization's supply chain, including its main elements as they relate to the organization's activities, primary brands, products and services.*

Type of supplier engaged, number of suppliers, geographic location of suppliers, estimated monetary value of payments made to the suppliers and sector specific characteristics such as labor intensity are examples of elements that may be included in reports. Significant changes that would have economic, environmental and social impacts should also be included. Furthermore, economic, environmental and social impacts of supply chain are set out in a detailed manner under topic specific standards. For instance, the number of jobs supported in the supply chain, support for local suppliers, negative impacts of supply chain on environment, assessment of suppliers on environmental and social impacts, customer health and safety are some elements included in the Standards.

Supply chain is not specifically mentioned in Ten Principles of UN Global Compact. However, companies may require their supplier to abide with these principles and also, they may assess suppliers for their compliance with these principles. Additionally, SDG 12 Responsible Consumption and Production and SDG 17 Partnership for the Goals are highly related with SSCM. AA 1000 do not only regulate internal operations but also management of value chain. Material topics should include supply chain matters. As well while measuring company sustainability performance, impact of supply chain should be included in (AA1000, 2018)

## **Research**

Globalization is showing up in every aspect of corporate. Sustainability is not an exception. It has an accelerative effect in fast spread of sustainability concern all over the world. Turkey also affected from this movement and in recent years there is a race among companies in terms of their sustainability efforts. The sustainability journey of Turkey dates back to participation in Rio Summit (1992) as a signatory. It has covered a great distance since then (International Investigation Report, 2016).

Motivations that divert companies, operating in specific countries, to engage in sustainability practices may be categorized as internal and external motivations. Non-governmental organizations are the most significant driving force for companies as an internal motivation source. Multinational companies that force local companies to engage in sustainability practices are categorized as external motivations. As a result of passive role of non-governmental organizations and increasing foreign direct investments by multinational companies, sustainability efforts may be borne to external motivations in Turkey. Three inter-related factors may be encountered as factors that increase sustainability practices in Turkey. They

are ever-increasing global competition, criteria of European Union and regulations of international organizations such as ILO, UN Human Rights Council and OECD (Deren Van Het Hof and Hostut, 2015)

Sustainability reporting is gaining importance as a result of sustainability concerns of companies and their stakeholders. Initial sustainability report was published in 2005. Number of companies preparing sustainability reports is increasing by then. The number reports publish in Turkey by 2016 was 75. 43% of the companies that publish sustainability report between 2005-2017 is operating in manufacturing sector. And percentage of financial institution is 35% for the same period. It can be derived that majority of reports are produced by these two sectors (Ertan, 2018). Additionally, food and beverage, construction and cement industries are outstanding among manufacturing companies (International Investigation Report, 2016). In accordance with the tendency all over the world, GRI is the mostly referred group of standards by Turkish companies. Yaz and Utku (2015) indicate that 84% of sustainability reports comply with GRI. This underlies that Turkish companies are following global trends.

In Turkey, the content of sustainability reports are varying according to public policies and country priorities. Recently topics that are usually emphasized by companies may be listed as environment, reduction of energy costs, energy efficiency, gender equality and education. The production of renewable energy, the fight against poverty through regional development and vulnerable groups are weakly mentioned topics within sustainability reports (International Investigation Report, 2016).

SSCM is one of the hot topics that should be included in sustainability reports. The aim of this study is to examine the significance of SSCM in sustainability reports prepared by Turkish companies. Hence sustainability reports of manufacturing companies that are listed in Borsa Istanbul (BIST) Sustainability Index are analyzed. Data selection, methodology and findings are discussed in the following sections.

## Data and Methodology

In accordance with the purpose of the study how Turkish companies represent their sustainability efforts related with supply chain management will examined. Some data selection criteria are determined. Initially companies are selected among companies listed in BIST Sustainability Index. Hence companies with superior sustainability reporting practices are included in this study. Companies should exceed some threshold value for criteria groups of performance indicator (social, environmental and governance) for being listed in the Index (Borsa Istanbul, Sustainability Index webpage). Additionally, owing to relative significance of supply chains for the industry and in order to enhance the comparability of findings; manufacturing industry is selected. There are 21 manufacturing companies listed in BIST Sustainability Index. Only 14 of these companies are providing stand-alone sustainability reports as of 2017. Names of companies included in analysis are given Table 2.

In Turkey, sustainability reporting is not compulsory. Therefore, any group of standards or guidelines are not specifically followed. However, GRI Standards are most commonly used one. Every company indicates their reference to GRI Standards except for one company that followed GRI G4 instead of GRI standards. Besides GRI, UN Global Compact and SDG are frequently used by companies. 7 companies indicated that they are signatory to UN Global Compact and ten companies declare their commitment to UN SDGs. ISO Standards are another commonly used standards. There are five companies participating in CDP. AccountAbility AA1000 is only being followed by two companies. One of the companies has prepared the report in the form of integrated reports that combines sustainability dimensions and financial information. Additionally, only four companies have provided assurance regarding their sustainability reports.

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Table 2. List of Companies

Ticker	Name of the Company	Industry
AKSA	Aksa Akrilik Corp.	Acrylic Fiber /Chemistry
ANACM	Anadolu Cam Sanayi Corp.	Glass Packaging /Stone
AEFES	Anadolu Efes Biracılık ve Malt Sanayi Corp.	Brewer /Food and Beverage
ARCLK	Arçelik Corp.	Consumer Durables and Consumer Electronic / Metal Good
AYGAZ	Aygaz Corp.	LPG Production / Chemistry
BRISA	Brisa Bridgestone Sabancı Lastik Sanayi ve Ticaret Corp.	Tire Production /Chemistry
CIMSA	CIMSA Cimento Sanayi ve Ticaret Corp.	Cement / Stone
CCOLA	Coca-Cola İçecek Corp.	Beverage / Food and Beverage
EREGL	Ereğli Demir Çelik Fabrikaları Corp.	Iron and Steel / Metal
FROTO	Ford Otomotiv Sanayi Corp.	Automotive / Metal Good
OTKAR	Otokar Otomotiv ve Savunma Sanayi Corp.	Automotive / Metal Good
SODA	Soda Sanayi Corp.	Soda Manufacturing / Chemistry
TOASO	Tofaş Türk Otomobil Fabrikası Corp.	Automotive / Metal Good
ULKER	Ülker Bisküvi Sanayi Corp.	Food /Food and Beverage

## Findings

Findings obtained with analysis of sustainability reports are discussed in this section. Initially, priorities of companies in preparation of reports will be set out and significance of SSCM among other sustainability issues will be exhibited. Then it will be examined how SSCM take place in reports.

## Sustainability Reporting Priorities

First, it should be stated that the supply chain is indispensable for manufacturing companies, less or more SCM is held in sustainability reports. It should also be noted that SSCM as a term only referred only for once within 14 reports. Similarly, “green logistics” term is only used for once. Every company within the sample gives information on supply chains as a separate section.

Five companies particularly indicated that sustainability matters related with supply chain or value chain are important. Eight companies also state that practices related with supply chain such as raw material procurement or sustainability, local collaboration, responsible production as significant among other sustainability matters. Remaining one company does not mention supply chain or any related practice within priorities or material issues. It can be concluded that sustainability in supply chains is highly important for manufacturing companies.

## Risk Management

Stakeholders expect companies to identify and take necessary measures for any anticipated sustainability risks. Companies make explanations regarding risky aspects of their operations and how they handle them. If any anticipated risk occurs, companies represent them on their sustainability reports.

Three companies do not include a section specifically for risk management topics. Two of the companies that have risk management section do not mention any risk related with supply chain. Remaining nine companies indicates anticipated risk and their probable responses.

For instance, ACAM and SODA, which are operating under the same group company, indicate “limited awareness along the value chain” as a risk management topic. In addition, enhancing stakeholder dialogue (suppliers and customers are also indicated) is stated as management response in order to overcome “barriers for effectiveness.” CCOLA anticipates food safety, packaging, supplier management and quality as risk related with supply chain. FORD and TOASO are two companies that give more importance to SCM risks. They held risk management and supply chain under a separate heading.

## Local Suppliers

Making contribution to the community it operates is vital for companies that prioritize sustainability. Companies that are willing to make economic contribution may prefer local suppliers. Two companies do not make any statement regarding their preference for local suppliers. Other companies either numerically or verbally indicates that they prefer local suppliers. In conclusion, it is found that companies prefer 45% or more local suppliers. Even some companies prefer 99% of total suppliers from locals. It should be noted that this preference is highly related with raw material used in production process. As far as manufacturing process is being held in areas close to raw material, percentage of local suppliers would increase proportionately.

## Supplier Assessment

In order to decrease the indirect impact, companies need to control for activities of participant within the supply chain. Therefore, it is important to assess suppliers according to their compliance with sustainability performance. Despite the variation in assessment methodology, every company in the sample assesses their supplier’s sustainability performance. Criteria used for assessment may be listed as compliance with UN Global Compact, ethical values, human rights, product quality and safety, cost and efficiency. In addition, companies regularly audit their suppliers whether criteria are still met. Three of the companies indicate that they train their suppliers, and this is a useful tool in empowering sustainable supply chain.

Practices of ARCLK stand out among other companies. Therefore, it is found necessary to mention them in order to exhibit best practices. Besides practices stated above, ARCLK carries out a project names as “Supplier Company Transparency Project” to raise awareness regarding sustainability among suppliers. This project was awarded by Chartered Institute of Purchasing & Supply in Europe with “Best Contribution to Corporate Responsibility.” ARCLK accompanies 12 of its suppliers in preparation of their own sustainability reports. Additionally, in order to enhance awareness about energy and efficiency on “Supplier Day” suppliers with outstanding energy performance are rewarded. Furthermore 10 of suppliers were rewarded for worthy performance and three suppliers were rewarded for special prize in accordance with Performance Driven Supplier Management System. Lastly ARCLK initiated “Sustainable Supplier Index” in 2017 to monitor its strategic suppliers in terms of risk and high-risk categories.

## **Raw Material Sustainability**

Production processes start with raw materials. Therefore, it can be stated that selection of sustainable raw materials is the building block for sustainability, especially for manufacturing companies. Compliance with SDG 12 Responsible Consumption and Production may be an indicator of a company's concern for sustainability in raw material. Ten companies indicate that they make efforts towards SDG 12.

Despite the importance of raw material, two of the companies do not make any statement regarding raw material consumption. Remaining companies state their efforts for reduction in usage of raw material or development of alternative raw materials. Raw material concern is more intense for food and beverage companies in which agricultural raw materials are commonly used and as it is well-known agriculture is under danger due to climate change. Three food and beverage companies give information on their support for sustainable agriculture (COLA, AEFES and ULKER). Lastly there two companies that give numerical information on reduction in raw material usage. Waste management is also as important as reduction in raw material. Each company in the sample has a policy regarding waste management such as recycling, reuse or recovery.

## **Product Safety and Quality**

One aspect of SSCM is ensuring product safety and quality. Every company in the sample is following international regulations and standards related with safety and quality of products. For instance, ISO 9001 Quality Management Standard is the most commonly used standard. Hence companies make sure that end-users get the best quality product. Additionally, companies do device research and development with this purpose.

## **Stakeholder Engagement**

Stakeholders are parties that are affected by company activities and they also have ability to affect company decision. Through stakeholder engagements company and stakeholders have opportunity to exchange information. Both parties listen to and learn from each other. Also, companies may have a better understanding of stakeholders. They may respond to their expectation promptly and build strong relationships.

Media and frequency of stakeholder engagement are disclosed in sustainability reports. Stakeholders that are related with supply chains are suppliers, customers and authorized dealer, services and retailers. Four of the companies do not state communication media and frequency for each group of stakeholders. They rather give general information on how they meet and interact with their stakeholders. Remaining ten companies tabulated stakeholder engagement activities. Commonly used communication media used for suppliers are one-on-one meeting, training, audits, annual or sustainability reports. Additionally, TOASO and ARCLK come together with their suppliers on stakeholder days or supplier days. Customer satisfaction surveys, support programs, special projects are communication media commonly used for engaging with customers.



## Other Concerns

Some of the common SSCM practices that are represented on sustainability reports are stated above. Beside it is found notable to indicate other less commonly mentioned practices related with SSCM. At the end of each sustainability report, a section named as performance indicators is given that exhibits company performance about economic, environmental and social dimension in numbers. However, it cannot be alleged that there is uniformity among them. One of the indicators is greenhouse gas emission. Only three of the companies (AEFES, CIMSA and TOASO) states greenhouse gas emission per product. CIMSA and COLA also indicates their greenhouse gas emission related with their product transportation and distribution. Additionally, FORD is the only company that gives information on supply chain expenditures. This information is given in two section; one is for total expenditures on supply chain and the other one is for local supply chain expenditures. Another indicator referred is sustainable packaging by COLA.

Besides this information there are other valuable information communicated via sustainability reports. For instance, AKSA states that they received "Green Building Certificate" for 2017. ARCLK initiated "Green Purchasing Movement" that involves procurement of environmentally friendly products, materials and services. Another good practice is being applied by FORD in the name of "Paydaş Paylaş (Share with Stakeholders)." Ford shares cost and profit margins for particular components with certain suppliers which they have established mutual trust. This would enhance the long-term relations with suppliers and support SSCM.

## CONCLUSION

Companies are feeling more pressure to integrate sustainability consideration into their businesses. The pressure may arise due to internal or external factors. It seems inevitable, especially for focal companies, to avoid sustainability practices. The problem is how to integrate economic, environmental and social dimensions and how to convey information related these practices to stakeholders. This is related with the ever-changing structure of sustainability. Sustainability reports provide numerous benefits on the road to sustainability goals. Initially, valuable information is communicated to internal and external decision makers. Additionally, a reliable measure for performance measurement is obtained in terms of economic, environmental and social dimensions of sustainability. Lastly, they are useful monitoring tools.

In this study, it is aimed to exhibit sustainability practices of companies within the scope of supply chain and to what extent these practices are represented in sustainability reports. Sustainability reports of manufacturing companies listed in Borsa Istanbul Sustainability Index are analyzed. It is found that SSCM practices are frequently included in priorities of companies and companies tend to manage any kind of economic, environmental or social risk related with their supply chain or value chain. Besides, information about preference for local suppliers, supplier assessment in terms of sustainability efforts, raw material sustainability, product safety and quality and lastly stakeholder engagement are commonly represented in sustainability reports. This information underlies the significance of SSCM practices for companies.

## **Accounting Perspective for Sustainable Supply Chain Management**

It is assumed that these findings would provide some guidance for companies in preparation of sustainability reports. Companies may have different perspectives in handling sustainability. Some kind of practices may be labeled as more valuable for specific companies. For instance, a company may weigh environmental considerations more than social value-adding activities. Therefore, it is not possible to propose a one perfect model for each company. However, it should be kept in mind that there are some common practices that may be generally accepted or applied.

Lastly, it would be worthy to indicate some areas for future research directions. Initially, this study included one year data only for Turkey. A longitudinal study or a study that makes a cross-country comparison would bring more insight. Additionally, research is on manufacturing companies. It may be suggested to make an industry-specific (for instance chemistry or food and beverage) study.

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# Chapter 10

## Contemporary Challenges of International Economic Relations: Global Trade and Investment Trends

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### **ABSTRACT**

*The main aim of this chapter is to analyze the contemporary challenges that have affected movements in the global trade and investments, as well as their interdependence. The focus is on the causes and consequences of the fundamental changes in international economic relations. The analysis is based on the following data: value of world trade, dynamics, and structure of exchange. Contemporary faces of the world economy such as transnationalization, intra-sector trade, increasing discourse on whether foreign trade and FDI's represent substitutes or complements, have also been an unavoidable part of this chapter. Depending on the stage of development, global changes have specific consequences on developed countries and developing economies. The chapter in its final part focuses on the analysis of how global value chains are directly affecting the growth of international trade and flows of foreign capital through the inevitable role of multinational companies.*

### **INTRODUCTION: CHALLENGES OF INTERNATIONAL ECONOMIC RELATIONS**

The studying of the international economy has never been as important as at the beginning of the 21st century, as trade in goods and services, money and investment flows have led to a globalised world economy and connections among economies closer than ever before in the history. At the same time, the first and second decade of the 21st century brought a number of challenges for the creators of economic policies, the leaders of the world's leading companies, or generally for the world economy due to the consequences of globalisation, the attitudes of its followers and opponents, as well as the unprecedented number of financial shocks that have instantly spread all over the globalised world. The basic economic

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models and primary concepts have been put into question, and propagated economic policies for decades have required detailed analysis and re-examination. Economic history has shown that Western developed countries have managed to achieve high rates of economic growth based on international trade during the 19th and 20th centuries. In the last few decades, the growth of the world economy has also been relatively high, contributed by the high growth rates of some Asian countries, in particular Southeast Asia and Japan, then the countries of the European Union, the United States and, of course, BRICS countries: Brazil, India, China and South Africa.

However, the experiences of individual countries in the transformation of their economies at the end of the 20th and the first two decades of the twenty-first century varies largely depending on their level of development - developed countries record moderate, but constant growth rates with occasional disruptions caused by financial and political crises; some developing countries have experienced enormous growth rates and an increase in per capita income, while some underdeveloped countries have plunged into an almost vicious circle of poverty from which there is no predictable positive exit. Economic experts in the countries in transition also deal with issues that are universal and inevitable, and on a global scale: the participation of a particular country in international trade, the indisputable role of foreign capital as an engine of economic development, the acquisition of foreign technology and knowledge, privatization with the great importance of foreign direct investment, share in the international division of labor, and the like. All the above-mentioned priority areas for the launch of economic development contain elements of foreign factor, i.e. there are few economic policies that are exclusively oriented towards internal or domestic measures in the modern economy. Likewise, it can be noted that the volume of international trade has steadily increased as a percentage of GDP, as the amount of foreign direct investment and other financial flows has significantly increased. In addition to the phenomenon of globalisation and its numerous factors, including the advancement of technology, telecommunications and transport, the greatest incentive to the above-mentioned changes in the international economy has been achieved due to changes in economic policies aimed at opening up national markets. Almost all countries have introduced significant reductions in restrictions on international exchanges in many areas.

## **BACKGROUND**

Development of international economic relations and the growth in the volume of foreign trade brings about a debate in academic circles about the impact of international economic relations with foreign countries on economic growth and development. In the literature, basic terminology in the field of theory and policy of economic development explains dynamic categories of economic growth and development, in the sense that economic growth signifies a constant increase in the value of production at the national economy level, expressed in absolute levels of aggregates such as social gross product, national income or per capita over a longer period of time (Đerić, 1997, p. 3), and the essential basis for growth should be increased production in a particular economy. On the other hand, economic development includes, besides changes in the scope of production and explanation of complex transformations in the composition and structure of the economy, that is, changes in the relative relation of certain factors of production, changes in technological, organisational, institutional and political character. Therefore, economic development involves economic growth and, moreover, complex transformations of the structure of the economy that contribute to the growth of living standards and changes in the distribution of created income. The goal of development is to fully satisfy the needs of a large social system as a whole, then

all of its subsystems and all members of society individually, and that the well-being of society is in fact the well-being of its members (Stojanović, 1987). The theory of economic growth deals with the study of quantitative relations between the factors used and the obtained output, and aims at explaining the relation of the factors of production to the growth of the social product. When it comes to the problem of development and macroeconomic observation of a given phenomenon, it is necessary to connect and explore factors that influence the economic dynamics using data and facts related to the overall economic prosperity and distribution of income of individual countries (Dragutinović, Filipović and Cvetanović, 2005, pp. 260-270). The research of economic growth and development requires a retrospective view of the views of the most important economic schools and their analysis of these economic phenomena, with each review of the theory being somewhat pragmatic and reduced due to the number and complexity of these analyzes in economic history. The economic ideal in the development economic policy is the economic growth without inflation and unemployment, with the external economic budget balance and the growth of productivity of labor and capital, and also the achievement of positive trends in changing the economic structure, demand, raising cultural levels and restoring the population and society in its overall (Đerić, 1997, p. 5).

A particular focus in theoretical and empirical research in the modern economy has been put on the relationship between trade and economic growth for decades. Economists have long been concerned with the question of whether trade can be the main driver of growth for a particular economy, and if so, whether by increasing the volume of trade with foreign countries or by improving the terms of trade with foreign countries. Numerous theoretical and empirical studies have shown that international exchange and foreign capital flows are the main drivers of economic growth. In the 1980s economists Diewert and Morrison (1986) presented an empirical model with the implication that trade could be a motor, a machine or a driver of economic growth (in the engine of growth) for stagnating economies. Similarly, the author of Bende-Nabende (2003, p. 2) states that in the existing literature published during the nineties of the 20th century, and especially with authors such as Barro, Levin and Renelt, many determinants of economic growth were studied, and it was also concluded that trade is one of the main drivers of economic growth. Consequently, the dominant economic policy applied in most developing countries during the second half of the 20th and the beginning of the 21st century, based on the leading neo-liberal attitudes of developed countries and relevant international institutions, included recommendations that integration into the world trade system and, in general, into international economic flows create favorable conditions for the economic growth and development of developing countries and enable them to move closer to developed countries. Foreign capital flows, which also play a fundamental role in the process of growth and development of the world economy, are indispensable. In addition to the many functions that these flows can have, the general and traditional role of these funds is in merging the side with domestic savings in order to finance investments in the domestic economy, thus flowing foreign capital into direct influence on the formation of domestic capital.

## **MAIN FOCUS OF THE CHAPTER - INTERDEPENDENCE OF FOREIGN TRADE AND ECONOMIC DEVELOPMENT**

Rapid liberalisation of trade and flows of foreign capital was the main recommendation in the creation of economic policies, which should increase the participation of developing countries in international trade, including a significant increase in their exports. Numerous papers suggest that liberal and trade

regimes that are export oriented represent an optimal strategy for small and open economies. From the seventies in the works of Ballasse (1971) and Bhagwatiya (1978) until the end of the 20th and the first decade of the 21st century in works by Dollar (1992), Sachs and Warner (1995), as well as in the review of works on a given topic in the book Van den Berg and Lewer (2007). An economic policy based on a liberal foreign trade regime allows optimal allocation of resources in production, since it directs resources in areas in which the country has comparative advantages. In addition to this general and obviously beneficial effect of foreign exchange in terms of the allocation of resources derived from specialisation, trade allows for economic growth by providing greater opportunities for economies of scale due to market expansion and capacity utilization through increased foreign demand. Furthermore, international trade allows the exposure of domestic producers to foreign competition through direct exit to foreign markets through export or domestic market through imports, i.e. the presence of foreign goods, which makes the domestic economy more efficient by investing in new technologies and improving knowledge and skills of employees, as well as modern management methods and systems. All this can lead to productivity growth and overall economic growth

### **Issues, Controversies, Problems**

The main hypothesis of this chapter relates to the position that foreign trade has often had a critical, but not always benign, role in economic development, especially in developing countries. As already mentioned in the introductory part, mainly the income from the export of primary products traditionally participates in a large volume in the formation of gross domestic product, mainly agricultural products and others from the group of primary products. There has been a tendency in the last few decades of falling prices for primary products, with the exception of oil and oil derivatives, which are significant for countries that export these products, and in some income from the sale of these products account for over 70% of national income. These countries are more and more exempt from the rules related to revenues and the creation of gross domestic product from primary products. Excluding exporting countries of mineral commodities, as well as some of the newly industrialized developing countries, such as South Korea, Singapore, Hong Kong, Taiwan, etc., it is possible to conclude that markets and prices of primary products carry with them export dependence and instability based on risk and uncertainty which is, of course, undesirable for most of the economy, especially the developing economy. At the same time, these economies are dependent on imports of raw materials, semi-finished products and industrial products that are necessary for industrial expansion and the growing demand for domestic markets for these products. It follows that most developing countries are facing chronic balance of payments deficits, as demand for imported products goes beyond their capacity to generate sufficient export revenues. Trade, as well as deficits in the current and balance of payments, led to monetary instability, reduced foreign exchange reserves, an increase in external debt, a reduction in inflows of foreign private capital, generally slowed down economic growth and development in most developing countries. In addition, stringent monetary and fiscal policy measures, usually promoted by international financial institutions, have further fueled the slowdown in economic growth and aggravated the problems of poverty and unemployment.

Hypothesis two deals with the standpoint that economic growth and development are key prerequisites for reducing poverty, as they can lead to an increase in inequality, but should reduce the number of those living in absolute poverty. The argument that openness stimulates long-term growth is not fully proven, although there is no evidence that it is detrimental to growth. Most economists agree that trade liberalization is an important component of a package of measures and policies that promote economic growth and



development. Among developmental economists, apart from the above mentioned views, there are those who consider that trade liberalization also brings short-term negative consequences for the participants in both the private and the public sector, and can lead to an increase in poverty in the long run, arguing that the openness of economies by external earthquakes can generate uncertainty, poverty than in less open economies, as well as jeopardizing the measures taken to reduce poverty and redistribute income. While it is not easy to measure trade liberalization and poverty, but with fragmented evidence, there are empirical studies that deal with the impact of trade liberalization on the rise in poverty. In order to examine the impact of trafficking on poverty, but also define policies, in order to eliminate or minimize negative effects, it is necessary to identify the channels through which such impacts are transmitted. Winters in this study identifies six links between trade and poverty: the impact of price changes and their impact on the poor, links across the market factors, such as work and earnings, changes in government revenue and expenditure, i.e. public finances, related risks, impact on economic growth and the adjustment process (Winters, 2000, p. 3). The conclusion that is amount is not final or recommends that in any case it should be checked whether the trade is destroying the market or creating a new one, thus affecting the ability to bear the risk that changes in the labor market affect earnings and employment, but also on the general comparative advantages of a particular country.

It is precisely the question of choosing between closed or open economic policy, a combination of both, or a modality of co-operation with similar and regional economic cooperation, one of five areas that can analyze the interaction between trade and development. In addition, it is possible to analyze (1) how external trade affects the rate, structure and character of economic growth, (2) whether the trade influences the distribution of income and wealth in one country or between different countries, (3) under what conditions trade can helping achieve the development goals of developing countries, and (4) whether the developing countries themselves can and to what extent can their activities determine how much and how to trade? (Todaro, 2000, p. 459). Based on Todaro's assumptions, as well as the theory of economic growth and development, it is possible to expound general theoretical attitudes related to the above-mentioned five forms of trade-development interaction. Trade is an important stimulator of economic growth, since it allows access to limited resources and world markets, as well as total world income. By the existence of conscious commodity exchanges and in general the interdependent commodities markets, capital and human resources, it is promoted and achieves a unification of the price of factors of production leading to greater equity globally and within individual economies. Trade also contributes to the development of the sector of the economy in which comparative advantages exist, and under free trade conditions, international prices and production costs determine how each economy should trade in order to maximize national wealth. Finally, in order to promote growth and development, it is necessary to apply an open economy strategy, since self-sufficiency is considered to be partial or complete isolation leading to an economically inferior position in relation to participation in unlimited opportunities for free trade.

Of course, such settings are too general, theoretically based on explicit and implicit assumptions, experiences of mostly developed countries, and as such are very discursive in empirical practice and contemporary international economic relations. Of course, one should not underestimate the role of free trade, open markets, the importance of global connections and flows, but the world in which there are various types of national protection and non-competitive policies are the reality of the modern economy at the beginning of the 21st century. There is a consensus among modern development economists who mainly deal with the so-called. Third World countries on the interaction between trade and development, and relate to the above issues. In terms of rates, structure and character of economic growth, the general

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conclusion is that trade can be an important stimulus for rapid economic growth, but also that rapid economic growth and the growth of national income may have little impact on development. The fact that trade can increase foreign income from exports and increase income levels does not mean that it will automatically reach economic and social development. First of all, the nature of the export sector, the distribution of benefits and the connection with the rest of the economy is essential. As for other areas of interest for development economists regarding the impact of trade on changes in the distribution of income, it is clear that the benefits of world trade have so far been disproportionately allocated to the benefit of developed countries, and in developing countries, as the development economists argue, on foreign residents or rich layers of society. It is obvious that a global system based on institutional, economic and social governance by powerful nations and even more powerful multinational corporations controls a huge amount of world resources. This obviously challenges the conclusion of a traditional trade theory that free trade will lead to income equalization, and Todaro concludes that this is nothing more than a theoretical construction. Trade, as well as education, further accentuates the existence of inequalities. What is crucial in this regard is the absence of supranational institutionalism, which eliminates the possibility of redistribution or redistribution of benefits from trade or investment in promoting the development of underdeveloped areas.

The general conclusion is that many developing countries have had much less benefit in international economic interaction with developed countries. The answer to the third question about the underlying conditions under which trade can contribute to developing countries to achieve their development goals is imposed as more than obvious, that is, the focus is on the capabilities of less developed countries, especially if they are regionally or interconnected, to lobby for more favorable trade conditions, especially for the elimination of trade barriers for products that are the subject of export of developing countries that are mostly labor intensive. Likewise, it is important to build strong positions for negotiations with multinational companies in order to grant benefits for the domestic population. The fourth question about whether to trade in general and how much trade is enough for development is the subject of the debate, but it is clear that for a single economy, and especially for small and undeveloped economies, the scenario of closing borders and lack of trade is not realistic. Most of these countries are very dependent on interaction with foreign countries, so self-sufficiency is not an option in any variant, at least due to the limited but certain inflow of foreign currency and technological knowledge from abroad, and for those most frightened by extreme geographical and climatic conditions, international Humanitarian aid is not a matter of choice but pure needs. In the final conclusion on this topic, the argument is that previous practice shows that trade in the past was not free despite the elegant settings of neoclassical theory, because only a small group of industrialized countries has benefited in the existing trade regimes, the majority has little benefit, and the rest is found in a state of economic dependence on such a sort of thing. The key recommendation of development economists is that developing countries need to explore possible trading opportunities with the rest of the world with a certain degree of selectivity in relations with developed and large corporations, and on the other hand expanding world trade shares and developing relationships with other developing countries, in a similar position. The pooling of resources goes beyond the limits of small and individual markets, and the strengthening of bargaining power leads to a better position in the world, where unequal trade conditions dominate, the technological domination of developed countries, and widespread market impeccability.

In 2017, world merchandise trade recorded its strongest growth in six years. Significantly, the ratio of trade growth to GDP growth returned to its historic average of 1.5, far above the 1.0 ratio recorded in the years following the 2008 financial crisis. This is a timely reminder of the crucial role that trade can play in driving economic growth, development and job creation around the world. It is also a reminder of the importance of the multilateral system of rules and disciplines, as embodied in the WTO, which helps global trade to flow as freely and fairly as possible (WTO Trade Statistics, 2018).

On the Figure 1, the data shows that in 2017 merchandise trade grew by 4.2% in volume terms and that represents the strongest growth in the past six years. When it comes to the value of global trade it can be said that merchandise trade increased by 11% in value in 2017.

If we are to analyse the leading countries in export and import globally, it is obvious that in world export China has been on the first place in both 2016 and 2017. China is followed by US, Germany, Japan and Netherlands, which all make it to the top five exporting countries worldwide. The rest 5 countries which take places from 6 to 10 leading exporting countries are two Asian – Korea and Hong Kong and three European – France, Italy and UK.

The situation similar regarding the leading importers, i.e. the top 10 countries are almost the same as leading exporters, but the order is a bit different – US, China, Germany, Japan and UK make the top five, and they are followed by France, Hong Kong, Netherlands, Korea and Italy.

The Figure 3 represents the list of leading exporters and importers in developing countries.

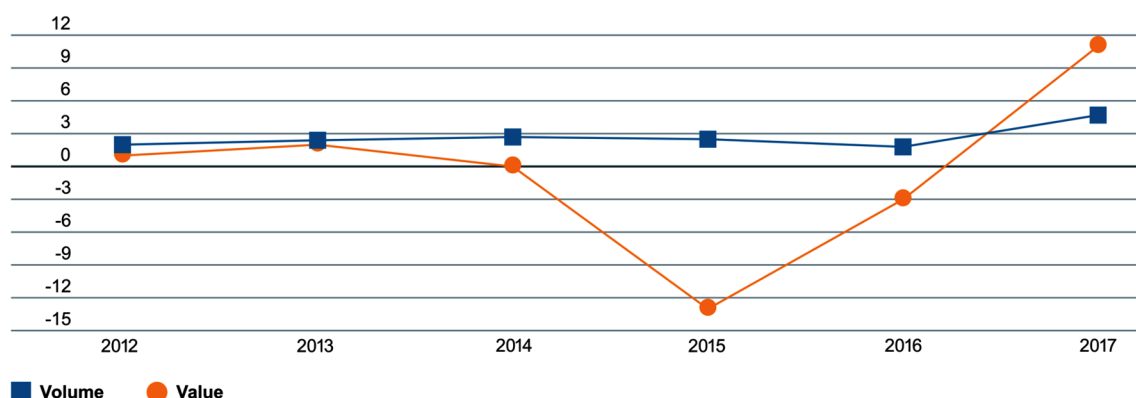
The above figure shows that the EU and NAFTA, which represent the most influential regional trade agreements, account for 48% of global exports of manufactured goods.

## FOREIGN TRADE AND FDIs: SUBSTITUTES OR COMPLEMENTS

The analysis in this part of the chapter starts with the consideration of the mutual interaction of foreign trade and FDIs, and a question whether their influence on the economic growth is achieved together, in a way that these two growth factors are mutually supportive, therefore, complementary and what is their interdependence? Or are they mutually exclusive and thus represent substitutes? In this respect, numerous areas for analysis can be opened up, for example, whether and how foreign trade causes FDIs, and on

Figure 1. Value and volume of world merchandise trade 2012-17

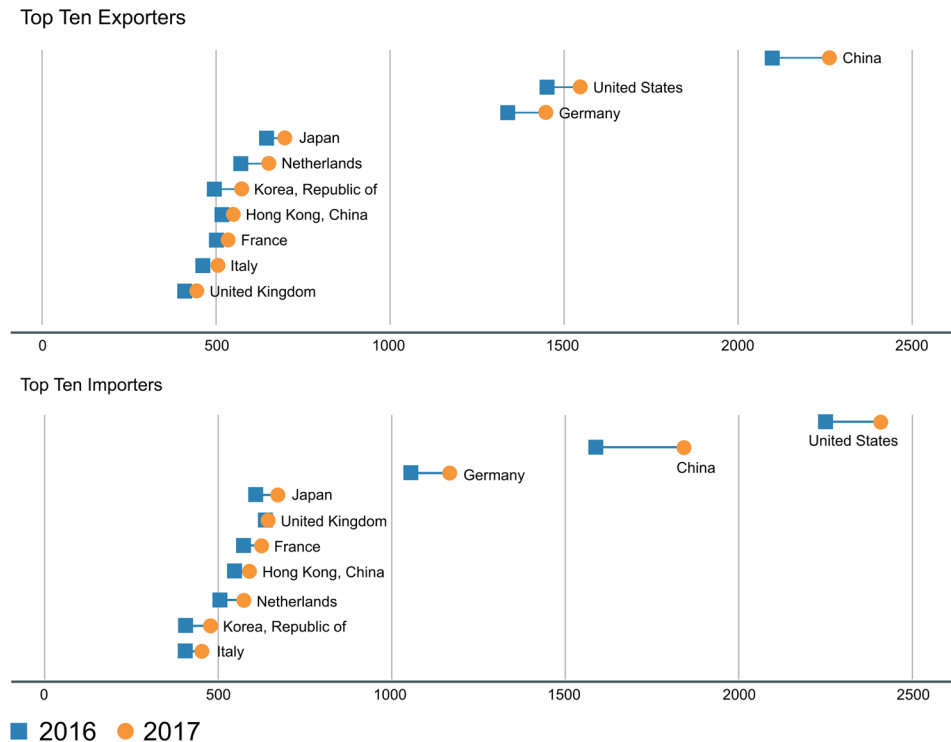
(Source: World Trade Statistics 2018, p. 10) [https://www.wto.org/english/res\\_e/statis\\_e/wts2018\\_e/wts2018\\_e.pdf](https://www.wto.org/english/res_e/statis_e/wts2018_e/wts2018_e.pdf)



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Figure 2. Leading countries in export and import in global trade 2016-2017

(Source: World Trade Statistics 2018, p. 12) [https://www.wto.org/english/res\\_e/statis\\_e/wts2018\\_e/wts2018\\_e.pdf](https://www.wto.org/english/res_e/statis_e/wts2018_e/wts2018_e.pdf)

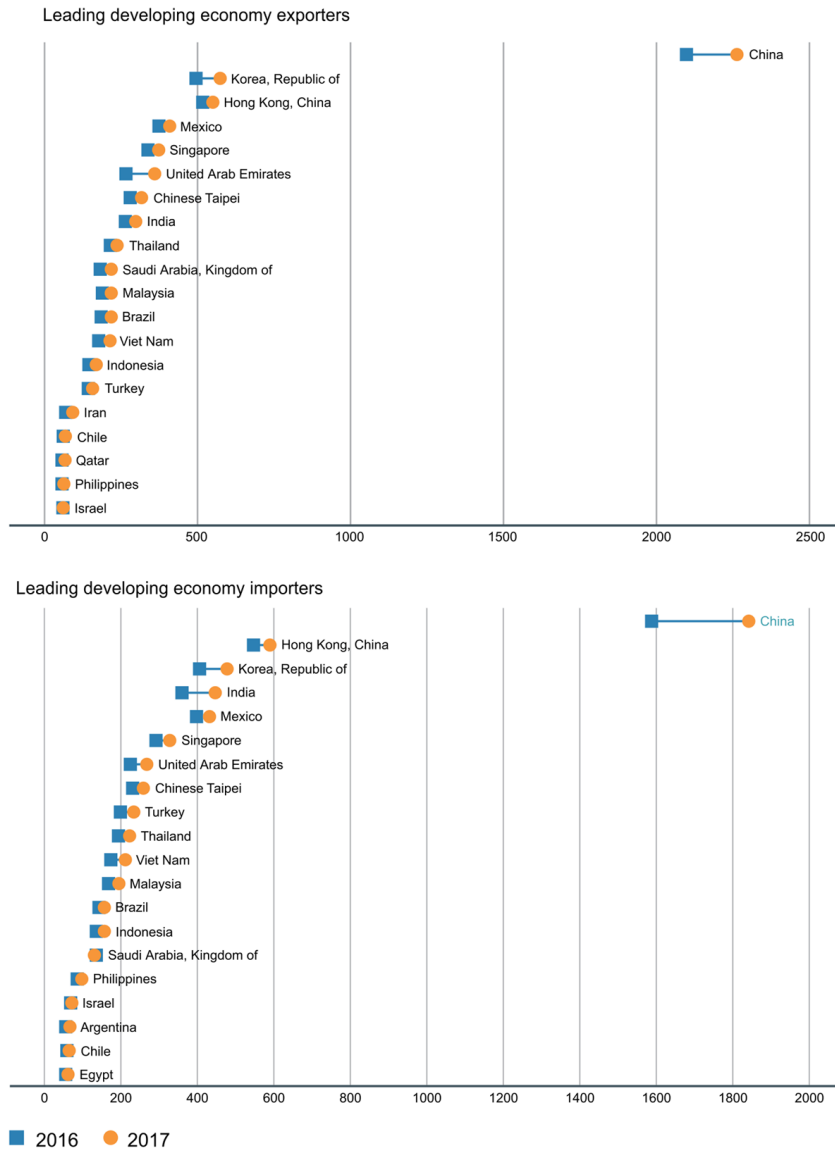


the other hand, how can FDIs encourage exports and export competitiveness, what is the importance of FDIs for intra-industry trade, as one of the most important phenomena of modern economy. The largest theoretical considerations based on empirical analysis of data mainly related to the Southeast Asia have focused on the relationship of FDIs and international trade, and in terms of whether FDIs promote or restrict international trade, and vice versa whether it trade encourages or reduces FDIs flows. It is possible to address this analysis from different aspects as follows: from the perspective of theoretical models, investment strategies, strategies of economic development and economic reform policies in the field of international trade and investment (Bende-Nabende, 2003).

The interaction between international trade and foreign direct investments (FDIs) is one of the main features of international economic relations and globalisation in general. The dynamic nature of this relationship and the lack of comprehensive data - macro, micro and sectoral, led to the existence of technically complex empirical material with unclear conclusions. The study of this relationship cannot be accessed from the perspective of a completely theoretical analysis, but empirical studies can be sublimated. Most of these works to the mid-eighties show that international trade generates investment, but after that period causal relationship has been reversed, therefore, investments started to significantly affect trade flows. The analyses show that the investments stimulate the growth of exports of investors, and it turned out that the investments are complementary to trade. Thus, for example, in the analysis that included 14 OECD countries it has showed that every dollar of investment abroad generates about two dollars of additional value of exports (Fontagné, 1999, p. 5). On the other hand, in the host countries of FDIs it has been proved that short-term FDIs increase imports, while export increase is occurring

Figure 3. Leading exporters and importers – developing countries

(Source: World Trade Statistics 2018, p. 13) [https://www.wto.org/english/res\\_e/statis\\_e/wts2018\\_e/wts2018\\_e.pdf](https://www.wto.org/english/res_e/statis_e/wts2018_e/wts2018_e.pdf)

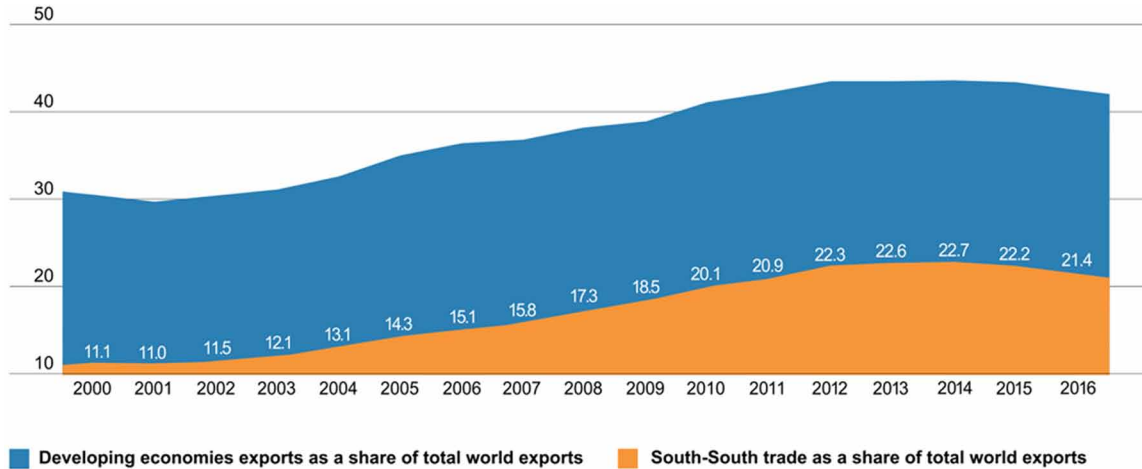


after a longer period of time. However, the benefits of investments in the short term are reflected in the transfer of technology, increased employment, involvement of local subcontractors and the like. Also, it was shown that the nature and characteristics of international trade and investment relations vary depending on the degree of development of the country, and even among the developed (USA and EU countries) there are different conclusions. In some cases, investments abroad have a clear and important complementary impact on exports and imports, as is the case for the USA, and to a lesser extent for EU countries, although it depends on which EU country is concerned. When it comes to investments that are coming to the USA, the impact of FDI is not significant for the export of USA, which is explained by the size of the domestic market and efforts by foreign companies to gain US market. The situation is

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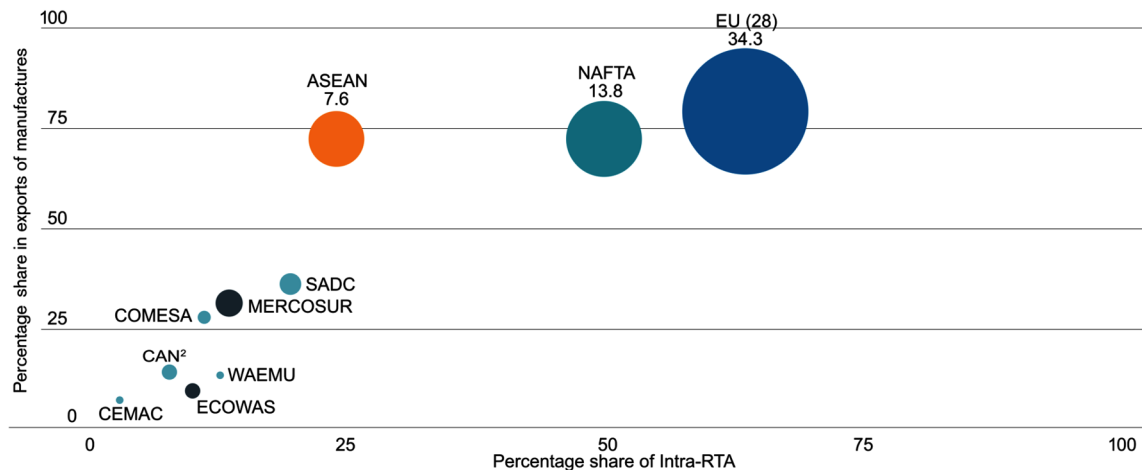
*Figure 4. Share of developing countries in world exports 2000-2016*

(Source: World Trade Statistics 2018, p. 19) [https://www.wto.org/english/res\\_e/statis\\_e/wts2018\\_e/wts2018\\_e.pdf](https://www.wto.org/english/res_e/statis_e/wts2018_e/wts2018_e.pdf)



*Figure 5. Regional Trade Agreements share in global exports of manufactured goods*

(Source: World Trade Statistics 2018, p. 18) [https://www.wto.org/english/res\\_e/statis\\_e/wts2018\\_e/wts2018\\_e.pdf](https://www.wto.org/english/res_e/statis_e/wts2018_e/wts2018_e.pdf)



similar when we are looking at the impact of incoming investments on imports of the USA, so for every dollar of investments, import increases to sixty cents, while in France, for example, a dollar of investments generates growth in imports of 1.4 dollars (Fontagné, 1999, p. 22). All these are very complex relationships between investments, exports and imports, which are dependent on the specific conditions of individual country - level of development, market size, development strategies, institutional conditions, etc. We should not neglect the reliability of statistical data and analysis used in the observed time periods, as it has happened that for the same country in different periods of time different data on complementarities, substitution or links between international trade and investment have been reached. Furthermore, it is necessary to pay attention to the forms of FDI's - greenfield, brownfield, horizontal and

vertical, mergers or acquisitions, as well as the growing importance of trade in services. It is possible to analyse this relationship from the standpoint of the level of economic integration with reliable statistics.

In the literature that deals with capital flows, in particular foreign direct investments, chronologically presented, a special contribution in this field has been made by Mandel, Vernon and Kojima (all in Ahmed, 2013, p. 146). Mandel (1957) showed that in the framework of the Heckscher-Ohlin-Samuelson-HOS model investments and trade are perfect substitutes, i.e. trade reduces the need for investments and vice versa. By contrast, with the use of different assumptions related to the HOS model, Markusen (1984) came to the conclusion that investments and trade can be complementary. He proved that investments encourage trade when the trade is based on factors that are not part of the HOS model, for example, differences in technology between trading partners. A key feature of this relationship is related to the area where the FDIs are used, whether it is the industry with export orientation or it is an industry that is competitive with imported products. If it is the first case, then there is an expansion of trade, and in the second case there is a reduction in the volume of foreign trade. However, in the case that the countries are of similar size and factor availability, Markusen's model shows that trade and FDIs are substitutes. Kojima (1973) distinguishes between trade and non-trade-oriented FDIs. The first type is occurring when the country of origin of FDIs has a comparative disadvantage in the industry in which it invests, so that capital goes to countries that have comparative advantages in relation to these activities. This leads to an increase in the volume of trade and globally to a more efficient use of resources. Investments that restrict trade occur in industries where the country of origin of capital flows has a comparative advantage, but despite that there is investment abroad due to possible protectionist or oligopolistic competition. This type of investment leads to the division of markets and reduction of trade (Petri and Plummer, 1998 in Ahmed, 2013, p. 147).

For the relationship of FDIs and trade the process of internationalisation of the product or company is important and it is presented through dynamic Vernon's product life cycle (Vernon, 1966). The main hypothesis in the model of the product life cycle is that FDIs occur when the production process of a new product in the country the innovation itself becomes standardised and more profitable to be produced abroad, first in other developed countries, and then in developing countries. According to this model the flow of investments initially tends to reduce trade because it replaces exports, but because production is entirely moved abroad it leads to repeated increase in the volume of trade. This establishes the order, from trade to FDIs, and then FDIs to trade.

Empirical data show that the experience gained in the process of investing abroad reduces the costs of production abroad, to the extent that even for relatively new products production is established abroad where there is an optimum availability of production factors (Petri and Plummer, 1998 in Ahmed, 2013, p. 147). This eventually leads to a concentration of production and the increased volume of international trade, even during the initial stages of investment. Therefore, this model shows that to some extent for certain types of products there are grounds to claim that FDIs and trade are substitutes, or mutually exclusive. However, in the current framework of global economy, when the movement of goods, services, capital, labour, and even the production in the context of transnational companies is maximally facilitated as a result of overcoming the technological and general economic policies in the field of trade and capital flows, companies have more choices on how to meet the demands of the market and exploit foreign resources. Internationalisation enables the company to combine FDIs and trade in a manner considered most appropriate for the business of TNC, which means that the model of product life cycle may not be considered appropriate for the interpretation of the situation in the global economy (Bende-Nebende, 2003).

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In this context, it is important to mention Dunning OLI (ownership-location-internalisation) paradigm (Dunning, 2008), which assumes that the company has certain resources in the form of production technology, management resources and techniques of marketing, which seeks to place on foreign markets and thus generate income. In this case, they can choose one of three options: to produce goods and export to foreign markets, second, they can license the patent to foreign producers and make the rent, and the third they can access foreign markets through the establishment of production abroad and thus directly supply foreign markets. In these settings, FDI and trade are seen as alternatives. If there is no appropriate licensing procedures, companies choose between exports and FDI, which directly leads to choice between investments or trade. In addition, if there are trade tariffs or non-trade barriers, or high transport costs, all this leads to a decision for company to choose FDI before export variant. The early work on the relationship between trade and FDI, led to the conclusion that they have been mostly exclusive, i.e. companies choose one or the other, but as the research broaden on this topic over time and by creating a modern economic environment, it became obvious that the investments and trade are complementary and mutually aided processes (Sauvant, 2002, p. 38).

The issue of the relationship between trade and FDI, as well as considerations of their complementary or substitutive relationship can be viewed from at least three perspectives: investment strategies, economic development strategies and general economic policy reforms in the areas of trade and investment. When it comes to investment strategies, this area is inevitably tied to vertical or horizontal type of FDI. Therefore, in the theory of international economics, if the two countries have similar resources, similar size and revenue, then the most common form of FDI is horizontal in order to expand the market and by doing that a classic trade is usually replaced. On the other hand, if it comes to FDI based on cheaper production costs, then it usually comes to vertical FDI, followed by exports from the country of origin of investments. The best example of this investment is related to the cheaper labour costs, especially in the textile industry, where the vertical investment leads to increase in trade on both the domestic and foreign countries, because the raw materials and/or semi-finished products are imported from the countries of origin of FDI, and final products are exported. A similar sequence of things occurs in FDI based on the search for resources, i.e. investment comes after an increase in trade for both countries, and only in this case the country of origin of FDI usually exports machinery and technology, and imports raw materials and/or finished products.

From the perspective of economic development strategies FDI and trade connection can be observed depending on the chosen development strategy of a particular country, or whether the chosen strategy is the one of closed market or very limited imports, or is it an open and development strategy oriented to cooperation with foreign countries. If, a country applies import substitution regimes this leads to a very restrictive trade regimes restricting imports to only absolutely necessary products. In this mode, the policy related to FDI may also be extremely radical, and all foreign investments may be prohibited, in order to facilitate achieving the goals of import substitution. In such cases, FDI are considered extremely detrimental to the effective functioning of the economy, and therefore prohibits foreign investments. However, rare are the countries in which this strategy is applied over the long term, a more common choice is to permit FDI in sectors where the country has comparative disadvantages in order to limit the possibility of exports. However, at the beginning foreign firms use a specific concessions, such as monopolistic position or other benefit in the short term, but over time they realise that slow growth and isolation from international movements negatively affect their business, so they lobby for change in trade regimes and strategies of closed markets. Therewith, radically limited trade regimes affect the FDI policy, which in turn cause changes in trade regimes. On the whole, dynamic models of relations



of trade and investments show that changes in FDI policies after a while cause changes in trade policies. If, however, we speak about a development strategy that is open to foreign countries, FDIs can be an effective tool in structural adjustment for improved efficiency in the use of comparative advantages of certain countries, and on the other hand, free trade regimes can enhance liberal investment policies. The development strategy based on an open economy tends to reduce the transaction costs of economic cooperation with foreign countries. The aim is to reduce restrictions on trade and investments, in order to reduce the cost of doing business, which undoubtedly stimulates both international trade and investment.

The paradigm that is inevitably to be mentioned in this chapter which analyses the relationship between international trade and FDIs is the paradigm of global value chains (GVC). It is evident that in the last few decades, the production of most goods and services has been vertically fragmented in different countries and that this is the main feature of today's international production sharing. Literature dealing with this global phenomenon is large, especially on the major factors affecting the spread of GVC, as well as the main indicators that characterise and measure this phenomenon. GVC are directly related to the growth of international trade, as well as the growth of flows of foreign capital through the inevitable role of multinational companies (MNCs) in all of this. The paper that represents a detailed review of the empirical literature on the GVC (Amador & Cabral, 2014) primarily emphasises that the main factors of development GVC are technological progress, reducing transport and communication costs, as well as the removal of political and economic barriers. For all these factors, we can say that are both drivers of international trade and FDIs flows, as well as being an integral part of GVC and operations of MNCs. The authors of the study of the European Central Bank primarily highlight the factors that have caused such a significant change in recent decades in global production and international trade flows. Among the most important they include strong economic and trade liberalisation, as well as the already mentioned acceleration of technological progress, especially in information and communication and transport fields. Progress in these areas has enabled the international fragmentation of production and separation of production parts and components, with at the same time perfect compatibility and coordination of geographical diversified production activities.

The main methodological approaches used in this field are: international trade statistics of parts and components, the customs statistics of this form of trade and data about international trade combined with input-output tables. Apart from the papers that use these data sources, it can be said that empirical studies of GVC with firm-level data are rather rare. In conclusion, the study points out that the GVC can not be understood only through the classical interpretation of the concept of comparative advantage applied to countries and economic sectors. GVC relate to a combination of added value from different sources with multiple dimensions, including the benefits of trade flows, productivity and trends in the labour markets.

## **CONCLUSION**

A large increase in the volume of international trade and global capital flows accompanied by the rapid growth of the financial sector has enabled the general liberalisation of economic relations. All this has led to the growth of interdependence between countries and regions of the world, that is, the glorification of the phenomenon of globalisation. The degree of interdependence and globalisation has caused the lives of billions of inhabitants of this planet to change from a major agrarian economy to unimaginable forms of mass production, global marketing and consumption. Over the past hundred years, we witnessed

radical changes in all areas of human life, caused by advances in technology, information technology, and telecommunications, which have enabled even faster flow of goods and financial resources among all, even the furthest parts of the world. Globalisation in the field of economics encompasses the growing interdependence between the economy in which the role of international trade and foreign capital flows has become very important. The contribution to global integration since the 1970s, especially over the last two decades, has resulted in foreign capital flows, even more significant than global trade alone. The proof of this is the fact that foreign direct investment grew faster than world exports. It is undeniable that this global integration, based on the technological advancement of humanity, contributes not only to the easier, but also to the faster implementation of international trade and financial transactions.

In the literature, the most widely analysed example of the impact of economic policies based on the openness of the economy, the rapid liberalisation and favors of foreign direct investments relates to the countries of Southeast Asia, which, owing to this turn of their own economies, increased their participation in world trade, mainly due to the rapid expansion of exports, increase their overall growth and reach the developed countries of the world. The general conclusion of the above-mentioned studies, which will be discussed in more detail in the following chapters, on the link between economic growth and the factors contributing to this, is that factor inputs of labor and capital are responsible for the enormous growth of the Southeast Asian economy over the last three decades. As the development dynamics of this region is based on interaction with foreign countries in terms of international trade and capital flows, it can be argued that chances have been created and supported by the process of globalization at the same time and in the areas of potential weaknesses, manifested by frequent financial crises and challenges that shook this area at the end of the 90s. However, it is undisputed that the East Asian model of economic growth based on international trade and foreign capital flows is a constant source of debate among economists, business analysts and economic policy makers, with the remark that generalization and recommendations for other economies, as well as a comprehensive review of the modeling of this model is hampered by heterogeneity of the geographical region itself. Despite this, it is estimated that by the year 2020, 5 Asian economies (China, Japan, Indonesia, South Korea and Thailand) will be from the eight most developed countries (along with the United States, Germany and India) from the region of East Asia (Asian Development Bank, 2014, p. 6). It is undisputed that international trade and capital flows were the basis for the development of Great Britain in the 19th century, the United States in the 20th century, taking into account the current trends; it seems that in the 21st century, the benefits of foreign interaction will benefit the Asian countries. If we add to this the state of the national economies, especially the countries of the Western Balkans and the prospects of future development, it is important that on other countries' examples we assess the role of international trade, capital flows and globalization in general, and accordingly, we point to recommendations that would be relevant in our context. Considering that we belong to countries with a low level of development, productivity and a weak connection with global flows, the question arises as to how to best integrate and exploit the international division of labor, or how to define development policies that will attract foreign capital flows in order to increase export competitiveness, i.e. how to define the goals of developmental economic policy and framework for the promotion of investments in accordance with the capacities and potential opportunities that exploit the dynamic comparative advantages of the economy.

The contribution of this chapter is related presentation of theoretical and empirical data related to link between trade, investments and economic development. Public policies based on outward looking market economy discourse with liberalised trade and optimal foreign resources with limited macroeconomic choices, in relation to monetary and fiscal policies, have not produced expected indicators of economic

development. The concept of good governance in the economy, which is overly stressed in developmental documents of the key multilateral institutions, represents fundamental recommendation with the aim of achieving economic development, as well as the concept of inclusive and extractive institutions (Acemoglu & Robinson, 2012). Global and especially regional integrative processes, in relation to European integration open up many possibilities for the countries of the Western Balkans. However, credible strategic and developmental policies based on confirmed postulates of modern economy are the key determining factors for development, which could be transferred in economic policies, measures and action plans. However, the strengthening of institutional, administrative, legal and bureaucratic frameworks needs to take place in order to successfully implement overall development efforts.

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# Chapter 11

## Relationship Between Working Capital Management and Supply Chain Management: A Contemporary Approach

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### **ABSTRACT**

*One of the firm's financial objectives is to minimize the time between making the payment for inputs and receiving payment for the outputs – the period for which working capital financing is required in the supply chain management process. In an attempt to reduce the level of working capital, a firm has to achieve some goals: to minimize cash available, reduce accounts receivables, extend its accounts payable, and shorten inventory days. To achieve these goals supply chain activities should be related with working capital requirements. The aim of this chapter is to provide an overview of the relationship between supply chain management and working capital management. A theoretical framework is proposed as an evidence to prove the relationship between supply chain activities and working capital components. Consequently, this chapter investigates how improvements on working capital components can add value to the supply chain process.*

### **INTRODUCTION**

Supply chain management is defined as the management of all processes that transform raw materials into final products to maximize customer value and achieve a sustainable competitive advantage. A supply chain starts with the delivery of raw materials from a supplier to a manufacturer and ends with the delivery of the finished product or service to the end consumer. A supply chain is the connected network of individuals, organizations, resources, activities, and technologies involved in the manufacture and sale of a product or service (Robbins & Decenzo, 2004). Managing a supply chain is more complex and difficult than managing an individual firm. The supply chain not only consists of more than the

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movement of physical goods between the members within a supply chain thus, it also involves the flow of information as well as the flow of cash (Fredendall & Hill, 2000).

Every business relies on cash flow to purchase raw materials to produce their products. Working capital includes the cash that is needed to purchase its inventory (inputs) and the cash received from selling its product (outputs). The level of working capital reflects the length of time between when cash goes out of a firm at the beginning of the production process and when it comes back in. Working capital, more correctly defined as net working capital, is the difference between the short-term (current) assets and the short-term (current) liabilities of a firm (Van Horne & Wachowicz, 2009). In other words, working capital involves short-term asset accounts such as cash, inventory, and accounts receivable, as well as short-term liability accounts such as accounts payable. Any increases in each of short-term accounts represent an investment that reduces the cash that is available to the firm. Therefore, working capital management aims at minimizing the employed in the firm's transaction process within its supply chain by reducing current assets and extending current liabilities. Reducing the working capital requirements enhance the balance sheet and reduces the need for short term borrowing, improve its financial ratios and therefore increase the ability to obtain financing for more strategic purposes.

Consequently, most firms require certain levels of working capital to make payments to its supplier and receive payments from its customers in a supply chain process. An efficient supply chain management prevents the firm to perform undesirable practices such as receivable extensions to customers, reductions in payable balances, or unbalanced inventory programs (Hoffman & Kotzab, 2010). Working capital management that is closely linked to the physical supply chain, can enhance the companies' overall financial well-being through supply chain management. Moreover, a focus on supply chain management has usually resulted in significant reductions in the level of inventory held by that firm. Accordingly, the present study identifies the relationship between working capital components and supply chain activities with a contemporary approach.

## **BACKGROUND**

### **Overview of Working Capital Management**

Businesses require adequate capital to succeed in business environment. There are two types of capital required by business; fixed capital and working capital. Working capital is the capital that is employed in the short-term to undertake daily operations of the business. Short-term or current assets and liabilities are collectively known as working capital. Working capital is an important issue during financial decision making since it is the capital that is available to satisfy the short-term cash requirements imposed by current liabilities. The management of working capital is the administration of the firm's current assets and the financing needed to support current assets such as current liabilities (Van Horne & Wachowicz, 2009). Working capital management is concerned with the most effective choice of working capital sources and the determination of appropriate levels of the current assets and their use. Working capital management ensures a firm has sufficient cash flow in order to meet its short-term debt obligations and operating expenses. Working capital that is more correctly defined as net working capital, is the difference between the current assets and the current liabilities of a firm.

Working Capital = Current Assets – Current Liabilities

## ***Relationship Between Working Capital Management and Supply Chain Management***

Working capital management is the function that involves effective and efficient use of all the components of current assets and current liabilities in order to maintain sufficient cash flow to meet its short-term operating costs and short-term debt obligations. A firm is required to maintain a balance between liquidity and profitability while conducting its day to day operations. It has been widely accepted that the liquidity and profitability of a firm mostly depends on how its working capital is managed. The inefficient management of working capital not only reduces profitability but ultimately may also lead to financial crises. On the other hand, proper management of working capital ensures financial returns at the optimum level even on the minimum level of capital employed.

Working capital management consists of all management decisions and actions that influence the size and effectiveness of the working capital investments. A key financial performance measurement for firms is the sign of working capital which is positive. This function of working capital depicts how much cash (or current assets) is available to satisfy the short-term cash requirements imposed by current liabilities (Preve & Sarria-Allende, 2010). A firm is facing insolvency if the firm's net working capital is negative. In this case the firm has insufficient current assets to provide cash to its meet current obligations which should be avoided. The objective of a firm is to convert both its inventories and accounts receivable into cash as soon as possible.

### **Key Components of Current Assets**

Current assets are important to firms to maintain its commercial transactions since every firm needs to finance its day-to-day business operations. A firm's current assets includes the firm's inventories (either raw materials or final goods), accounts receivables, and a minimum level of cash so the firm can operate normally. The time horizon of current assets represents one year of the firm's balance sheet. Since all the current assets including cash (cash holdings), accounts receivable and stock inventory are expected to be easily converted to cash in a short time, it also represents a firm's liquid assets. These assets are expected to be conveniently sold, consumed, utilized or exhausted through the standard business operations.

Cash and cash holdings include cash in current and interest-bearing accounts at bank. Liquid investments and marketable securities like interest-bearing short-term treasury bills or bonds, are often referred to as near cash. These securities are liquid enough to be transferred back into cash at short period of time. Cash holdings are similar to inventory as they keep the firm ongoing its operations (Brealey et al., 2015). Firms need to be sure that it has a certain level of cash available to satisfy the cash requirements that arise during business operations. As the need for cash is usually associated with the firm's activity level and cash cycle, different firms are likely to establish different levels of cash holdings (Preve & Sarria-Allende, 2010).

One important current asset is accounts receivables. When a firm sells its goods or services to another firm, it does not usually receive the payment immediately. Firms often allow customers a specified number of days to pay their invoices (Brealey et al., 2015). The use of such credits generates trade receivables, also known as account receivables. In principle, goods or services delivered to customers on credit will increase the receivables balance, and payments received from customers will eventually decrease this balance. In other words, accounts receivable is the balance of money due to a firm for goods or services delivered or used but not yet paid for by customers. On average, the balance of a given customer's current account is obtained by multiplying the daily volume of sales to that customer times the number of days the customer is allowed to take to pay the bill (Sagner, 2014; Preve & Sarria-Allende, 2010).

## ***Relationship Between Working Capital Management and Supply Chain Management***

Another important current asset is inventory. A firm's inventory that is determined at a certain level, is the necessary investment to make sure that the operation of the business acts smoothly. Inventories may consist of raw materials, work in process or finished goods awaiting purchase. Firms invest in inventory and holding inventory may provide firms some benefit. The benefits of holding inventory are often implicit. A large inventory of finished goods reduces the possibility of stock-out when the demand is increased unexpectedly. A firm that holds a undersized finished-good inventory is more likely to be unable to fulfill customer orders promptly. Moreover, large inventories of raw materials reduce the probability of an unexpected shortage that forces the firm to decrease the level of production. On the other hand, the cost of holding inventory bears not only storage cost but also the risk of spoilage and obsolescence (Brealey et al, 2015). Some firms, because of their operating or commercial structure, need to make a large investment in inventory, while others can operate with a lower level of inventory. Firms usually define an optimal number of days to keep each kind of good in their inventory. (Preve & Sarria-Allende, 2010).

### **Key Components of Current Liabilities**

Current liabilities are a firm's debts that are incurred within one year or an operating cycle. Moreover, current liabilities are covered by the use of a current asset such as cash and cash equivalents or by creating a new current liability. Current liabilities appear on a firm's balance sheet and include accounts payable, short-term debts and other similar debts.

A firm's principal current liability consists of accounts payable are the trade payables due to suppliers, usually as evidenced by supplier invoices. When purchasing raw materials and other inputs, a firm may benefit from credit terms that will help reduce the need for other finance. Suppliers sell their products to the firm and allow a certain amount of time before payment is due. Thus, account payables increase every time the firm receives a new goods and decreases when it makes the corresponding payment. On average, the balance of one supplier's account is obtained by multiplying the daily volume of purchases from that supplier times the number of days the supplier allows before payment is due (Sagner, 2014; Preve & Sarria-Allende, 2010).

### **A General Approach to Managing Working Capital Accounts**

Working capital management includes managing and controlling all working capital accounts to make short-term investments effectively. Several aspects of working capital management like the cash management, account receivables management, accounts payables management and inventory management are fully integrated as a part of a body.

### **Cash Management Perspective**

Cash is the medium of exchange since the societies are established and is the first account of current assets on the balance sheet. A firm should hold enough cash, neither more, not less to run the business. Cause, excessive cash remains idle which simply increases the cost holding cash in hand obstructing the profitability of the firm. In the absence of sufficient quantity of cash at the proper time, payment of bills may not be made and in the trading and manufacturing operation will be disrupted. The firm also invests in short-term securities as known as liquid assets. The firm may choose from a variety of short-



term securities that differ somewhat with regard to their default risk and liquidity risk. Moreover, holding liquid assets has a cost in which liquid assets may earn a below-market return, and a firm may face transaction costs if it needs to raise cash quickly. A firm must have the ability to transfer ownership of the asset quickly and easily for full market price. If a discount is applied to the selling price, the asset is considered to be illiquid. Similarly, holding excess cash has disadvantages. It increases the cost of capital and overall risk by destroying business value and lowers the return on assets. Given these circumstances, the optimal strategy for a firm to hold cash is to anticipate the demand for its products and fluctuations that affect its business. Risky firms and firms with high-growth opportunities have a tendency to hold a relatively high percentage of amount as cash. If the firms have an easy access to capital markets, tend to hold less cash (Sagner, 2014; Berk et al., 2012; Preve & Sarria-Allende, 2010).

The key reasons of a firm for holding cash balances are transactions, precautionary, and speculative. The amount of cash a firm needs to be able to pay its bills is sometimes referred to as a transactions balance. Transactions balances are maintained to meet the payment of known obligations that a firm must hold enough cash to pay its bills. The amount of cash a firm needs to satisfy the transactions balance requirement depends on both the average size of the transactions made by the firm and the firm's cash cycle. Precautionary balances are held as a cushion for uncertainty. The size of this balance depends on the degree of uncertainty surrounding a firm's cash flows and the opportunity cost of funds. The more uncertain future cash flows are, the harder it is for a firm to predict its transactions need, so the larger the precautionary balance must be. A firm may hold a speculative balance to take advantage of temporary opportunities, such as a sudden decrease in the price of a raw material. In conclusion, cash management involves the efficient collection, disbursement and temporary investment of cash. (Berk et al., 2012; Van Horne & Wachowicz, 2009; Gitman et al., 1979).

## **The Concept of Trade Credit**

Most firms engaged in business with each other allow the exchange of goods and services without any immediate exchange of money. Such a transaction generates a commercial credit for the seller and a commercial debt for the client. Trade credit is the credit provided by a firm to others when the goods and services are bought on credit. The general name given to commercial credit is trade credit. Similar manner, the commercial credit provided is often referred to as accounts receivables, whereas the commercial credit received is often referred to as accounts payables. In principle, trade credit is a loan from the selling firm to its customer. Thus, trade credit is commonly used by firms as a source of short-term financing and appears as accounts receivables and accounts payables on the balance sheet. For a number of reasons, trade credit can be an attractive source of funds. First, trade credit is simple and convenient to use, and it has lower transaction costs than alternative sources of funds. Second, it is a flexible source of funds and can be used as needed. Finally, it is sometimes the only source of funding available to a firm (Berk et al., 2012; Preve & Sarria-Allende, 2010).

When a firm allows a customer to pay for goods at some date later than the date of purchase, it creates an accounts receivable for the firm and an account payable for the customer. However, a firm would prefer to be paid in cash at the time of purchase and a cash in advance (CIA) policy may cause the firm to lose its customers and competition. Accounts receivable represent the credit sales for which a firm has yet to receive payment. The accounts payable balance represents the amount that a firm owes its suppliers for goods that it has received but for which it has not yet paid. Firms can employ several methods to reduce their collection and disbursement floats. Although a firm may try to extend its payables and

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reduce its working capital needs, it risks making late payments to suppliers. In such a case, the firm may be charged an additional fee for paying late or may be required to pay cash before delivery (CBD) or cash on delivery (COD) for future purchases. In some cases, the supplier may refuse to do business in the future with the delinquent firm (Berk et al., 2012).

### **Receivables Management Perspective**

Firms usually sell their products on credit, rather than requiring immediate payment. There are various important elements in establishing a program to manage accounts receivables, including establishing policies and organizing a business for the implementation of these policies. In particular, a firm adopts a policy for offering credit to its customers. When the firm determines the credit policy that involves three steps, the firm establishes credit standards, credit terms and a collection policy. Policies on receivables formalize decisions on the extension of credit to customers for instance the firm may extend credit strategically while dealing with potentially important customers or high-margin sales. The decision of how much credit risk to assume plays a large role in determining how much money a firm ties up in its receivables. While credit risk is the starting point, the cost of the credit is one of the determinants. If the cost of the credit is small relative to the purchase price, it may also adopt a less restrictive policy. Although a restrictive policy can result in a lower sales volume, the firm will have a smaller investment in receivables. Conversely, a less selective policy will produce higher sales, but the level of receivables will also rise (Sagner, 2014; Berk et al., 2012; Preve & Sarria-Allende, 2010).

Obviously, credit policy can have a significant influence on sales. Since a firm decides on its credit standards, it must next establish its credit terms. The firm decides on the length of the period before payment must be made and chooses whether to offer a discount to encourage early payments. Discounts are price reductions given for early payment provided to its customers. If it offers a discount, it must also determine the discount percentage and the discount period. The last step in the development of a credit policy is to decide on a collection policy. Collection policy refers to the procedures used to collect past due accounts can range from doing nothing if a customer is paying late, to sending a polite letter of inquiry, to charging interest on payments extending beyond a specified period, to threatening legal action at the first late payment. After establishing a credit policy, a firm must monitor its accounts receivable to analyse whether its credit policy is working effectively. One tool that firms use to monitor the accounts receivable are the accounts receivable days (Berk et al., 2012; Preve and Sarria-Allende, 2010; Brigham & Houston,2009).

### **Payables Management Perspective**

Payables management is the administration of a firm's outstanding debts, or liabilities, to suppliers for purchases of goods and services made on credit. Purchasing inventory, raw materials, and other goods on trade credit allows a firm to defer its cash outlays, while maintaining resources immediately. Moreover, accounts payable is a short-term financing common to almost all firms. In fact, they are collectively the largest source of short-term funds for the firms. A firm should choose to borrow using accounts payable only if trade credit is the cheapest source of funding. The firm must balance the advantages of the trade credit against the cost of relinquishing a possible cash discount. The higher the discount percentage offered, the greater the cost of relinquishing the discount. When a firm has a choice between trade credit from two different suppliers, it should take the less expensive alternative. A firm should strive to keep

its money working for it as long as possible without developing a bad relationship with its suppliers or engaging in unethical practices (Berk et al., 2012; Van Horne & Wachowicz, 2009).

There are several advantages of trade credit as a form of short-term financing. The major advantage is its ready availability as a continuous form of credit. There is no formal need to arrange financing it as old receipts are paid and new purchases made, new accounts payable replaces old and the amount of trade credit financing changes accordingly. A firm should monitor its accounts payable to ensure that it is making its payments at an optimal time. One method is to calculate the accounts payable days outstanding and compare it to the credit terms. The accounts payable days outstanding is the accounts payable balance expressed in terms of the number of days of cost of goods sold (Berk et al., 2012; Preve and Sarria-Allende, 2010; Brigham & Houston, 2009).

### **Inventory Management Perspective**

Managing inventory is so important to most of the firms that inventory balances can help firms meet variation in demand, as well as variation in the supply of raw materials. Inventory management involves the setting of inventory levels so as to maximize the benefits while minimizing the costs of holding inventory. A firm needs an optimal level of inventory to operate for diverse set of reasons. One reason, an efficient inventory management avoids the risk that the firm will not be able to obtain an input that it needs for production. Holding too little inventory may cause stock-outs, the situation when a firm runs out of inventory, lead to lost sales. Therefore, unsatisfied customers may switch to one of the firm's competitors. Other reason, holding inventory allow flexibility in the production schedule such as seasonality in demand that customer purchases do not perfectly match the production quantity. For example, while raw materials that are near-commodities are typically liquid, finished goods may or may not be easy to sell quickly without a considerable discount, and works in progress tend to be highly illiquid. (Berk et al., 2012; Preve & Sarria-Allende, 2010).

The role of the managing inventory is to balance the costs and benefits associated with holding inventory. Firms may prefer to buy large quantities to take advantage of size discounts and to avoid stock-out problems. However, this strategy might involve storage and obsolescence costs, also raises the capital needed to acquire the additional inventory. However, this. Additionally, may lead to overinvestment problems, specifically, the cost of financing more than needed in inventory jeopardizing firm's overall profitability (Preve & Sarria-Allende, 2010; Brigham & Houston, 2009). On the other hand, efficient management of inventory increases firm value. Inventory is a current asset to a firm, but it is costly to maintain as it waits to be converted into future sales. Thus, cash invested in inventory holdings may be tied up for a considerable amount of time. While excess inventory does increase costs, a shortage of inventory may result in lost sales (Shin et al., 2015).

Inventory management focuses on reducing the costs such as acquisition, order and carrying costs. The lower the level of inventory a firm carries, the lower carrying cost but the higher its annual order costs because it needs to place more orders during the year. Some firms seek to reduce their carrying costs as much as possible. With "just-in-time" (JIT) inventory management, a firm acquires inventory precisely when needed so that its inventory balance is always zero, or very close to it. JIT is defined as an inventory strategy aimed at improving a firm's financial performance by reducing excess inventory and its associated cost. JIT inventory system requires exceptional coordination with suppliers because suppliers have to fill the inventory as soon as it reaches a minimum level as well as a predictable demand for the firm's products (Shin et al., 2015; Berk et al., 2012).

## **THE ROLE OF WORKING CAPITAL MANAGEMENT ON FIRM'S FINANCIAL PERFORMANCE**

Working capital management is crucial to make sure that the organization has sufficient cash for carrying out its everyday operations expeditiously. In the present day of rising capital cost and scarce funds, the significance of working capital needs special emphasis. Working capital requirement varies from one firm to another and also within the same firm could vary from one month to another. The managers need to forecast earnings, which is inventory and accounts receivable and expenses, which is accounts payable to determine the adequate level of working capital for the firm to run its businesses. There are crucial drawbacks for the firm if it cannot achieve appropriate level of working capital to operate its business. Thus, working capital management directly affects the liquidity and profitability of a firm. A firm is required to maintain a balance between liquidity and profitability to perform a financial well-being.

If an organization's current liabilities are more than its current assets, then it shows a deficiency in the working capital investment and might lead sometimes to a business-related debt. A shortfall in working capital investment has a damaging impact on the image of an organization it shows that the firm is facing liquidity problems and is unable to pay for costs related to short term periods. An increase in inventories can prevent production disruptions (Garcia-Teruel & Martinez-Solano, 2007), reduce the risk of stock-out (Deloof, 2003), and reduce supply costs and price fluctuations (Blinder & Maccini, 1991). Moreover, an increase in accounts receivable can increase sales as it allows customers to delay their payments and can be an inexpensive source of credit for customers used as an effective price cut that strengthens long-term supplier/customer relationships (Tauringana & Afrifa, 2013; Deloof, 2003; Wilner, 2000; Peterson & Rajan, 1997).

A large amount of cash can be employed in working capital, so a firm managing it efficiently could benefit from additional liquidity and be less dependent on external financing. However, increasing investment in working capital may result in opportunity cost of cash tied-up in inventory, accounts receivable and increased inventory storage and insurance costs which could reduce the profitability of the firm (Deoof, 2003). Tauringana and Afrifa (2013) stated that the management of account payables and receivables is an important driver for the firm's profitability. By minimizing inventory holding costs such as warehouse storage costs and insurance costs will in return increase the firm's profitability. Moreover, retaining accounts receivable to a minimum will also increase profitability as the funds will not be kept in accounts receivable can be left in the bank earning interest or invested elsewhere. However, a reduction in both inventories and receivables may jeopardise the amount of sales, herewith reducing profitability. At the same time an attempt to demand more credit from suppliers may reduce profitability as the firm may lose out on the discounts. Nevertheless, delaying payments to suppliers can be an inexpensive and flexible source of financing for a firm (Deoof, 2003).

In a competitive environment, firms should concentrate on improving adequate level of its working capital to be successful in its financial performance. Firms with lower working capital will post a higher return on capital so shareholders will benefit from a higher return for every dollar invested in the business. The ability to meet short-term obligations is a pre-requisite to long-term solvency and often a good indication of counterparty's credit risk. Liquidity is a precondition to ensure that firms are able to meet its short-term obligations and its continued flow can be guaranteed from a profitable firm. Adequate working capital management will allow a business to pay on time its short-term obligations which could include payment for purchase of raw materials, payment of salaries, and other operating expenses. Working capital ties up funds that could be employed elsewhere in the firm to earn a return and can increase

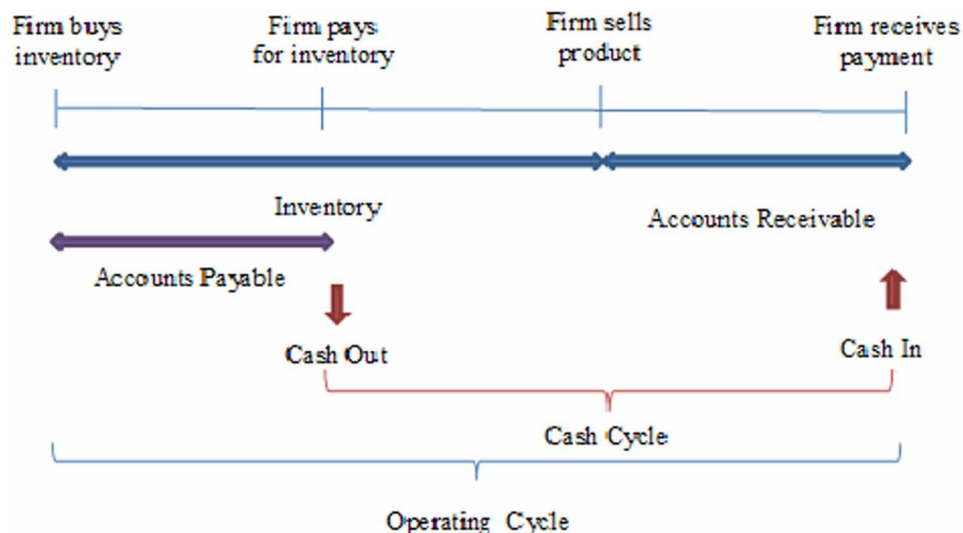
firm value. Managing working capital efficiently will increase free cash flows, allowing a manager to maximize firm value. Any reduction in working capital requirements generates a positive free cash flow that the firm can distribute immediately to shareholders (Berk et al., 2012; Preve & Sarria-Allende, 2010; Brigham & Houston, 2009, Van Horne & Wachowicz, 2009).

### **The Significance of Supply Chain Management on Cash Conversion Cycle**

All firms follow a cycle in which they purchase or produce inventory, hold it for a time, and eventually sell it and receive cash while managing its working capital. Working capital management mainly focuses on two processes that are operating cycle and cash cycle. A firm's operating cycle is the average length of time between when the firm originally purchases its inventory and when it receives the cash back from selling its product. The cash cycle is the average time between when a firm pays for its inventory and when it receives cash from the sale of its product. If the firm pays cash for its inventory, this period is identical to the firm's operating cycle. However, most firms buy their inventory on credit, which reduces the amount of time between the cash investment and the receipt of cash from that investment (Berk et al., 2012; Brigham & Houston, 2009). Operating and cash cycle are depicted graphically in Figure 1.

Some practitioners measure the cash cycle by calculating the cash conversion cycle. It is defined as "the number of days between paying for raw materials and getting paid for product, as calculated by inventory days of supply plus days of sales outstanding minus average payment period for material" (Farris II & Hutchison, 2002). As a popular measure to evaluate working capital performance, the cash conversion cycle explores the time lag between the expenditure for the purchases of raw materials and the collection of sales of finished goods. The longer this time lag, the larger the investment in working capital (Deloof, 2003). A longer cash conversion cycle might increase profitability because it leads to higher sales. However, corporate profitability might also decrease with the cash conversion cycle, if the costs of higher investment in working capital rise faster than the benefits of holding more inventories

*Figure 1. The cash and operating cycle*  
*Source: (Berk et al., 2012, p. 567)*



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and/or granting more trade credit to customer. The mathematical formula for cash conversion cycle is represented as:

$$\text{Cash Conversion Cycle} = \text{Inventory Days} + \text{Accounts Receivable Days} - \text{Accounts Payable Days}$$

where “Inventory Days” are calculated as follows:

$$\text{Inventory Days} = \frac{\text{Inventory}}{\text{Average Daily Cost of Goods Sold}}$$

where “Accounts Receivable Days” are calculated as follows:

$$\text{Accounts Receivable Days} = \frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$$

where “Accounts Payable Days” are calculated as follows:

$$\text{Accounts Payable Days} = \frac{\text{Accounts Payable}}{\text{Average Daily Cost of Goods Sold}}$$

The longer a firm’s cash conversion cycle, the more working capital it has, and the more cash it needs to carry to conduct its daily operations (Berk et al., 2012). One goal of cash conversion is to balance the investments a firm makes in inventory and extending credit to customers with payments that a firm makes for purchases. Higher accounts receivable days may signal that the firm is having trouble collecting from its customers, and low accounts payable days might suggest it is not taking full advantage of opportunities to delay payment to suppliers. Finally, high inventory days would focus a manager on why the firm needs to have its inventory on hand so long before it sells the product (Berk et al., 2012).

The cash conversion cycle holds significance for supply chain management activities as it has a financial projection of physical goods into (as raw materials) and out of the firm (as finished goods). Cash conversion cycle reflects the time intervals between actual cash expenditures for the purchase of raw materials and the final collection of receipts from finished good sales (Yazdanfar & Öhman, 2014; Richards and Laughlin, 1980). Therefore, cash conversion cycle provides a valid measurement for a firm’s liquidity and depicts a firm’s average liquidity position. Further, firms use the cash conversion cycle to evaluate changes in the circulation of cash by converting its financial resources to firm’s profitability. Since it is important to invest its available financial resources to yield the highest revenue, an optimal level must be determined between the amount resources deployed to working capital and the amount deployed to capital investments. Therefore, a firm’s optimum liquidity position and its minimum level of liquidity necessary to support a given level of business activity must be identified and regularly monitored (Farris II & Hutchison, 2002; Schilling, 1996).

The optimum liquidity level for a firm is determined by decisions between financial decision-making within cash conversion cycle (to decrease minimum liquidity required) and operational decision-making within the supply chain management (which can lengthen the cash conversion cycle and therefore, increase

minimum liquidity required). To determine the minimum level of liquidity, a useful measurement would be the calculation of cash turnover, which entails a measure of the number of times cash cycles during the year for a firm. Cash turnover can be calculated by dividing the number of days in the year by the cash conversion cycle. Then, taking the cash turnover and dividing it into the annual cash expenditures can obtain the minimum liquidity required. Apparently, a direct relationship exists between the length of the cash conversion cycle and the minimum liquidity required. If the cash conversion cycle lengthens, the minimum liquidity required increases (Farris II & Hutchison, 2002; Shilling, 1996). Also, the longer the cash conversion cycle, the greater the need for a firm to require external financial resources (Farris II & Hutchison, 2002; Soenen, 1993; Moss & Stine, 1993).

A firm's value is also closely related to its cash conversion cycle. Thus, a shorter cash conversion cycle results in higher cash inflows generated by the assets and a higher firm value (Farris II and Hutchison, 2002; Soenen, 1993). Moreover, reducing the accounts receivable period, combined with lower inventory and extended supplier credit terms, leads to a shorter cash conversion cycle, therefore, a lower capital level may improve firm's liquidity and profitability. The advantage of this strategy is to finance cheaply that the current liabilities incur little or no interest. However, this strategy involves risk, as low inventory levels combined with a short-term trade credit may lead to higher operational risk in a supply chain and decreased sales (Yazdanfar & Öhman, 2014; Ebben & Johnson, 2011; Wang, 2002).

Supply chain management focus on achieving lowest total cost through interrelation of cash conversion cycle components as it connects inbound material activities with suppliers through manufacturing operations and the outbound sales activities with customers. Supply chain management offers opportunities for improvements throughout the business process. If supply chain management and working capital improvements encompassed everything from initial supplier to final customer fulfillment, total cash conversion cycle time could be decreased. (Farris & Hutchison, 2002).

## **The Linkage Between Working Capital Management and Supply Chain Management**

Proper management of working capital is essential to a firm's fundamental financial health and operational success of a business. A key component of organizational success (or failure) is the control of the components of working capital. It is widely acknowledged that the performance of the supply chain management has a significant effect on a firm's financial well-being. Working capital investments which are the firm's current assets affect shareholder value all are within the influence of supply chain management function. It is also stated that supply chain management has a significant effect on a firm's financial performance as an enormous measure of working capital is employed in a supply chain (Hofmann & Locker, 2009; Ellram & Liu, 2002).

A supply chain involves more than the movement of physical goods, it also includes the flow of cash between the channel partners, which might be suppliers, intermediaries, third party service suppliers and customers. The primary purpose of every partner in the supply chain is to generate money, considered to be flow-oriented which link the supply chain management to working capital. All the partners in a supply chain strive to improve the operations for supply chain with the motive to increase their own incomes (Fredendall and Hill, 2000). Obviously, both supply chain decisions and working capital flows have a direct effect on the financial viability and performance of a firm. Thus, the components of working capital management measured by cash conversion cycle overlap with the supply chain activities. There are relevant findings concerning the interrelationship between working capital components and supply

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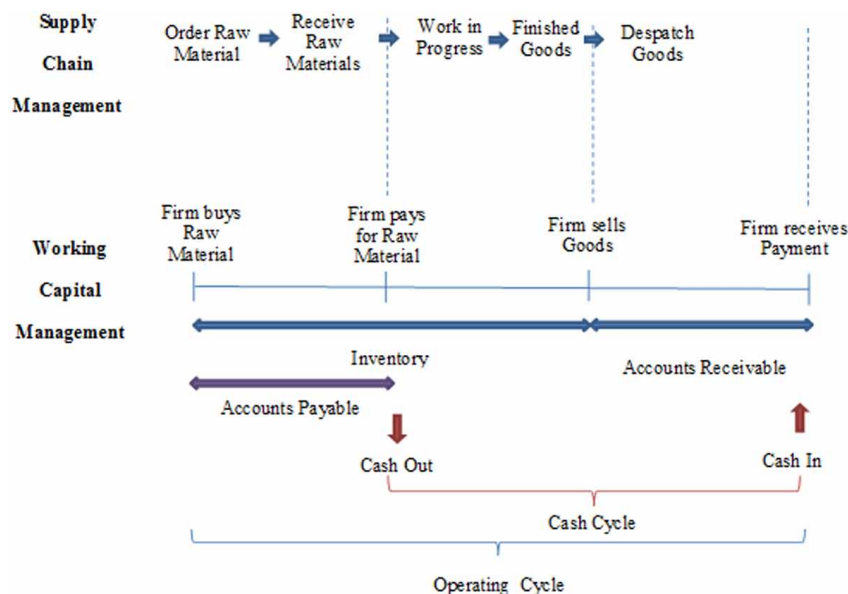
chain management issues (Hofmann & Kotzab, 2010; Ramos, 2004; D'Avanzo et al., 2003; Farris & Hutchisson, 2003; Ellram & Lui, 2002; Farris & Hutchisson, 2002; Timme & Williams-Timme, 2000; Stewart, 1995). A theoretical framework is developed to depict the projection of supply chain activities on working capital components. This framework demonstrates the relationship of working capital and supply chain management has an effect on a firm's liquidity and profitability performance.

Wisner (2011) states that decisions of supply chain managers and their outcome have linkages with financial targets and its related metrics. The effect of supply chain activities on the firm financial performance can be studied by creating linkages between the processes and outcomes (Pradhan et al., 2018). Further, Wisner (2011) has stated the linkages between the organization's supply chain activities affect the firm financial performance through working capital decisions and short-term financial planning. Working capital components provide the necessary support to managers for enhancing the performance in the supply chains that help to achieve firm's objective and consequently improve their performance. Besides, the various components of working capital as stated by Wisner (2011) have been critically examined for framing a relation between adoption of supply chain performance and firm performance. Therefore, the supply chain activities that affect firm's financial performance is linked to working capital components, measured by cash conversion cycle which are inventory days, accounts receivables days and accounts payable days.

## CONCLUSION AND SUGGESTIONS

It is stated that managing the working capital involves an effort that must be a cross-functional approach within the firm and a collaborative approach throughout the supply chain, between the firm, its customers and its suppliers (Farris & Hutchisson 2002). Therefore, to build an effective model between

Figure 2. The projection of supply chain activities on working capital components





## **Relationship Between Working Capital Management and Supply Chain Management**

*Table 1. The linkages between working capital components and supply chain activities*

Working Capital Component	Supply Chain Activities
Inventory Days	<ul style="list-style-type: none"> <li>• Holding costs – financing, warehousing, tracking, moving, insurance</li> <li>• Obsolescence</li> <li>• Theft</li> <li>• Forecasting accuracy</li> <li>• Sourcing time</li> <li>• Delivery time</li> </ul>
Accounts Receivable Days	<ul style="list-style-type: none"> <li>• Bad debt</li> <li>• Follow-up calls to receive payments</li> <li>• Unable to ship due to non-payment</li> <li>• Exchange rate changes</li> <li>• Correct invoicing terms</li> <li>• Proof of receipt</li> </ul>
Accounts Payable Days	<ul style="list-style-type: none"> <li>• Discounts not taken</li> <li>• Late payments; subsequent orders delayed</li> <li>• Correct invoicing terms</li> <li>• Payment penalties</li> </ul>

Source: Wisner, Priscilla (2011)

supply chain activities and financial performance, the supply chain organization in a firm must understand how its actions and decisions link to the working capital components of the firm. Then, the firm should analyze the influence that its various actions and components have on outcomes that affect the firm's financial performance. This linkage model will help to ensure that the supply chain management is implementing decisions in accordance with working capital management will be valued by the top management of the firm.

Firms with an efficient supply chain management will often be able to sell their products at a discount while similar firms with inefficient supply chain obliged to external financial sourcing. One of the firm's financial objectives is to reduce the required level of working capital to preserve its liquidity and gain profitability. However, supply chain activities correspond to an amount of capital to keep supply chain working and reducing the working capital should be succeeded without hurting the supply chain performance. Therefore, a reduction in working capital must not be allowed to happen at the expense of supply chain performance, whether in terms of overall profitability or customer satisfaction. In general, there are some levers available to firms for reducing its supply chain working capital. By working with working capital management together a supply chain can optimize its cash management (meet expenses without excessive cash holdings), its receivables management (trade credits for customer payments), its payables management as short-term financing (trade credits from suppliers) and its inventory management (reduce levels of inventories).

One lever to monitor the working capital is to determine the adequate level of cash that is available for a short period. Most firms establish a target level of cash balances to maintain an optimal of cash to meet its debt obligations and also operate the business operations. Firms also avoid excess cash balances because interest can be earned when these funds are invested in marketable securities. Doubtlessly, the higher the interest rate available on marketable securities, the greater the opportunity cost of holding cash. Thus, the firm will have a desire to reduce its cash holdings (Van Horne & Wachowicz, 2009). There are some suggestions that enable firms to reduce its cash holdings. To obtain interest rate in the short-term, the cash could be invested in marketable securities. Additionally, the decision to invest cash

## ***Relationship Between Working Capital Management and Supply Chain Management***

in marketable securities involves not only the amount to invest but also the type of security to invest. The selection of marketable securities could be determined by its ability to be converted into cash without any price concession in the market. Another suggestion is the evaluations of firm's expected future cash flow patterns to minimize the uncertainty associated with the cash balance.

Another lever to minimize the working capital is to reduce the accounts receivable days which is the period of time for customer payments. The goal of this approach with accounts receivable is to expedite cash collection. There are some suggestions that may improve accounts receivable collection. To encourage faster payments, discount terms which is one of the most effective mechanisms to increase receivables collection can be settled to each customer (Farris & Hutchisson, 2002; Boardman & Ricci, 1985). Moreover, interest payments could be imposed on delinquent accounts and future orders for delinquent customers could require cash on delivery (COD) payments. Another idea is to accept electronic payments that would also speed up receivable collections. Additionally, factoring of accounts receivable to financial institutions could be offered as a means of reducing collection time (Farris & Hutchisson 2002; Walz, 1999).

The other lever to reduce the working capital is to extend the average accounts payable associated with inventory through its supply chain and therefore, provide interest-free financing. There are positive reasons for extending the days of accounts payables. There are some suggestions to achieve this objective. A firm could take advantage of electronic payments for raw materials, inventory, wages and expenses and pay at the last possible date. Another suggestion would be to make partial payments rather than full to suppliers. An additional suggestion would be to extend payments by using interest-free credit cards or lines of credit. Finally, credit terms would be utilized by taking purchase discounts for paying invoices early that reduce full payments to suppliers. The goal of all these suggestions is to monitor and limit capital requirements and avoid external financial resourcing (Farris & Hutchisson 2002).

The final lever to improve working capital is to shorten production cycle to reduce inventory days of supply. Maintaining an appropriate level of inventory is a key issue to a firm's financial performance. To achieve this goal one suggestion is to determine the production schedule as managerial response to market demand. As inventory is the least liquid current asset to a firm, it is costly to maintain as it waits to be converted into future sales. While excess inventory increases costs, a shortage of inventory may result in lost sales. Another suggestion for the firms is to first work on overage inventory, implementing manufacturing and inventory strategies such as just-in-time (JIT) delivery, and real-time inventory tracking. Then collaborative planning, forecasting and replenishment (CPFR), synchronizing supply/demand planning and cross-docking of materials at warehouse locations may be used to reduce optimum inventories as a component of the supply chain working capital. (Shin et al., 2015; Farris & Hutchisson 2002).

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## **KEY TERMS AND DEFINITIONS**

**Cash Before Delivery (CBD):** Cash on delivery is a payment method in which a firm only sends goods to a customer after they have received the customer's payment.

**Cash in Advance:** Cash in advance is a payment method in which a customer must send their payment for goods at the same time as they send their order.

**Cash on Delivery (COD):** Cash on delivery is a payment method in which the purchaser makes payment for a good at the time of delivery.

**Collection Float:** Collection float is created when a firm receives a check, causing an increase in the firm's book balance but no change in its available balance.

**Disbursement Floats:** Disbursement float is created when a firm writes a check, causing a decrease in the firm's book balance but to change in its available balance.

**Liquidity:** The degree to which an asset can be quickly converted into cash without price concession in the market.

**Opportunity Cost:** Opportunity cost represents the benefits that is lost by not taking the next best investment alternative.

**Profitability:** As a measurement of efficiency, it refers the ability of a firm to produce a return on an investment based on its resources.

# Chapter 12

## Performance-Based Budgeting and Performance Auditing in Turkish Public Finance

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### **ABSTRACT**

*In order to use public resources effectively, budgeting and audit processes should be compatible. There is a performance term in base of this harmony. Public Financial Management and Control Law No. 5108 has brought performance-based budgeting and performance audit institutions to Turkish public finance. According to this law, public administrations should prepare performance-based budgeting with respect to strategic plans. On the other hand, a performance audit, which is a kind of internal audit should be performed according to predetermined performance indicators. This process is called performance management in the literature. This study is a literature review which examine topic of performance-based budgeting and performance audit. Some terms have been researched that are thought to be important in the legislation. One hundred seventeen national and international abstracts have been read and full texts of twenty studies directly related to the subject have been analyzed according to the 4N1K literature screening method.*

### **INTRODUCTION**

The entry into force of the Public Financial Management and Control Law No. 5018 in 2005 is considered as a turning point in terms of effective, economic and efficient use of public resources. Expectations of individuals about the quality of public goods and public services have made it necessary to use public resources more carefully and more meticulously than ever before. Therefore, Law 5018 is based on the performance-based budget in the preparation of the strategic plan. Because the determination of the performance indicators in advance is very important in the effective use of public resources.

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Internal audit institution is one of the innovations which have been brought by the law. Internal audit is defined in the law as an activity that shows whether public resources are used according to the principles of economy, efficiency and efficiency. Performance audit is a type of internal audit that complete performance-based budget approach. If the budget and audit is determined according to performance indicators, undoubtedly, efficiency will increase in public financial management.

This study focuses on performance-based budgeting and performance audit in Turkish public financial management. Before entering into the subject of budgeting and audit, some terms will be emphasized which have important effects on the use of public resources. After explaining these terms which form the basis of Law No. 5018, performance-based budget and performance audit issues will be discussed in detail.

## **BASIC TERMS IN THE LAW NO 5018**

To make a quality performance audit in public financial management, there are some important conditions. If these conditions are not fulfilled, it is difficult to ensure effectiveness in the audit. Some terms entered to the Turkish public finance for the first time under the Law on Public Financial Management and Control No. 5018. These terms are economy, effectiveness and efficiency and efficiency. These three terms are provided by the law in six different places. In addition, accountability and financial transparency are important principles in the law too.

<sup>1</sup> *“The purpose of this Law is to regulate structure and functioning of the public financial management, preparation and implementation of the public budgets, accounting and reporting of all financial transactions, and financial control in line with the politics and objectives covered in the development plans and programs, in order to ensure accountability, transparency and the effective, economic and efficient collection and utilization of public resources” it is stated that these terms are very vital for public financial management. Effectiveness, economy and efficiency are among the performance indicators of both public and private institutions (Yükçü and Atağan, 2011:1). Performance indicators allow a comprehensive measurement of performance. Performance indicators are also used to measure the performance of the activity, personnel and production factors (Yükçü and Atağan, 2011:1). In this part, these terms in article 1 will be explained.*

### **Effectiveness**

The general definition of effectiveness is the best use of resources and the best possible result (Yükçü and Atağan, 2011, p. 1). In other words, the goal of reaching the targeted plans is the most important description of effectiveness. Effectiveness is an important performance indicator that shows the extent to which organizations and organizations achieve their goals at the end of their activities (Horngren and.,2010). The effectiveness goes into division; organizational effectiveness and managerial effectiveness. Organizational effectiveness is the realization of the target at the highest level with the opportunities and resources in the hands of the organization. Managerial effectiveness is the management’s contribution to achieve organizational effectiveness (Işıkgöz, 2016, pp. 79-90). Quality organizational effectiveness depends on a managerial effectiveness (Karatepe, 2005, pp. 307-326). According to “Working Procedures and Principles of Internal Auditors Regulation” effectiveness is defined that relationship between the

planned and actual effect of an activity and refers to the degree and availability of the goal. In the light of these definitions, it is understood that the term of effectiveness is included in the legislation in order to measure the performance of public administrations.

## **Economy**

Economy can be defined as the ratio of revenues obtained from the production phase to the expenses for production.<sup>2</sup> The most comprehensive definition of economy is not included in the primary legislation. Internal Audit Coordination Board (IACB) has prepared an implementation directory for internal auditors. Its name is Performance Audit Directory (PAD). Economy is the acquisition and use appropriate quality and amount of resources at the appropriate time, at the most appropriate cost, to achieve the targeted output or result. For economy obtained of output at the most appropriate time and cost is very important. During the internal audit, economy determine whether public resources are used sparingly.

## **Productivity**

Productivity with the widest meaning; In addition to measure sensitivity and effectiveness of instruments in reaching economic objectives, technically, it is a term that examines the physical relationship between output and input. Productivity is defined as follows “in projects, programs, processes and activities program, using minimum amount of input, production of maximum and quality output” in a (PAD). The principle of productivity is similar to the principle of economy in terms of focusing on input and output issues. Productivity is the ratio of input and output to each other.

Productivity = Output / Input

For example, number of services is an output. Input varieties are more than output varieties. The number of workers, materials, equipment, quality and time are considered as inputs. The number of services is divided into all these inputs and unit cost of the outputs is calculated. Productivity can be measured by benchmarking method after unit costs are found.

## **Accountability**

Accountability is the responsibility of the public authorities to use their authority and activities they carry out. In other words, accountability is defined as giving an answer and making a statement (Gül, 2008, pp. 71-94). The person explains and responds to the chancellor for his acting. In the Public Financial Management Law No. 5018, there are a lot of terms of accountability.

Accountability is defined under the “Accountability Responsibility” heading in article 8<sup>3</sup>, “Those who are assigned duties and vested with authorities for the acquisition and utilization of public resources of all kind are accountable vis-à-vis the authorized bodies and responsible for the effective, economic and efficient acquisition, utilization, accounting and reporting of the resources on the basis of law, as well as for taking necessary measures to prevent abuse of such resources”.

In Section 4 of the same law, the responsibility of accountability of ministers and top managers was mentioned. Public administrations must prepare strategic plans, development plans and annual plans. Ministers are responsible for the follow-up and communication and coordination with other ministries.



Ministers are also responsible to Prime Minister and Turkish Grand National Assembly (TGNA) for bring to the public attention and effective, economic and efficient use of public resources. The c - suite are responsible to the ministers they are affiliated with in the institutions mentioned above. Article 49 mention that necessity of accounting system for the accountability

## **Fiscal Transparency**

Transparency is a term which aims to share targets, tools, and results with the public opinion.

Fiscal transparency is a declaration plans and results of government policies that in order to obtain and use of public resources (Karakas, 2005, p. 297). The term of financial transparency is also found in many places in the Law No. 5018. Because fiscal transparency is one of the most needed terms in the process of spending of public resources in particular, it is complementary to the 4 important terms previously described.

## **PERFORMANCE: BASED BUDGET AND STRATEGIC PLAN**

The basic legal law of state budget is Law No. 5018 in Turkey. In this law, issues related to the basic and shape of the state budget have been determined. Strategic planning and performance-based budgeting topics take part in article 9 of the Law. The strategic plan is the most important part of the performance-based budgeting and performance audit process. It is stated that public administrations are obliged to prepare a strategic plan. The objectives of preparing a strategic plan are as follows;

- Composing future vision and mission
- Identifying strategic goals and measurable targets
- Measuring performance with pre-defined indicators
- Monitoring and evaluating this process

Resources allocated to specific programs by the public administrations should be made based on strategic plans, annual targets and performance indicators. Under secretariat Of State Planning Organization (SPO) has important role in this process. Under secretariat of SPO decide about implementing of strategic plans and exercise date.

In article of 9 “Public administrations shall prepare strategic plans in a cooperative manner in order to form missions and visions for future within the framework of development plans, programs, relevant legislation and basic principles adopted; to determine strategic goals and measurable objectives; to measure their performances according to predetermined indicators, and to monitor and evaluate this overall process”. These statements are included. Ministry Of Treasury And Finance is authorized to determine the appropriateness of the budgets prepared by public administrations to the performance indicators stated in strategic plans.

Performance indicators need to be included in the strategic plan prepared by the public administration. Performance indicators are determined by the relevant Public Administration, under secretariat of State Planning Organization and the Ministry of Treasury and Finance. Performance audit is performed within the framework of performance indicators.

*Figure 1. Process of determining performance indicators*



## **INTERNAL AUDIT AND PERFORMANCE AUDIT**

Internal audit in public is an institution that has entered into legislation with the Public Financial Management and Control Law No. 5018. Internal audit and pre-financial control are two important elements of internal control. In article of 63, internal audit is defined as such “Internal audit is an activity of providing independent and objective assurance and consultancy, which is performed in order to improve and add value to the activities of the public administrations by evaluating whether the resources are managed in conformity with the principles of economy, effectiveness and efficiency, and by providing guidance. Such activities are performed with a systematic, regular and disciplined approach and in accordance with the generally accepted standards, aiming to evaluate and improve the efficiency of risk management and of management and control processes in the management and control structures and financial transactions of administrations. The Law No. 5018 has a prudential audit understanding that brings suggestions and aims to improve public financial management rather than traditional audit. Because in recent years, use of public resources economy, effectiveness and efficiency are considered important,

In order to achieve these objectives, performance measurement is critical in public financial management. Furthermore, responsibility of c-suite is important for achieving their goals too. Especially in the least developed and developing countries, the inflation increase is originated due to low performance in public financial management. The reasons of the rise in the cost of public services are these factors. Instead of reducing or ending public services, it is an important approach in today’s world to ensure efficient use of scarce resources.

### **Performance Audit in Public Administration**

In Turkey the performance audit which is an element of internal audit came to the agenda with the Public Financial Management and Control Law No. 5018. Until this law comes into force, Turkish Court of Accounts (TCA) had a performance audit mandate. But TCA is responsible for conducting external au-

audits in the public sector essentially (Özer, 1997, p. 2). So, performance audit was limited before internal audit comes (Candan, 2007, p. 4). Performance indicators are also a stage of the strategic plan that public administrations should undertake in the medium and long term. Furthermore, the law emphasized that performance-based budget means public administrations will comply with performance criteria when preparing their budgets. The definition of performance audit is made within the scope of the secondary legislation “Regulation on Working Procedures and Principles of Internal Auditors”. The regulation also defines the types of audits that the internal auditor should undertake, see Table 1.

According to this regulation; compliance audit and system audit are carried out within the framework of the classical audit approach. The most frequent audits of internal auditors are to determine whether public resources are used in accordance with predetermined rules. Financial audit aims to determine the reliability of financial systems and tables. Information technology audit, it is required to test the continuity and reliability of the electronic information systems of the relevant public administration or unit.

In relevant regulation performance audit is defined as follows “Performance audit is the evaluation of effectiveness, economic and efficiency in the planning, implementation and control stages of operations that performed at all levels of management.” Among these types of audits performance audit is the most striking type in internal audit. Because in many parts of Law No. 5018; terms of effectiveness, efficiency and efficiency are the main theme of performance audit. In a viewpoint, effective performance auditing is essential for these terms to be effective.

## **Reasons of Performance Audit Appearance**

In recent years especially in OECD countries, performance audit has been added to agenda in public sector (Yenice, 2006, p. 122). In our country, there are many reasons why performance audit, is on the agenda. The most important of these are expressed as (Kubalı, 1999, p. 35):

- Expansion of the state activity field
- Rationality in resource allocation
- Development of democracy
- Principles of financial transparency and accountability
- Information technology and its rapid development

When these reasons are examined, it is revealed that the state should be removed from the traditional audit concept to the modern audit concept. Because the state is expanding to offer better quality services in line with the expectations of citizens the risk of bullying is increasing. In addition, the people’s will

*Table 1. Internal audit types*

1. Compliance Audit
2. Performance Audit
3. Fiscal Audit
4. System Audit
5. Information Technology Audit

Source: <http://www.idkk.gov.tr/SiteDokumanlari/Mevzuat/Ikincil%20Duzey%20Mevzuat/icdenalusulveesas.pdf>

to see where the public resources are spent has increased the importance of accountability. When the rapid development of information technology is added as a requirement of the era, performance audits are inevitable.

## **Legal Basis and Framework in Performance Audit<sup>4</sup>**

Internal Audit Coordination Board (IACB) has drawn up a comprehensive performance audit roadmap for internal auditors. It is considered useful to indicate the legal and institutional basis of performance audit, which is the sub-branch of internal audit (See Table 2).

The legal basis for defining the roadmap of performance audits implemented in Turkey is given in Table 2. For this purpose, one law, one regulation, one standard and two guidelines were used. Among these, legislation constituting the basis of performance audit is the Regulation on Working Procedures and Principles of Internal Auditors.

## **Performance Audit Sphere**

Internal audit units can perform performance audits in many areas. However, it is stated in the Performance Audit Directory that 8 areas are priorities (See Table 3).

It is desired to determine whether these 8 audit areas are effective, economic and efficient. For example, the need for performance auditing came to light as “public personnel management” was replaced by “human resources” (Ekici, 2008, p. 175). There is also important working in the public sector in order to

*Table 2. Legal Basis of Performance Audit*

1. Public Financial Management and Control Law No. 5108
2. Regulation on Working Procedures and Principles of Internal Auditors
3. Public Internal Audit Directory
4. International Internal Audit Standards
5. Performance Audit Directory

Source: <http://www.idkk.gov.tr/SiteDokumanlari/Mevzuat/Ikincil%20Duzey%20Mevzuat/icdencaulusulveesas.pdf>

*Table 3. Performance audit sphere*

1. Benefiting from Financial Resources in the Framework of Public Targets
2. Efficiency of Internal Control Systems
3. Information Systems and Applications
4. Human Resources and Staff Efficiency
5. Cost Reduction
6. Business Processes
7. Outsourcing and Contracts
8. Evaluation of Stakeholder Satisfaction

Source: Performance Audit Directory (PAD)

keep up with the European informatics standards in Turkey's recent (Çukurçayır & Çelebi, 2012, p. 58). This situation necessitates the subject of performance evaluation in information systems and applications.

## Performance Audit Elements

Internal auditors perform performance audits in accordance with certain criteria. These criteria are, in a sense, performance indicators, as listed in Table 4. It is the answer to how the performance audits of predetermined units of public administrations are performed.

Table 4 shows the components of performance audit. Performance audit consist of six elements. These are economy, productivity, effectiveness, consistency, sustainability and compatibility. Economy means that the highest efficiency is achieved with the least cost. The principle of economy is mostly valid for tender processes in public administrations. Productivity is used in terms of minimum input and maximum output. It is known that the Productivity element is used in the field of information and technology. Effectiveness shows the capacity to achieve targeted results. Consistency is questioning the alignment of public administrations ' targeted strategies and results with each other. Sustainability is concerned that the outputs used by some public administrations should then be used by other administrations. The item of sustainability is subject to the re-availability of the outputs obtained during the activity. It is also defined as an element that examines whether the results obtained from the activity can be disseminated or disseminated. In audit activities, both micro and macro targets and objectives are determined. The element that examines the compatibility of activities carried out by public administrations to macro and micro targets is consistency. Compatibility is to question the adequacy of the existing organizational structure in achieving the activities and objectives of the public administration.

## Performance Audit Analysis Methods

Following the performance audit areas in public administrations, performance audit elements have been determined. Performance analysis methods are intertwined with audit elements.

Table 5 shows performance analysis methods. There are five types of analysis methods. These are Comparing, Performance Measurement and Reporting, Evaluation of Program and Application Results, Productivity Analysis, Timeliness Analysis and Quality Analysis.

*Table 4. Performance control elements*

1. Economy
2. Productivity
3. Effectiveness
4. Consistency
5. Sustainability
6. Compatibility

Source: Performance Audit Directory (PAD)

*Table 5. Analysis methods*

1. Comparing
2. Performance Measurement And Reporting
3. Evaluation Of Program And Application Results
4. Productivity Analysis
5. Timeliness Analysis
6. Quality Analysis

Source: Performance Audit Directory (PAD)

## Performance Audit Analysis Methods

Six analysis methods are recommended for performance audit in Performance Audit Directory (PAD). The Internal Audit Unit will be able to use different analysis methods if deemed necessary. Table 6 lists the matrix of control analysis methods.

It is also valid for six elements of audit for these six methods of analysis specified in PAD. For example, “Performance Measurement and Reporting”, the first of the analysis methods, also applies to elements of economy, effectiveness, productivity, consistency, sustainability and compatibility. All other analysis methods must be approved by the audit elements specified in the table.

## LITERATURE STUDY

In this study, the literature has been examined in the scope of “performance-based budgeting” and “performance audit.” The Google Scholar database has been extensively scanned. It has been researched only for literature from Turkey. Because the study focuses on the final point in the Turkish public finances.

*Table 6. Performance control analysis methods and elements matrix*

	Economy	Effectiveness	Productivity	Consistency	Sustainability	Compatibility
Performance Measurement And Reporting				x		
Comparing				x		
Productivity Analysis				x		
Timeliness Analysis				x		
Quality Analysis				x		
Evaluation of Stakeholder Satisfaction				x		

Source: Performance Audit Directory (PAD)

## **Performance: Based Budgeting**

In particular, approximately 87 studies have been identified. In the titles of these studies, “performance-based budgeting” is mentioned. The full text of 14 of these studies, which are considered to be important have been obtained and analyzed in the 4N1K literature review table. Table 7 provides the relevant literature.

Approximately 87 publications mentioned in the title “performance-based budgeting” have been reached by us. 14 full texts of the publications have been examined in Table 8 given below.

Generally, document scanning method has been used in these studies. Overall situation assessments have been made in all of the studies and the applicability of performance-based budgeting in Turkey has been questioned.

## **Performance Audit Literature**

In this section, the literature has been scanned in the “performance audit” and “performance management” category. The studies related to the performance audit carried out by the court of accounts audit has been excluded, as given in Table 9.

In this study, it has been observed that the studies on performance audit which is an element of internal audit are relatively small. In the literature review, more than 30 studies have been found and six of them have been examined in the full text. It has been determined that these studies are related with the present situation.

## **CONCLUSION**

Public financial management and Control Law No. 5018 which came into force in 2005 in Turkey is accepted as a milestone in Turkish public finance. In particular, the classical audit approach has been replaced by a performance-based audit approach. The terms of economy, efficiency, productivity, accountability and fiscal transparency have been introduced for the first time. In addition, the Internal Audit Institution has been tried to activate all public administrations. Performance audit, which is a kind of internal audit, has also taken its place in legislation as one of the most important steps of effective public financial management. One of the ways to reduce waste in the allocation of public resources is performance audit is the complement of performance-based budgeting. Preparation of strategic plans in performance-based budgeting system is one of the most important tasks for public administrations. Because, as stated in the law, strategic plan is prepared based on performance.

In this study, performance audit is discussed in conjunction with performance-based budgeting system. These two phases form the performance management process. In this study, new terms entered into legislation have been defined and given some information about the strategic planning process, which is the most important part of performance-based budgeting. Performance control elements and analysis methods have been briefly discussed. The Google Scholar database has been scanned for “performance-based budgeting”, “performance auditing” and “performance management” concepts. 117 studies in the

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Table 7. Performance-based budgeting literature

Author	Date	Purpose of Study	Method	Result
Eriöz, E.	2005	In this study it has been discussed world practices of performance-based budgeting.	*Review of literature *Oral presentation paper	It is emphasized that performance-based budget implementation is in transition stage in Turkey and time is needed for the placement of this system.
Özen, A.	2008	The aim of the study is to investigate the transition from modern budgeting system to performance-based budgeting in Turkey and to question the applicability of this system in Turkey.	*Documents Scanning *PhD Thesis	In Turkey, it has been determined that this system is new and most public institutions do not meet the requirements of the performance-based budget system.
Oral, E.	2005	The aim of the study is to demonstrate the extent to which the OECD countries have passed performance-based budgeting and the situation in Turkey in this context.	*Documents Scanning *Research Report	It has been determined that all OECD countries are in performance-based budgeting and that Turkey is following the OECD backward.
Karacan, E.	2010	The aim of the study is to examine the OECD countries that have undergone performance-based budgeting and to examine the strategic plans of 27 public administrations in Turkey.	*Documents Scanning *State Planning Organization Dissertation	It has been concluded that the institutional cultural environment should be improved in public administrations, the effectiveness of the Turkish Grand National Assembly (TGNA) within the budget process, the capacity of strategy development units should be increased and strategic plans should be improved in terms of measurability.
Tüğen, Kamil, Egeli, H. and Özen, A.	2007	The aim of this study is to examine the reforms made during the transition to performance-based budgeting in developed countries.	*Documents Scanning	It has been determined that they are easily adapted to performance-based budgeting system with the comprehensive infrastructure of developed countries.
Çelebi, A. K., and Kovancılar, B.	2012	The aim of the study is to examine the advantages of performance-based budget system as well as its disadvantages.	*Documents Scanning	At the end of the study it has been found that there are problems such as behavioral model problem, Policy-rationality conflict, encouragement problem, conflicts of interest, and political behavior.
Badem, A. C., Kılınç, Y., and Kavas, T.	2013	The purpose of the study is to outline the overall performance-based budget system and examine strategic plan of Kocaeli University in addition.	*Documents Scanning	At the end of the study, the budget structure that should be implemented in Kocaeli University strategic plan has been revealed.
Aksaraylı, M. Egeli, H. Tüğen, Kamil, Akdeniz, H. A., and Özen, A.	2007	The aim of the study is to determine whether the Turkish public institutions accept the performance-based budget system and have adapted to this situation.	*In-Depth Interview *92 employee in 25 public administrations	It has been observed that performance-based budgeting determinants have not been completed throughout the institutions. They have a problem with adaptation to the new system.
İpek, Ş., and Çiçek, H. G.	2013	The aim of the study is to determine the effectiveness of performance-based budgeting in performance management.	*Review of literature	At the end of the study, it was found that performance management tools contribute to accountability but cannot contribute to performance improvement, which is the most important objective of performance management.
Beynam, H.	2013	The main objective of this study is to examine the performance-based budgeting systems of the Civil Aviation General Directorate and the Federal Aviation Administration of the United States and to make conclusions about the better functioning of the system for Turkey.	*Review of literature *Master's thesis	The study revealed that there are technical barriers in front of efficient operation of performance-based budgeting in Turkey and that the current instruments will be insufficient in overcoming this deficiency.
Çıldır, M.	2010	The aim of this study is to examine and evaluate the performance-based budgeting system applied in the UK.	*Review of literature	Performance based budgeting system in the UK started to be implemented in 1998. During this period, it had an important place in public financial management and had a share in the effective use of public resources.
İpek, E. A. S., Sakal, M., and Çiçek, H. G.	2014	The purpose of this study is to examine the performance-based budgeting system in detail.	*Review of literature	In this study, it has been observed that the mathematical computations of some budget systems are concentrated, while others are prone to human-oriented managerial skills.
Küçükaycan, D., and Tekin, R. C.	2017	The purpose of the study is to examine performance-based budgeting and the performance audit of the Court of accounts.	*Review of literature	The study mentions the performance audit of the Court of accounts. It has been determined that there are many errors during the audit and performance-based budgeting is a complement to the performance audit.
Şahin İpek, E. A.	2017	The purpose of the study is to test performance-based budgeting for gender-sensitive budgeting.	*Review of literature	It is stressed that some restrictions should be eliminated for the integration of the two systems.



*Table 8. Articled studied*

Articles	10
Thesis	3
Research Report	1

*Table 9. Performance audit literature*

Author	Date	Purpose of Study	Method	Result
Görmen, M.	2017	The objective of this study is to determine the contribution of Internal Audit units to the public administration's performance.	*Balanced Success Indicator Model	What kind of contributions will be made to the implementation of the model in public administrations?
Hatikler, M. A., and Çalıyurt, K. T.	2018	The purpose of the study is to investigate the reason for the inability to perform performance audits in public administrations.	*Survey	At the end of the study, the reason for the lack of performance audit in public administrations is attributed to the lack of performance management.
Çevik, S.	2002	The purpose of the study is to present the final status of the audit system in Turkey and to question the applicability of performance audit in Turkey within the context of world practices.	*Review of literature	It has been concluded that performance audit in Turkey is very inadequate and performance audit should be disseminated for an effective public financial management.
Candan, E.	2007	In this study, performance audit is extensively explained.	*Review of literature	The importance of performance audit in public financial management has been emphasized.
Apan A.	2011	The purpose of the study is to explain performance audit within the framework of Anglo-Saxon audit approach.	*Review of literature	It has been observed that the structure of Performance Control in Turkey is influenced by the American audit system. In addition, it has been determined that the audit applied in Turkey is approaching the Anglo-Saxon approach.
Karasoym, H. A.	2014	This study focuses on performance management, which has an important place in the new public financial management understanding.	*Review of literature	The public opinion that public expenditures should be more transparent has made Performance Management a critical issue.

title of “performance-based budgeting” have been found. The full text of 20 of these studies has been examined. Although there have been many studies on performance-based budgeting, it has been observed that the number of studies on performance control is relatively low. As a result, it has been found that the national literature is inadequate in the field of studies. It has been revealed that the number of studies should be increased in the scientific field.

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## ENDNOTES

- <sup>1</sup> <https://www.internationalbudget.org/wp-content/uploads/TurkeyPublicFinancialManagementand-ControlLaw2003-English.pdf>
- <sup>2</sup> [http://www.ekodialog.com/Konular/ekonomiklik\\_nedir.html](http://www.ekodialog.com/Konular/ekonomiklik_nedir.html)
- <sup>3</sup> <https://www.internationalbudget.org/wp-content/uploads/TurkeyPublicFinancialManagementand-ControlLaw2003-English.pdf>
- <sup>4</sup> All information given under this heading is quoted from Performance Audit Directory (PAD) which was prepared by the Internal Audit Coordination Board (IACB) for Public Internal Auditors in 2016.

# Chapter 13

## Reporting on CSR and Ethical and Sustainable Management in Food Industry in Slovakia as an EU Member

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### ABSTRACT

*The food industry is an important sector in each country with regards to food self-sufficiency, and it is a subject of stricter monitoring compared to other sectors. Disclosure of non-financial information significantly compliments the image of each company and contributes very effectively to the decision making of their customers, not only from the supply chain. Interest in non-financial information as parts of CSR from the perspective of the ethical and sustainable supply chain management is increasing. In the social, environmental, and economic spheres, it is important to determine the specificities of food industry reporting in order to achieve sustainable development. The aim of this chapter is a theoretical analysis of the reporting of non-financial information according to their disclosure requirements in the food industry by enterprises in Slovakia and a quantitative analysis of their reporting in the structure of SK NACE for 2017 in the context of the ethics and sustainability. Slovakia has more requirements for company reporting in the annual report since 2017.*

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## INTRODUCTION

The food industry holds a significant position in the economy of the Slovak Republic, because it is closely related to agricultural primary production. It has a significant impact on the employment rate and health of the population, as well as on the development of individual regions of the SR. In line with the Food Industry Development Plan 2014 - 2020, it is imperative to perceive the food industry as a strategic industry that provides for Slovakia's food sovereignty with a potential to generate its self-sufficiency at 80% to 2020 and includes the objectives in Table 1.

In April 2018, the Slovak Agriculture and Food Chamber drew attention to the dwindling trend of the food industry in every indicator, which is the result of wholesale practices, whereby retail supermarkets try to negotiate the lowest prices possible with suppliers, and in some cases, suppliers are forced to provide food products and services at prices below the cost of production.

Even in the food industry, profit is seen as the primary goal, but in the long run, the pressure to increase profits when struggling for customers in the food industry can have the opposite effect. Food industry businesses generally hold the positive view that, if they want to create and they add their interest in society and environment, they will benefit not only themselves but also society as a whole. In this context, they have recently become important factors of ethics and sustainability in the supply chain. Therefore, the food business should take into account the ethical behavior of suppliers as they choose them to ensure further production of food products and services, taking into account all CSR attributes. The desired situation is to make it possible for businesses on the market to be ready to continuously improve the food products and services and reduce negative environmental impacts, for example through waste reduction or the greening of production processes, in line with the positive perception of this behavior by consumers (Ulker- Demirel & Demirel, 2016) across the supply chain. If a food industry business wants to be a sustainable one, it needs a reliable base in supplier-customer relationships. Supplier selection, which takes into account responsible business, calls for the need to detect corporate social responsibility in the supply chain before concluding long-term supplier-customer relationships and contracts. The necessary information on CSR can be provided in annual reports as one of the most important freely available sources of information on any businesses.

Food Industry Development Plan introduces measures and actions required for meeting the strategic goals and objectives and food industry targets effectively and reliably and identifies positive effects on food self-sufficiency, safety, and quality. In this regard, the need for information on food businesses and food industry is currently increasing. Therefore, there should be goals set in the different areas of the Corporate Social Responsibility to help them address these issues. In the social, environmental, and economic sphere, it is therefore important to determine the specifications of information reporting in the food industry. Meeting the individual CSR goals themselves can contribute to meeting the objectives of

Table 1. Food industry development concept objectives

Food Industry Development Plan 2014 - 2020 of the SR Objectives	
1.	Increase food self-sufficiency to 80% of the current consumption in the SR
2.	Improve food industry market position in the SR
3.	Boost the level of competitiveness of the food industry

Source: (Rokovanie vlády SR, 2018)

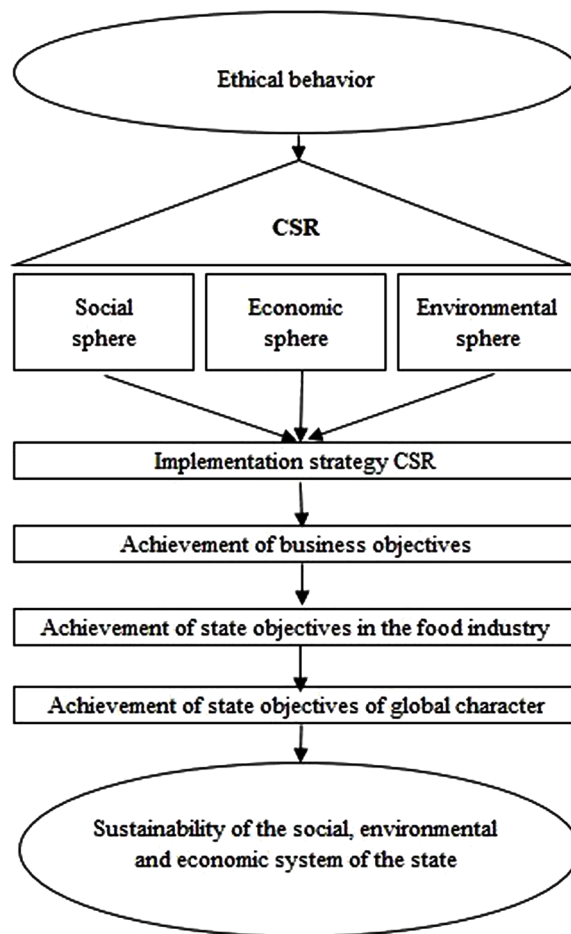
businesses in the competitive market environment of the food industry. It follows that food companies should implement CSR in their strategies in order to achieve their business objectives as well as the objectives of the state in the food industry sector (Figure 1).

The aim of this chapter is a theoretical analysis of non-financial disclosure requirements for their disclosure in the food industry by businesses in Slovakia and quantitative and qualitative surveys of annual corporate reports in the structure of SK NACE for 2017 in the context of ethics and sustainability.

In the theoretical analysis of reporting requirements for the food industry businesses, we identify the businesses in Slovakia that have the obligation to compile and publish annual reports as one of the most important freely available business information sources on the website of the Register of Financial Statements (Register, 2018) under the Ministry of Finance of the Slovak Republic. The result of the theoretical research, which is a part of this chapter, is also a summary of the most important information that the annual reports should in particular contain within Slovakia in terms of current legislation in the context of sustainable and ethical behavior of businesses.

*Figure 1. Food industry CSR-based support*

*Source: Authors' own work, 2018*



The research findings in Slovakia were focused on annual reports of businesses active in the food industry. The selection of businesses in the food industry, broken down by SK NACE, was made by Finstat (Finstat, 2018) service. From the total number of 1,577 food companies, 145 businesses were included in the sample that meets the following two conditions as of 2017:

1. Businesses engaged in the food industry;
2. Businesses subject to audits of their accounts that have a mandatory duty to produce annual reports.

This chapter analyses the ratio of businesses - according to the SK NACE structure - that disclosed their annual reports through the Financial Statements Registry. From the total number of businesses that have a mandatory duty to disclose annual reports pursuant to Act no 431/2002 Coll. on Accounting, as amended (Accounting Act, 2018). The results thereof are given in their absolute and relative terms. The content analysis of the annual reports was carried out on a sample of 83 published annual reports by food industry businesses in view of the occurrence of keywords chosen in the area of ethical behavior and social responsibility: ethics / code of ethics; values / principles / standards / norms; advice; reporting; social policy; working relations / environment; employment; employee / management relationships, health / safety; training / education.

## **BACKGROUND**

Sound management of natural resources is one of the most important factors affecting the country's economy (Saxunová, 2015). The food industry also uses natural resources, especially renewables. Food Industry Development Plan 2014-2020 in Slovakia aims to meet the strategic objectives, which include, above all, increasing self-sufficiency. The emergence and arrival of large wholesalers, mostly after the accession of the Slovak Republic to the EU, has significantly affected the ratio of domestic versus foreign foods adversely and pushed Slovak products out of the stores (Teraz.sk, 2018). As a consequence, since 2011 we can observe a decrease in the ratio of domestic products from 50% to 37.2% in 2017 (Zachar, 2018). Most foreign legislators introduce standards to regulate food safety and establish maximum rates of food imports (Golian et al., 2018). Food safety can be defined as a condition, in which all people at all times have physical and financial access to sufficient, safe, and nutritious food that meets their nutritional needs and food preferences for an active and healthy life (Kollár, 2015). Food producers have to face many challenges, such as the international competition, wholesale players pressure to lower the prices of food imports, etc. (Tuzová, Toullová, & Kubíčková, 2017).

The food industry is classified according to the SK NACE - Statistical Classification of Economic Activities in the section C Manufacturing, which is based on the NACE EU Regulation, as set out in Regulation (EC) No 1893/2006 of the European Parliament and of the Council (Regulation (EC) 2018). This section involves the physical or chemical transformation of materials, substances or components into new products, although this definition may not be the only universal criterion for defining industrial production. The food industry clearly meets this criterion (Turečková, 2014). Transformed materials, substances or components are raw materials that can be agricultural, forestry, fishing, mining or quarrying products as well as other industrial activities. Substantial treatment, repair or reconstruction of goods is generally considered to be industrial production (C Priemyselná výroba, 2018). From the point of view of the structure of larger food businesses in Slovakia, traditional types of production such as

bakery production, processing and preserving of meat and milk predominate in Slovakia. In the total number of businesses, production of other food products, production of soft drinks, alcohol and wine is at the forefront. Slovakia can be considered a new player in the wine production sector. It has its history in the production of quality wine, but the 20th century has been characterized by disturbing events that have drastically influenced the viticulture and wine-making sector (Chovanová et al., 2011).

The principle of social responsibility - as the basis for sustainability - expresses the focus of a business towards its objectives and seeks to meet economic, social, and environmental requirements of their actions whereby the company behaves ethically and responsibly beyond the legal standards (Németh, 2016), where mostly innovative companies care about criteria of CSR 3.0 concept (Krejčí & Šebestová, 2018). Businesses should pursue their actions in order to meet the CSR essential social, environmental, and financial aspects, create a business value and positive societal change, and become part of everyday business culture and business activities (McElhney, 2011).

Terms “sustainability” and “sustainable development” come from the 70’s, initially used in connection with the idea that an uncontrolled growth of anything (population, production, consumption, pollution, etc.) is not sustainable when resources are limited (Petera & Wagner, 2015; Martinat et al., 2016). The Friedman and Miles (2002) model concentrates on the analysis of the organization/stakeholder relationship, which is not exclusively from the organization perspective and which is capable of illuminating why and how organization/stakeholder relations change over time, which is also important. Stakeholder engagement is recognized as a key process to align firm and stakeholder interests and to identify material content for sustainability reporting (Moratis & Brandt, 2017). It is very important to know how to communicate the sustainability reports effectively. Content analysis based on corporate websites and social media was conducted by Göçer and Tuğrul (2015). This area still needs an active cooperation structure as being mentioned by Šebestová, Krejčí and Šiška (2018) in the area of supporting tools, cooperation and sustainable economic growth.

The European Union is interested in environmental, social and economic sustainability issues. It gave its clear position towards the support of socially responsible undertakings, among others, in its EU Horizon 2020 programme priorities for 2018-2020, as well as in its specification of cross-sectional priorities – climate action and sustainable development; gender equality and the social sciences and humanities – SSH (European Commission, 2014; European Commission, 2016). Indeed, modern European integration is inherently linked to the single internal market with its digital dimension while following the determination for the smart, sustainable and inclusive growth (MacGregor, 2013).

Regarding the information on sustainability, namely CSR, the key currently valid legal act for disclosure requirements is Directive 2013/34/EU of the European Parliament and of the Council (Directive 2013/34/EU, 2013) on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC and 83/349/EEC as amended by Directive 2014/95/EU of the European Parliament and of the Council amending Directive 2013/34/EU as regards the disclosure of non-financial information and information on diversity by certain large enterprises and groups. In 2013 the European Commission (European Commission, 2013) launched a public consultation on the non-binding guidelines on methodology for reporting non-financial information following Article 2 of Directive 2014/95/EU on disclosure of non-financial and diversity information by certain large undertakings and groups (Directive 2014/95/EU). The purpose of this public consultation was to collect views from stakeholders. The consultation was a part of the Commission work related to preparing non-binding guidelines on methodology for reporting non-financial information. Guidance on reporting dealing with the non-financial information reporting methodology including non-financial



general and sectoral key indicators of behaviour, aimed at facilitating relevant, useful and comparable non-financial information disclosure for the undertakings had been prepared by the European Commission and was published in the Official Journal of EU on July 5, 2017 as Guidelines on non-financial reporting - methodology for reporting non-financial information (Publications Europa, 2017). While the inclusion of the financial and non-financial statements in the management report for certain large undertakings and groups are covered by Directive 2013/34/EU, the compulsory disclosure of related information and documents is covered by the Directive 2017/1132/EU relating to certain aspects of company law (MacGregor, 2017). Also in Slovakia, there are changes in the scope and clarification of requirements for the content of the annual report of public interest entities in the reporting of non-financial information compiled from 2018 for 2017 (Ondrušová & Kňažková, 2017).

## **MAIN FOCUS OF THE CHAPTER**

In the past, the Slovak Republic was characterized by food self-sufficiency with traditions, developed agriculture and a processing industry. At present, however, it is characterized by inefficiency, a low level of food security, low level of processing of domestic raw materials and a high import share of value-added finished products that remains abroad.

Business information published in the annual reports only fulfils its significance if it is useful for user decision making. Because there is no consistent reporting approach for reporting non-financial information, it is difficult to compare the information. The information published in the annual report, within varying extents, in different places and parts of the annual report, with different words and interpretations, raises the question of whether the business is reporting or not reporting ethical principles of behaviour.

Despite attempts to harmonize and ensure the comparability of non-financial information in the Member States of the European Union, for example through the publication of the Guidelines for Disclosure of Non-Financial Information (Methodology of Disclosure of Non-financial Information), there are barriers arising from differences in legislative adjustments, terminology or presentation of information. Therefore, it is important to address the issue of theoretical analysis of reporting requirements but also the real implementation of these requirements in practice. In this chapter, we are focusing on food industry businesses in this context because of the overall importance of the industry, as well as the importance of ethical behaviour of companies in this sector for the society as such. The ethical behaviour of food industry businesses, as one of the aspects of social responsibility, is an appropriate tool in assisting in a competitive business environment. Admitting this approach and describing concrete actions to promote this behaviour should also be a part of the information presented in the annual report as one of the business' information tools. The main contribution of this chapter is to clarify the requirements for CSR reporting and ethical and sustainable entrepreneurship in the form of an annual report in food industry businesses in Slovakia as an EU Member State, supported by the results of research in practice accompanied by summaries and recommendations.

## **SOLUTIONS AND RECOMMENDATIONS**

Generally, annual reports are the sources of information used by stakeholders to take their decisions in relation to their businesses. Pursuant to the Accounting Act, businesses subject to audits of their financial

## Reporting on CSR and Ethical and Sustainable Management in Food Industry in Slovakia

statements have the mandatory duty to produce annual reports in the SR. Companies meeting the conditions given in Table 2 have the duty to get their financial statements audited and provide annual reports.

Annual reports under the Accounting Act have the nature of accounting records and belong to the accounting documentation that is subject to archiving obligations. Accounting records, namely financial statements, statements of selected data from financial statements under the Accounting Act and annual report are retained for ten years following the year to which they relate. The information in the annual report, as well as in the financial statements, must be useful to the user, assessed from the point of view of their significance and clear, comparable and reliable. Information is considered important if its failure or misstatement could influence the judgment or decision of the user. The information is comprehensible if it also enables the entity to reliably and unequivocally determine the situation of the entity in all areas, being economic, social and environmental considerations, following the principles, procedures, methods and processes used, and the content of accounting records, in conjunction with the forms of accounting records used. Information cannot be excluded simply because it is incomprehensible to the user. The intelligibility of the information is assessed from the point of view of the user with reasonable economic knowledge who can properly assess the information. The information is comparable when the same methods, policies and presentation methods are used in the following accounting periods. The

Table 2. Accounting entities that are required to compile an annual report

Accounting entities that are required to prepare annual reports following the conditions for auditing the financial statements
An accounting entity with a mandatory duty to create capital and Cooperatives that meet at least two of the following conditions as of the date of the annual reports: 1. The total amount of assets exceeds € 1,000,000 taken from the balance sheet without adjustments and other provisions thereof 2. Net turnover exceeded € 2,000,000 3. Average recalculated number of employees over a single accounting period exceeded 30; Company or Cooperative, whose securities are admitted to trading on a regulated market; Company subject to special regulations (e.g. foundations);
An accounting entity that chooses to prepare the accounting statement under special regulations (IFRS - adopted by the European Union): • Bank, management company, insurance company other than health insurance provider, reinsurance company, pension management company, Slovak Insurance Office, supplementary pension company, stock exchange and Železnice Slovenskej republiky. • A business company which, for at least two consecutive accounting periods, meets at least two of the following conditions: • The total amount of the assets exceeded € 170,000,000, the amount of the asset being the amount recognized from the balance sheet in the valuation unadjusted for the impairment of assets, • Net turnover exceeded € 170,000,000, • The average recalculated number of employees exceeded 2,000 in each accounting period;
An accounting entity that chooses to prepare the individual financial statements under special regulations (IFRS) on a voluntary basis, if it issued securities in the accounting period that were admitted to trading on a regulated market, or is a payment institution, electronic money institution, securities broker, is the acquiring entity, and the terminating entity or the acquiring entity has prepared individual IFRS financial statements prior to the decisive date, or is the newly created subsidiary and to the date when it compiles the first individual financial statements, is subject to at least two of the conditions (the aggregate amount of the assets exceeded € 170, 000, 000, the amount of the asset being the amount of the balance sheet in the valuation not adjusted for assets impairment, turnover exceeded € 170,000,000) and its parent entity that is subject to the law of a Member State draws up individual IFRS financial statements, is a European company based in the Slovak Republic, a European cooperative based in the Slovak Republic or a European economic interest grouping located in the Slovak Republic, and have prepared individual IFRS financial statements prior to the transfer of the registered office into the Slovak Republic;
The parent entity, which is required to prepare the consolidated financial statements, prepares a consolidated annual report.
Legal entities as defined in Act no. 595/2003 Coll. on Income Tax, as amended, whose annual tax amount is more than € 35,000 for the accounting period in which the funds were used. These financial statements must be certified by an auditor within one year of the end of the accounting period, unless otherwise provided in a special regulation (for example, Sec. 25 of Act No. 147/1997 Coll., Sec. 34 of Act No. 213/1997 Coll., on Non-Profit Organizations providing generally beneficial services in the wording of Act No. 35/2002 Coll.).

Source: Authors' own analysis (Accounting Act, 2018)

information is reliable if the financial statements and the annual report give a true and fair view of all the facts that are the subject of the entity's disclosure and of the entity's financial, social and environmental situation and is complete and timely. The completeness of the information is ensured with respect for materiality and taking into account the cost of obtaining it. The entity's accounting is complete if the entity has booked all accounting cases in the accounting period in its ledgers and has prepared individual financial statements for a given financial year, consolidated financial statements, if it has the obligation to compile it, has prepared the annual report or the consolidated annual report, and has deposited the documents under the Accounting Act and has all the accounting records about these facts. The information is timely if it meets the information function for decision makers (Accounting Act, 2018).

The requirements for the content of the annual report under the Accounting Act state that the annual report contains:

- The financial statements for the accounting period for which the annual report is being prepared,
- The auditor's report on these financial statements, unless otherwise provided in a special regulation,
- And in particular information about the entity's development, its status and significant risks and uncertainties to which the entity is exposed.

The information in the annual report is provided in the form of a balanced and comprehensive analysis of the status and the forecast of the development and contains important financial and non-financial indicators, including information on the environmental and employment performance of the entity, with reference to the relevant data in the financial statements in Table 3.

These general requirements represent the basic content framework to be kept by the entities that are required to prepare and publish annual reports.

Effective from 1 January 2017, the amended provisions of the Accounting Act entered into force, which extend the obligations of some entities to provide more detailed information in annual reports. These changes to the scope and specification of annual reports' content requirements for 2017 are related to public interest entities that are defined in the Accounting Act on the basis of the entity's business subject matter or size criteria, set for the number of employees, total assets and net turnover for two consecutive accounting periods.

*Table 3. Annual reports content*

<b>Content of the Annual Reports</b>	
a)	Information about entity's development, position, significant risks, and uncertainties;
b)	Information about events of a special significance occurring after the end of the reporting period relevant thereto;
c)	Information about expected future development of the entity's operations;
d)	Entity's R&D costs;
e)	Information about acquisition of treasury stock, temporary shares, business shares, temporary letters and shares of the parent entity;
f)	Information about profit and Loss Distribution Proposal or Loss Coverage;
g)	Information about data required under special regulations;
h)	Information whether the entity operates a foreign organizational unit.

Source: Authors' own analysis (Accounting Act, 2018)

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The development of a legal framework for reporting of non-financial information in the Slovak Republic as one of the EU Member States should be in line with EU requirements and a legislative framework applicable in the European Union. The purpose of this part of the text is to identify the compliance or non-compliance with the non-financial information disclosure requirements set out in EU Directives in the context of the obligations of the business entity in Slovakia.

According to the EU legislation and the Accounting Act applicable in the Slovak Republic, the reporting of non-financial information is obligatory for some public interest entities. The following Table 4 contains the comparison of their definitions.

Comparing the size criteria for business companies that have the obligation to disclose non-financial information, it is clear that in the SR the criteria are more stringent than the Directive requires. Therefore, this obligation applies to a larger group of enterprises than it would be in case Slovakia transposed only criteria from the Directive into our legislation. Enhances requirements for disclosing information of public interest entities are given in Table 5.

Table 4. Entities reporting non-financial information

Directive 2014/95/EU amending Directive 2013/34/EU	Act No. 130/2015 Coll., amending Act No. 431/2002 Coll. on Accounting
<p>Large undertakings which are public-interest entities exceeding on their balance sheet dates the criterion of the average number of 500 employees during the financial year shall include in the management report a non-financial statement containing information to the extent necessary for an understanding of the undertaking's development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters</p> <p>Large undertakings shall be undertakings which on their balance sheet dates exceed at least two of the three following criteria:</p> <p>a) balance sheet total: € 20 000 000;</p> <p>b) net turnover: € 40 000 000;</p> <p>c) average number of employees during the financial year: 250.</p>	<p>A public-interest entity, with the exception of the National Bank of Slovakia accounting unit with the average calculated number of employees for the accounting period exceeding 500 employees, will also provide in its annual report non-financial information regarding the development, performance, position and effect of the accounting unit activity on the environmental, social and employment issues, information regarding the respecting of human rights and information concerning the fight against bribery and corruption (hereinafter referred to as the "social responsibility area").</p>
<p><b>'Public-interest entities'</b> means undertakings within the scope of Article 1 which are:</p> <p>a) governed by the law of a Member State and whose transferable securities are admitted to trading on a regulated market of any Member State within the meaning of point (14) of Article 4(1) of Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on markets in financial instruments</p> <p>b) credit institutions as defined in point of Article 4 of Directive 2006/48/EC of the European Parliament and of the Council of 14 June 2006 relating to the taking up and pursuit of the business of credit institutions, other than those referred to in Article 2 of that Directive</p> <p>c) insurance undertakings within the meaning of Article 2 of Council Directive 91/674/EEC of 19 December 1991 on the annual accounts of insurance undertakings</p> <p>d) designated by Member States as public-interest entities, for instance undertakings that are of significant public relevance because of the nature of their business, their size or the number of their employees;</p>	<p>A <b>public interest entity</b> is considered an accounting unit that has issued securities admitted to trading on a regulated market in any Member State of the European Union ("Member State"), bank, branch of a foreign bank, the Export-Import Bank of the Slovak Republic, insurance company, a branch office of a foreign insurance company, reinsurance company, a branch office of a foreign reinsurance company, health insurance company, asset management company, a branch office of a foreign asset management company, pension asset management company, supplementary pension asset management company, stock exchange, central securities depository, securities trader, payment institution, electronic money institution, collective investment entity, pension fund, a branch office of a foreign financial institution and an accounting unit: an accounting entity is a company that has met, in at least two successive accounting periods, no fewer than two of the following requirements:</p> <p>a) its total assets exceeded € 170,000,000; while total assets being defined as total assets ascertained from the balance sheet before adjustments by items specified in Act on accounting,</p> <p>b) its net turnover exceeded € 170,000,000,</p> <p>c) the average calculated number of employees exceeded 2,000 in a particular accounting period.</p>

Source: Authors' processing (Directive 2013/34/EU and Accounting Act, 2018)

*Table 5. Public interest entities reporting non-financial information*

<b>Basic provision on the content of non-financial information</b>
Public interest entities, except for the NBS, whose average recalculated number of employees exceeded 500 employees for the accounting period, state in their annual reports the non-financial information on the development, conduct, position and impact of the entity's activity on the environmental, social and employment area, information on human rights and information on the fight against corruption and bribery (hereinafter referred to as "Corporate Social Responsibility"), indicating in particular the following information:
<ul style="list-style-type: none"> <li>● a brief description of the business model</li> <li>● a description and results of using the policy an entity applies in the area of corporate social responsibility</li> <li>● a description of the main risks to the entity's impact on the sphere of corporate social responsibility resulting from the entity's operations that could have adverse consequences and, if appropriate, a description of the business relations, products or services provided by the entity, and a description of how the entity manage such risks</li> <li>● significant non-financial information about the activities of an entity by activity</li> </ul>
<b>Connecting non-financial information to financial information in annual reports</b>
<ul style="list-style-type: none"> <li>● Annual reports would provide a reference to information on the amounts reported in the financial statements and an explanation of these amounts in terms of impact on the area of corporate social responsibility, as appropriate.</li> </ul>
<b>Frameworks a business may use when disclosing non-financial information</b>
For non-financial information, public interest entities may refer to the EU framework or other international frameworks governing non-financial information if they specify exactly what framework they have followed, for example, the Environmental Management Scheme (EMAS), the UN Global Compact, the main principles in the area of business and human rights implementing the UN framework "Protect, Respect and Remedy", OECD Guidelines for Multinational Enterprises, Standards of the International Organization for Standardization ISO 26000, the tripartite declaration of the International Labor Organization on the principles of transnational corporations and social policy, the global initiative for reporting or other recognized international frameworks.
<b>Exemptions from reporting non-financial information obligation</b>
The obligation to disclose non-financial information does not apply to subject of public interest that is a subsidiary entity if the information about it and all its subsidiaries is included in the annual report or similar report of the parent entity.
<b>Completeness of information and justification of incompleteness</b>
Where a public interest entity does not disclose all non-financial information required by law, it shall state in its annual report the reasons for not disclosing that information.
<b>How to meet the obligation to report non-financial information</b>
By disclosing information on corporate social responsibility, the entity's obligation to disclose non-financial information about the impact of the entity's activity on the environment and on employment is met.

Source: Authors' own analysis (Accounting Act, 2018)

Specific disclosure requirements are for undertakings that issue securities admitted to trading on a regulated market. These requirements are shown in Table 6.

Guidance on reporting on non-financial information reporting methodology, including non-financial key indicators of behavior, both general and sectoral, in order to facilitate relevant, useful and comparable disclosure of non-financial information was published and made available by the European Commission on 5 July 2017 in the Official Journal of the EU under the Disclosure Guidelines non-financial information (Methodology of Disclosure of Non-Financial Information). In this guideline, accounting entities find instructions on how to access the specific components of annual reports and what specific information to report (Publications Europa, 2017).

The disclosures in annual reports are subject to verification by the auditor, who is required to express the opinion (Table 7).

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Table 6. Requirements for disclosure of entities that issue securities admitted to trading on a regulated market

<b>Diversity policy</b>
<p>An accounting entity that has issued securities admitted to trading on a regulated market of any Member State shall also indicate in its annual report a description of the diversity policy it applies in its administrative bodies, governing bodies and supervisory bodies, in particular in relation to age, gender, education and the professional experience of the members of those bodies, the objectives of such a policy, the manner in which it is performed and the results achieved in the reporting period if, at the date of drawing up the accounts, at least two of the following conditions were fulfilled:</p> <ul style="list-style-type: none"> <li>• the total amount of the assets exceeded € 20,000,000, the amount of assets for that purpose being the amount recognized from the valuation balance sheet adjusted for items of correction,</li> <li>• net turnover exceeded € 40,000,000,</li> <li>• the average recalculated number of employees exceeded 250.</li> </ul> <p>An entity that does not provide a description of the diversity policy in the annual report under the previous provision shall state in its annual report the reasons why it decided not to apply the diversity policy.</p>
<b>Statement on Administration and Management</b>
<p>An accounting entity that issued securities admitted to trading on a regulated market is required to specifically state in its annual report the administration and management statement that includes:</p> <ul style="list-style-type: none"> <li>• A reference to the company management code that applies to it or which it has decided to abide by in the process of management and an indication of where the company management code is publicly available</li> <li>• All relevant information on management methods and indication of where the information on management methods is disclosed</li> <li>• Information on deviations from the company management code and the reasons for these deviations, or information on the non-application of any company management code and the reasons for doing so</li> <li>• A description of the main internal control and risk management systems in relation to the financial statements</li> <li>• Information on the activities of the General Assembly, its powers, description of shareholders' rights and the procedure for their implementation</li> <li>• Information on the composition and activities of the bodies of the company and their committees</li> <li>• Information about the structure of equity, restrictions on the transferability of securities, a qualifying holding in the registered capital under a special regulation, holders of securities with special control rights, giving a description of these rights, restrictions on voting rights, agreements between the holders of securities known to it which may lead to restrictions on the transferability of securities and restrictions on voting rights, the rules governing the appointment and removal of members of its statutory body and the amendment of the statutes, the powers of its statutory body, in particular their power to decide on the issuance of shares or the redemption of shares, of any significant agreements to which it is a party and which become effective, change or expire as a result of a change in its control over the takeover bid and its effects, unless its disclosure would seriously damage it</li> </ul>

Source: Authors' own analysis (Accounting Act, 2018)

Table 7. Verification of the annual report by the auditor

<b>Verification of the annual report by the auditor</b>
<p>The accounting entity's annual reporting under the Accounting Act must provide a true and fair view and must be audited by the auditor within one year of the end of the accounting period to which it relates.</p> <p>The auditor must:</p> <ul style="list-style-type: none"> <li>• Express their opinion on whether the annual report is consistent with the financial statements in addition to the annual report under a separate regulation</li> <li>• Express their opinion on the description of the main systems of internal control and risk management in relation to the financial statements, the details of the qualifying holding in the share capital under a special regulation, the holders of securities with special rights of control describing such rights, the limitations of those rights, the rules governing the appointment and dismissal of the members of its statutory body and the amendment of the statutes, the powers of the statutory body, in particular its power to decide on the issuance of shares or the redemption of shares</li> <li>• Express their opinion as to whether the annual report contains information under a specific regulation</li> <li>• Express their opinion on whether the annual report contains information under the Accounting Act</li> <li>• Indicate whether, based on knowledge of the accounting entity and its situation, they have identified significant misstatements in the annual report and to state the nature of any such material misstatement</li> </ul>

Source: authors' analysis (Accounting Act, 2018)

## **Obligation to Publish the Annual Report**

Accounting entities are required to store and disclose information about their economic situation in the form of financial statements, annual reports and other documents in the freely available Register of Financial Statements at <http://www.registeuz.sk>. Regular and extraordinary financial statements are entered in the Register of Financial Statements and, in the case of accounting units that are also compiled by individual and consolidated annual reports, as well as the auditor's reports when the financial statements and the annual report are audited.

Register of Financial Statements or the Ministry of Finance of the Slovak Republic does not accept direct financial statements or annual reports and other documents. The financial statements as well as other documents published in the Register of Financial Statements are delivered by law to the Financial Administration (private sector entities) or through the Treasury system (public sector entities). Documents are currently being uploaded exclusively in an electronic form. The obligation to store and publish documents is met by the entity submitting documents to the Financial Administration (in writing or electronically). Public administration bodies will be required to submit documents through the Treasury system. The individual financial statements, individual annual reports, consolidated financial statements and the consolidated annual report of accounting units, the composition of which is laid down in the Accounting Act, shall be disclosed by filing into the Register of Financial Statements. Annual reports, both individual and consolidated, are required to be reported by the entity to the Register of Financial Statements no later than one year after the end of the accounting period for which these annual reports are prepared. Access to published financial information is free and accessible without the need to log in.

## **Publication of Information on Food Industry Businesses in Slovakia: The Results of Research**

The results of our declaratory research show (Table 8) that for the 2017 reporting period, financial statements of 1,577 food businesses were disclosed. According to the SK NACE structure, the most active sector in 2017 was the sector of SK NACE 10890 - Miscellaneous Food Production with a prevalence of 217 businesses. It was followed by the sector of SK NACE 11020 (Grape Wine Production) with a prevalence of 146 businesses and then by SK NACE 11070 (Soft Drinks, Mineral Water, and Other Bottled Waters Production) with 132 businesses. Based on the financial indicators above, we can say that in 2017 a total of 145 businesses were subject to audits of their accounts from the total number of 1,577 businesses. Out of this number, only 83 food companies have actually disclosed their annual report, which is only 57,24%, and the remaining 62 companies (42.76%) failed to comply with the legislation (Table 8).

In particular, SK NACE 10710 - Bread, Fresh Pastry, and Cakes Production - showed the highest number of businesses subject to the mandatory disclosure, i.e. 36 businesses out of the total number of 50 in the sector (24,83% in relative terms) with a compliance rate of 58.33% in relative terms, i.e. 21 businesses. Given the above, 15 businesses (41.67%) failed to disclose information in their annual report. Another most frequent food industry subject to the audit and mandatory disclosure of annual reports is SK NACE 10510 - Dairy and Cheese Production, where only 10 food companies out of 14 disclosed their annual reports (71.43%), the rest of which (28.57%) failed to comply with their statutory duty. Selected sample of businesses shows that 146 businesses operate in the sector of SK NACE 11020 (Grape Wine Production) and 10 businesses in SK NACE 11030 (Cider and Fruit Wine Production). Only one company operating in SK NACE 11020 (Grape Wine Production) had a mandatory duty to

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disclose its financial information, which was duly complied with. An example of a sector in which none of the companies were subject to the mandatory disclosure is SK NACE 11030 - Cider and Fruit Wine Production (Table 8).

The reporting requirements of food industry businesses relate in particular to areas of employee care, benefits and education and rehabilitation benefits, and occupational safety, with regard to the employment of those who work extensively in the industry on production lines and in warehousing. The above-mentioned information is reported by food industry businesses in their annual reports whose content analysis was made in 83 published annual food business reports for 2017 (Table 9). Most often, there was information about employment (44), in particular the number of employees, followed by information on the means to protect health and safety, or on the number of occupational accidents (17). In the context of employee training, the information was published by 15 companies out of 83 (Table 9). Admitting ethical principles by businesses can help businesses gain customer loyalty, attract and retain employees, and become more visible in the market, because quality employees are becoming more and more a key tool in asserting themselves in a competitive business environment, yet businesses have not paid much attention to this information in the reviewed annual reports.

Table 8. SK NACE structure-based food businesses analysis

Food Industry Sector	SK NACE	Number of Food Businesses in 2017		Number of Businesses Subject to Mandatory Disclosure in 2017		Number of Businesses publishing information in their annual reports in 2017		Number of Businesses that did not compile their annual reports in 2017 despite being obliged to	
		Number of Businesses	% of the Total Number of Businesses	Number of Businesses	% of the Total Number of Businesses	Number of Businesses	% of the Total Number of Businesses to Mandatory Disclosure	Number of Businesses	% of the Total Number of Businesses to Mandatory Disclosure
Meat Processing and Preservation	10110	71	4.50	11	7.59	9	81.82	2	18.18
Poultry Processing and Preservation	10120	9	0.57	5	3.45	2	40.00	3	60.00
Meat and Poultry Processing and Preservation	10130	56	3.55	9	6.21	4	44.44	5	55.56
Fish, Crustaceans, and Mollusks Processing and Preservation	10200	8	0.51	2	1.38	1	50.00	1	50.00
Potatoes Processing and Preservation	10310	17	1.08	0	0.00	0	0.00	0	0.00
Fruit and Vegetable Juices Production	10320	8	0.51	1	0.69	0	0.00	1	100.00
Fruit and Vegetable Miscellaneous Processing and Preservation	10390	72	4.57	4	2.76	1	25.00	3	75.00
Oils and Fats Production	10410	28	1.78	4	2.76	1	25.00	3	75.00
Margarine and Similar Fats Production	10420	1	0.06	0	0.00	0	0.00	0	0.00

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*Table 8. Continued*

Food Industry Sector	SK NACE	Number of Food Businesses in 2017		Number of Businesses Subject to Mandatory Disclosure in 2017		Number of Businesses publishing information in their annual reports in 2017		Number of Businesses that did not compile their annual reports in 2017 despite being obliged to	
		Number of Businesses	% of the Total Number of Businesses	Number of Businesses	% of the Total Number of Businesses	Number of Businesses	% of the Total Number of Businesses to Mandatory Disclosure	Number of Businesses	% of the Total Number of Businesses to Mandatory Disclosure
Dairy and Cheese Production	10510	37	2.35	14	9.66	10	71.43	4	28.57
Ice-cream Production	10520	59	3.74	0	0.00	0	0.00	0	0.00
Farinaceous Products Production	10610	57	3.61	6	4.14	3	50.00	3	50.00
Starch and Starch Products Production	10620	4	0.25	1	0.69	0	0.00	1	100.00
Bread, Fresh Pastries, and Cakes Production	10710	50	3.17	36	24.83	21	58.33	15	41.67
Biscuits, Long-Lasting Pastry, and Cakes Production	10720	76	4.82	5	3.45	2	40.00	3	60.00
Pasta Production	10730	1	0.06	0	0.00	0	0.00	0	0.00
Production of Cutlery, Pasta, Couscous, and Farinaceous Products	10730	22	1.40	0	0.00	0	0.00	0	0.00
Sugar Production	10810	3	0.19	2	1.38	2	100.00	0	0.00
Cocoa, Chocolate, and Sugar Confectionery Production	10820	64	4.06	3	2.07	3	100.00	0	0.00
Coffee and Tea Processing	10830	63	3.99	2	1.38	0	0.00	2	100.00
Spices and Flavor Ingredients Production	10840	19	1.20	5	3.45	5	100.00	0	0.00
Convenience Foods Production	10850	75	4.76	6	4.14	1	16.67	5	83.33
Homogeneous and Dietary Foods Production	10860	7	0.44	2	1.38	0	0.00	2	100.00
Production of Miscellaneous Food Products	10890	217	13.76	9	6.21	4	44.44	5	55.56
Livestock Food Production and Preparation	10910	69	4.38	1	0.69	1	100.00	0	0.00
Pet Food Production and Preparation	10920	11	0.70	1	0.69	1	100.00	0	0.00
Alcohol Distillation, Treatment, and Mixing	11010	111	7.04	6	4.14	4	66.67	2	33.33

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**Reporting on CSR and Ethical and Sustainable Management in Food Industry in Slovakia**

*Table 8. Continued*

Food Industry Sector	SK NACE	Number of Food Businesses in 2017		Number of Businesses Subject to Mandatory Disclosure in 2017		Number of Businesses publishing information in their annual reports in 2017		Number of Businesses that did not compile their annual reports in 2017 despite being obliged to	
		Number of Businesses	% of the Total Number of Businesses	Number of Businesses	% of the Total Number of Businesses	Number of Businesses	% of the Total Number of Businesses to Mandatory Disclosure	Number of Businesses	% of the Total Number of Businesses to Mandatory Disclosure
Grape Wine Production	11020	146	9.26	1	0.69	1	100.00	0	0.00
Cider and Fruit Wine Production	11030	10	0.63	0	0.00	0	0.00	0	0.00
Non-Distilled Fermented Beverages Production	11040	11	0.70	0	0.00	0	0.00	0	0.00
Beer Production	11050	50	3.17	2	1.38	2	100.00	0	0.00
Malt Production	11060	7	0.44	1	0.69	1	100.00	0	0.00
Non-Alcoholic Beverages, Mineral Water, and other Bottled Waters Production	11070	132	8.37	6	4.14	4	66.67	2	33.33
Tobacco Products Production	12000	6	0.38	0	0.00	0	0.00	0	0.00
<b>Total</b>		<b>1577</b>	<b>100.00</b>	<b>145</b>	<b>100.00</b>	<b>83</b>	<b>57.24</b>	<b>62</b>	<b>42.76</b>

Source: Authors' own research

*Table 9. Qualitative analysis of the content of annual reports for the use of the selected keywords*

Keyword contained in the annual report	Number of Businesses, that have published ethical information		Number of Businesses, that have not published ethical information		Number of Businesses, that have published their annual reports 2017	
	Number of Businesses	% of the Total Number of Businesses	Number of Businesses	% of the Total Number of Businesses	Number of Businesses	% of the Total Number of Businesses
Ethics – Code of Ethics	6	7.23	77	92.77	83	100
Values, principles, standards, norms	4	4.82	79	95.18	83	100
Advice, Reporting	5	6.02	78	93.98	83	100
Social policy	12	14.46	71	85.54	83	100
Working relations, environment	12	14.46	71	85.54	83	100
Employment	44	53.01	39	46.99	83	100
Employees and management relationships	14	16.87	69	83.13	83	100
Health and safety	17	20.48	66	79.52	83	100
Training and education	15	18.07	68	81.93	83	100

Source: Authors' own research

## **FUTURE RESEARCH DIRECTIONS**

Future developments in the research focus should be directed towards improving the reporting capacity of company-published reports for users of this information. Good disclosure of financial and non-financial information is a prerequisite for ensuring sustainability. The need for harmonization and comparability of the information provided is contributed by the fact that there is a number of different businesses in the business environment whose business scope is wide ranging, which implies the necessity to define certain content variations of annual reports whose content will be consistent with their business focus. Food industry of the Slovak Republic has large number of food businesses with different food production. By clarifying the requirements set by the legislation on the content of the published information in the annual reports in this chapter, the issue of optimal setup and the formal reporting aspect has been put to the fore, enabling users to obtain timely and relevant information in a timely manner.

In this area, there is room for deeper research in favor of interventions aimed at simplifying regulations and procedures, designing appropriate tools and methodologies to meet business practice requirements.

## **CONCLUSION**

The food industry is a very important sector of the economy in each country with regard to food self-sufficiency, and it is a subject of stricter monitoring comparing with other sectors in the European Union. Disclosure of non-financial information significantly complements the image of each company and contributes very effectively to the decision making of its users. Interest in non-financial information of companies from the perspective of the ethical and sustainable supply chain management is increasing. Nowadays, in the social, environmental and economic spheres, it is important to determine the specificities of food industry reporting in order to achieve a sustainable development. The aim of this chapter is a theoretical analysis of the reporting of non-financial information according to their disclosure requirements in the food industry by enterprises in Slovakia and a quantitative analysis of their reporting in the structure of SK NACE for 2017 in the context of the sustainability. At present in Slovakia there have been significant changes in requirements for reporting of non-financial information in the CSR context in the European Union. Such changes have been effective as of 1 January 2016 or 2017 for the number of enterprises with extended reporting requirements. Following Directive 2014/95/ EU of the European Parliament and of the Council amending Directive 2013/34/ EU as regards the disclosure of non-financial information and information on diversity by certain large enterprises and groups, Slovakia transposed the requirements for reporting in annual reports into Act no. 431/2002 Coll. on accounting. These requirements apply in particular to large enterprises, since the category of medium-sized enterprises has not been introduced into Slovak law, but the size criteria for large enterprises are stricter in Slovakia than in EU Directives. Most of the more specific reporting requirements for non-financial information relate to areas of corporate social responsibility in terms of sustainability and sustainable development not only of companies but also of the societies they operate in. The disclosure CSR information should cover social and environmental matters and they should be linked to the reported financial information.

The food industry plays an important role in the Slovak Republic; however, it is characterized by inadequacy and low level of food security. Food Industry Development Plan - together with the CSR Concept - is a suitable tool to meet the strategic goals of food businesses related to the strategic goals of the state. Currently, the interest of the public in information related food industry increases, and basic

## **Reporting on CSR and Ethical and Sustainable Management in Food Industry in Slovakia**

sources of information on the activities of the companies include annual reports regulated by the Accounting Act in the Slovak Republic.

Based on the financial indicators, we can say that in 2017 a total of 145 businesses were subject to mandatory disclosure of their annual reports from the total number of 1,577 businesses. From the total number, only 83 businesses managed to comply with this mandatory duty, which is 57.24%. A total number of 62 food companies failed to disclose their financial information. Our research shows that the largest number of companies in the food industry in absolute numbers is in SK NACE 10710 (Bread, Fresh Pastries, and Cakes Production) where 36 out of the total of 50 businesses, were subject to mandatory disclosure in 2017, while 21 businesses complied and violations were found in case of 15 businesses. Another sector worthy of mentioning is SK NACE 10510 (Dairy and Cheese Production). In this food industry, 14 businesses were subject to mandatory disclosure, but only 10 complied with their statutory duty (71.43%), and 4 businesses (28.57%) failed to disclose their financial information. Information on food industry businesses, in the context of ethical and sustainable behavior, published in annual reports, is particularly distinguished by information from the areas of employee care, benefits and contributions to education and regeneration and occupational safety. Based on our research, we found that 44 companies out of 83 (53%) published information on employee numbers, their fluctuations, or the structure of the employees. A great deal of information concerned information on occupational safety and accident at work, i.e. 17 businesses (20.48%) published the information out of 83 food industry businesses. In the area of employee education, information was published by 15 businesses out of 83 (18.07%). Finally, we can say that there is still a reserve in the field of reporting which can be filled in through academic research and provide recommendations that are fully usable in practice, so the information shared was more inclusive.

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## **KEY TERMS AND DEFINITIONS**

**Annual Report:** An accounting record that provides information on an entity's development, status, and significant risks and uncertainties to which it is exposed. The information is provided in the form of a balanced and comprehensive analysis of the status and the forecast of the development and contains important financial and non-financial indicators, including information on the environmental and employment performance of the entity, with reference to the relevant data in the financial statements.

**Behavior Ethics:** It is a new field of social scientific research that seeks to understand how people actually behave when confronted with ethical dilemmas. It refers to behavior that is judged according to generally accepted norms of behavior.

**Food Industry:** It is a complex, global collective of diverse businesses that supplies most of the food consumed by the world's population.

**Food Security:** It can be defined as a state where all people at all times have physical and economic access to sufficient, safe and nutritious food meeting their nutritional needs and food preferences for an active and healthy life.

**Register of Financial Statements:** It is set up by the Accounting Act to improve and simplify the business environment and reduce the administrative burden of in the field of entrepreneurship. At the same time, it should improve the availability and quality of information on entities. Users can search through the list of entities free of charge, view, store and print available financial statements and other documents published in the Register, such as annual reports.

**SK NACE:** Slovak Statistical Classification of Economic Activities.

**Sustainable Development:** According to the United Nations, the concept of sustainable development allows us to meet present needs without the imperilment of the future generations.



# Chapter 14

## Renewable Energy Sources Management and Role of Ecological Parks: Improving Quality of Life for Sustainable Development

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### **ABSTRACT**

*On the global level, governments are leading the national policy for development of modern technology and alternative energy resources. The tendencies of sustainable development are reflected in the realization of using renewable energy resources that contribute to a more diversified and more efficient use of clean energy. The aim of this chapter is to represent adequate responses to the efficient management at the state level that created all necessary conditions for sustainable development and energy efficiency using renewable energy resources in countries of European Union. Legal regulations, energy policy, short, medium and long-term strategy with a stimulating policy, can contribute for achieving adequate results in terms of sustainable development. The aims of this policy would be reflected in the development of eco-industrial parks and clean energy that contribute development of new companies, employment, on the state budget and local government levels.*

### **INTRODUCTION**

If we look at the world's using of energy and at the resources of the energy we can conclude that at the beginning of the world the man used energy from the renewable resources which include solar energy, hydropower, and biomass. The people used the animals and primitive vehicles for the transport; they used wind for the boats and sailboats. However, every process and things has its development and the man with the development of the technology and knowledge develops and starts using the different kinds of the energy. With the appearance of the steam machine the First Industrial Revolution started. Later,

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the steam machine started using the coal for its movement. During 18th century, the coal was used for heating but later, at the beginning of 20th century electric energy and oil appeared.

The oil was refined in gasoline, which as its derivative was the main propellant for internal combustion engines. When the period of electric energy started, the process of urbanization and modern humanity rapidly increased. The distant parts of Europe were connected to the long-distance pipelines, while much of the world was using electricity. The cars which became new way of transport and things which could be bought, the needs for gasoline increased. The need for energy and its consumption has been doubled, every decade (Pipkin, Trent, Lazlett & Bierman, 2014). The need was growing more and more and there are not enough attention paid to its efficient use. The man believed that the resources of energy were unlimited, and he used it very much for his economic development. Then, later, atomic energy appeared, and it required different treatment. After big nuclear disasters (The Island Three Miles, 1976, and Chernobyl, 1989) nuclear industry got a big kick. The man became more and more worried about big natural disasters, climate changes, the effect of the greenhouse and he started looking for the solutions of the problems which were caused by him (Stojanović, Ilić & Mihajlović, 2017).

The disturbed environment and the big exhaustion of non-renewable energy resources made the humanity turn again to the renewable energy resources but this time from a different point of view. The renewable resources have begun to be treated as the only replacing for the renewable resources and their savings with minimal bad environmental impacts (Ilić, Marković & Randelović, 2017).

## **BACKGROUND**

Nikola Tesla, the creator of contemporary humanity and one of the greatest inventors in human history, said that energy in the future would be a matter of life or death. The non-renewable energy resources which were widely used during that time poisoned the planet and were unreliable while Nikola Tesla said that although the man can survive the poisoning it cannot prevent the day when these energy resources will be exhausted, or will dry up.

“With my project I can provide energy for all needs- the clean energy. The energy generated by the distinction of natural elements (nuclear energy) is a crime against the nature and it will cause the disaster. We can control the living world, but we must not exploit and destroy it for the purpose of a higher task. It is important for the peaceful survival of mankind to overcome the common spiritual thought of guidance. The universe is one sensible living organism. The universe is an integral organism, which consists of several parts that are similar, but differ by different frequency of vibration. Each part is a parallel world. Entering the resonance with the frequency of another world, we seem to open the window into that parallel world. That can be the way for travelling all around the world” ([http://hr.wikiquote.org/wiki/Nikola\\_Tesla](http://hr.wikiquote.org/wiki/Nikola_Tesla))

## **RENEWABLE ENERGY SOURCES MANAGEMENT: ITS EFFECTS ON SUSTAINABLE DEVELOPMENT**

Based on economic analyses of scientific researches APSE (The Association for Public Service Excellence), their numerous “case studies” and appropriate professional support of local management together with management risk planning, it has been concluded that there is a positive direct economic impact of

renewable energy sources on yields on investments to a significant extent. There are great possibilities to stimulate sustainable economic growth and employment and to increase incomes both on the local and national level, with the help of political support and management by using sustainable energy products. Depending on the management actors-both on the local and national level, it depends whether renewable sources productivity will be used, which is proved in numerous researches and “case studies”.

Thus is, for example, proved that, under certain circumstances, the use of solar energy has contributed that for every 1 £ of expense, returns would be 2,90£ ([https://www.eia.gov/energyexplained/?page=renewable\\_home](https://www.eia.gov/energyexplained/?page=renewable_home)).

Analysts have performed an extrapolation of economic effects-yield rates on investments with the use of assumptions on investment expenses, gains and losses, energy generation expenses, payment period, regarding different screenplays (APSE, 2012). Models for calculating different versions of included parameters have been applied, when it analyzing different screenplays of renewable energy sources of ecological parks both in EU and USA.

The life cycle of the project which assumes its financial and operational life has been observed. Long-term renewable energy sources (RES) capacity planning is necessary by applying appropriate long-term models and screenplays, in developed countries, as well as in developing countries and countries in transition. In APSE report, it is pointed out that it is necessary to provide relevantly different flexible and transitive capacities in different time periods and in potentially different areas, in order to provide long-term stability of RES functioning by including relevant model parameters. In Table 1 the application of the model in national plans and strategies is represented (IRENA, 2017).

Although the technology of renewable and conventional energy sources is clean, it's still not continuous and developed enough, especially in transitive and less developed economies, in which conventional sources are still dominant. In thus economies, renewable sources should be primary goal of energy politics, in which hybrid versions of energy sources are used with applying solar energy, in order to achieve present and future sustainable energy development (Kosmadakis, Karellas & Kakaras, 2013).

### **Role of Ecological Parks in Improving the Quality of Life**

The use of RES (renewable energy sources) has a great ecological impact because it favorably affects climate changes; it contributes to the quality of the environment, which is also a goal of EU that is suggested in directives by the year 2020: “reducing of harmful gases emission by 20%”. European parliament

*Table 1. List of the models (Greece, Italy, Poland) from the report of IRENA, 2017*

	<b>Appropriate institution</b>	<b>Models</b>	<b>The period of energetic system (Scope)</b>	<b>Planning document</b>	<b>Source</b>
Greece	Ministry of ecology, energy and climate changes	SimEE	Energy system 2010-2020	National renewable Energy Action Plan in the Scope of Directive 2009/28/	MEECC. 2010.
Italy	Government of Italy	PRIMES and TIMES	Energy system 2013-2050	Study for National Energy Strategy update 2016	Government of Italy, 2013.
Poland	Ministry of economy	WASP IV and MAED	Energy system 2013-2050	Demand forecast for fuels and energy until 2030	Ministry Gospodarki, 2009.

Source: (IRENA, 2017)

**Renewable Energy Sources Management and Role of Ecological Parks**

adopted in the second energy directive new goals until the year 2050 with the reducing of gas emission by at least 80%, with application of different technologies and energy mix of renewable sources, by putting an accent on ecological environment and future ecological policy. By appropriate waste remediation, pollution is prevented and also its harmful impact which causes many health problems with breathing, heart and also neurotically diseases and especially an impact which causes cancer. Based on feasibility studies which take into consideration economical and geographical factor and surrounding, it is possible to choose a screenplay that is the most efficient and the most economical to build ecological Greenfield parks (Pearce, 2008).

Eco industrial park (EIP) is an industrial park in which companies cooperate with each other and with the local community in an effort to reduce waste and pollution and efficiently share resources such as information, materials, water, energy, infrastructure and natural resources. In this way, they help achieve the goals of sustainable development in order to increase economic profits and improve the quality of the environment. Based on the concepts of industrial ecology, cooperation strategies do not only include the synergy of by-products in terms of waste for food exchange, but can take the form of cascading wastewaters, joint logistics and transportation and receiving facilities, joint parking lots, educational centers, and the like. EIP also applies to industrial parks where “green” access to infrastructure and location development has been undertaken. This may include green infrastructure which relates to renewable energy sources, i.e. management of underground and wastewater, road surfaces as well as management of transport demand.

A suggestion of life cycle activities project, that precede ecological industrial parks building with the use of renewable sources is shown in Gantt chart 1 (Gupta, 2014)

An economy aspect for ecological Greenfield industrial parks has been analyzed through the use of twelve different screenplays of expenses of renewable energy sources in Europe and America. For LCP, “life cycle project” of renewable sources has been taken into analysis together with comparable cost of

*Figure 1. Gantt chart 1: Project timeline (project timeline Gantt chart)*  
 Source: (Gupta, V., Study of Use of Renewable Energy to Power Greenfield Eco-Industrial Park, 2014.)

Activity \ Timeline	August – December (2013)	January – April (2014)	May – November (2014)
Literature review	[Bar spanning Aug-Dec 2013 and Jan-Apr 2014]		
EIP analysis	[Bar spanning Aug-Dec 2013, Jan-Apr 2014, and May-Nov 2014]		
RE analysis	[Bar spanning Aug-Dec 2013 and Jan-Apr 2014]		
Sustainability analysis		[Bar spanning Jan-Apr 2014 and May-Nov 2014]	
Gabi modeling		[Bar spanning Jan-Apr 2014 and May-Nov 2014]	
Economic analysis			[Bar spanning May-Nov 2014]
Feasibility analysis			[Bar spanning May-Nov 2014]
Results & conclusion			[Bar spanning May-Nov 2014]

electricity (LCOE): capital costs, constant and variable costs of operating and maintenance, simultaneous costs of degree of using all the assumed types of renewable energy sources. Development of new technologies of RES and also development of ecological industrial parks of renewable energy sources in potential geographic zones, especially in the smaller country (for example Serbia), also contributes to increasing employment and economic development both on local and national level, besides energy efficiency.

Renewable energy sources management in these countries that are still in the process of transitions (Serbia, Bosnia and Herzegovina, Macedonia) is in charge of the government based on “Law of energy”, which means that “strategy is made by the National Assembly of the Republic of this counties on the proposal of the government for a period, for example, of at least fifteen years. By the use of energy politics strategy, directions of development of the use of energy from renewable and new sources are determined, as well as directions of improving energy efficiency” (Low for energy efficiency, RS, 2014). Renewable energy sources management means bringing of a national action plan for the use of renewable sources, passing of legal acts which more closely determine under which circumstances energy permits for building different objects are issued, as well as issuing of energy permits in the law regulated procedure on requests of the investitures which are submitted to the competent ministry for the construction of facilities.

## **SOLUTIONS AND RECOMMENDATIONS FOR USING OF RENEWABLE RESOURCES: WARNINGS**

It is not disputable that renewable ecologically pure energy is one of the important ways to reduce greenhouse gases (GHG). The problem, however, is that no one has explicitly, in an exact way, posed the key question: From which sources and under what conditions is truly renewable and environmentally “clean” energy obtained. Undoubtedly, there is a miraculous simplification that all devices using wind, solar, biomass, small water power and other such natural resources have been declared “renewable, ecologically clean sources”. Some extremely important facts are ignored along the way:

1. Primary energy (oil, coal, electricity) spent on materials that are incorporated into a wind, solar, or biomass power plant or used during their construction is not taken into account. These materials (steel, copper, aluminum, glass, plastics, concrete, etc.) are very expensive and huge amounts of primary energy are spent on their production, which must be included on the expenditure side of the total energy revenue of the energy production devices. This primary energy consumed for materials, reduced to the same energy unit – joule (J), is often higher than the energy that will be generated during the total use time of the device.
2. When it comes to “renewable” biomass energy, it is astonishing that nobody takes care of the enormous amount of energy consumed for its production, collection and transport to energy processing devices. It can be undoubtedly shown that the energy consumed for the production, transport and processing of biomass (petroleum for machine operation, energy spent for fertilizer, transport and processing) is higher than the energy obtained from biomass, so the energy of biodiesel and bioethanol certainly do not belong to renewable energy sources, but are imposed as mandatory due to the political pressures of powerful interest groups.

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3. Some natural resources (sun, wind) are highly changeable in time, so that the electric power system (EPS) must have in reserve other power plants (accumulation and reversible hydro power plants, coal and gas thermal power plants) that can cover consumption when “renewable” sources do not work. So, “renewable” sources must, due to the safety of EPS, be doubled with conventional power plants, which only increases the pressure on all material and environmental resources.
4. In order for an appliance to be regarded as an environmentally “clean” energy source, the following conditions are necessary:
  - a. In the course of the century of exploitation “to save” GHG emissions in a higher amount than GHG emissions during the production (anywhere in the world) of materials for their production; Not to reduce biological diversity in the zone of such a power plant.
  - b. In the case of solar power plants (SPP), which occupy a large area, the balance of energy losses must also include: the lost biomass that would occur in the area that the plant occupies, the reduction of oxygen (O<sub>2</sub>) production, and the absorption of carbon dioxide (CO<sub>2</sub>) in the process of plant photosynthesis. When this is also accounted for, balance analyses are implausible: if a solar power plant is built on the zyrtyc soil of any class of worthiness (including the worse, where only forest production is possible), the energy balance of the solar device in certain conditions is negative, so it is not a renewable source. Also, it is not an ecologically clean source of energy: the sum of GHG gases emitted during the production of materials and construction is greater than the amount of “saved” gases over the entire lifetime of the plant. One more thing that no one takes into account: the production of oxygen and carbon dioxide is reduced as a result of the destruction of vegetation in that area. In such plants, particularly vulnerable is the biological diversity, because instead of rich diversity in this area (forests, meadows), a fenced space with zero biological diversity is obtained; due to the protection of solar panels from vegetation, this area is treated with herbicides and is completely biologically dead.

## **FUTURE RESEARCH DIRECTIONS**

The exact delineation of whether energy sources produce renewable or non-renewable energy can be obtained if the following indicators are introduced: (1) the return time of primary energy used for construction and maintenance, (2) strategic priority of energy source index and/or investment saving measures. The time spent on the return of primary energy spent on construction and maintenance is a very important indicator, which defines the time expressed in years for which the source of energy, i.e. investment saving measure, is able to return the primary energy spent for its realization. This indicator is very indicative: if the periods of the return of consumed energy (in some cases longer than the exploitation period) are very long, this clearly shows that from a long-term strategic energy point of view it makes no sense to build such plants. The Strategic Priority of Energy Sources and/or Investment Saving Measures (ISP) analytically delimits the long-term strategic priority of using certain renewable and non-renewable energy sources and/or investment measures of consumption saving (upgrading thermal insulation of buildings, increased investment in so-called solar architecture, etc.). The ISP is a dimensionless dimension, which may be higher or smaller than 1. in the case of  $ISP > 1$ , it is quite obvious that this is an energy source or consumption rationalization measure which has an undeniable long-term strategic validity since the

energy revenue is higher than the sum of all expenses –primary energy spent for both construction and device maintenance.

Therefore, in order to rationally use energy from renewable sources, it is inevitable to determine the time, method and cost-effectiveness of their use. regarding eco industrial parks (EIP), future investments in their development can be used as a means of growth for the renewable energy sector. an example for this can be found in the case of the capacity for the production of solar photovoltaic (pv) plants, in which the eip can increase production efficiency to make it more economical, while reducing the negative impact on the environment by producing solar cells. basically, this helps the growth of renewable energy industry and environmental benefits that come with the replacement of fossil fuels.

## **CONCLUSION**

It can be concluded that it is necessary to innovate both national action plan and energy politics strategy which will help launching activities of competent foreign experts for the analysis of the feasibility study, by the use of adequate simulation models in geographical areas, which are potential zones for renewable sources, ecological and industrial parks. This would enable symbiosis of industry, ecology, energy efficiency of renewable sources and sustainable economic development. Profitability of investing in renewable energy sources is certain in case of adequate foreign investments in suitable business surroundings based on “confidence”, in case of favorable Greenfield and Brownfield zones, of adequate political support and suitable management of local and political authorities. Numerous studies have shown that adequate investments in renewable energy sources would contribute to energy efficiency, increase in gross domestic product, economic growth and whole sustainable economic development, which are primary goals of countries of European Union.

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## **APPENDIX: ABBREVIATIONS**

**APSE:** Association for Public Service Excellence

**RES:** Renewable Energy Sources

**IRENA:** International Renewable Energy Agency

**LCP:** Life Cycle Project

**LCOE:** Low Cost of Electricity

**GHG:** Green House Gasses

**EIP:** Ecological Industrial Park

**ISP:** Index of Strategic Priority

**SPP:** Solar Power Plants

**EPS:** Electric Power System

# Chapter 15

## Solid Waste Management in the Context of Public Policies and Private Sector Participation: Thoughts on the Need of a Comprehensive Approach

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### ABSTRACT

*Public policies have undoubtedly a very important position in the economy. The environmental economy is a phenomenon that requires intervention in the market through public policies. This is because environmental problems need to be intervened with public policy tools because they have the characteristics of externalities and are public goods. Accordingly, waste management is a subject of environmental economics, at which point public policies come into play particularly at the level of local governments and gain importance. However, this is not only a matter of public policies but also requires the active involvement of the private sector and social participation. The participation of society and non-governmental organizations, as well as public and private partnerships plays a pivotal role in the effective management of this process because it is difficult to understand the significance of solid waste management for a society that has not completed its intellectual and cultural education.*

### INTRODUCTION

Human beings have responsibilities for the environment in which they live. If these responsibilities are not fulfilled properly, environmental problems emerge and this causes harms to human beings. Solid waste management requires effective and organized execution of its processes. It can also turn into a serious environmental problem that can threaten people when necessary care is not taken. The processes of collection, disposal and storage of solid wastes, which are non-liquid wastes produced as a result of human activities, are of utmost importance for human and environmental health. Failure to carry out

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the processes properly results in illnesses, epidemics and various environmental problems. Everyone is accountable for the negative externalities that will arise since environmental problems are of public goods quality. Although public policies are primarily considered in the internalization of these externalities, the participation of the private sector in the process may result in effective results in solid waste management.

Considering solid waste management in the context of public policies, it is expected that the environmentally sensitive public policies to be implemented at a local level will be more effective in terms of proximity to the service unit. On the other hand, the biggest disadvantage of local public policies is the deficit of budget and qualified personnel. The participation of the private sector comes into play at this point. Private sector participation has facilitated financing in the countries in which it is realized. Even though public and private partnerships are an essential form of partnership in solid waste management, it will be difficult to stand in a balanced way as a table with a missing pillar in case society and NGOs do not participate. This is because the most important factor in waste management is human, so it is very important to ensure the environmentally sensitive mind-set transformation of humans. For this transformation to occur, it is necessary to implement local public policies that will enable people to enhance their environmental education and integrate incentives encouraging people's participation in waste management. Besides, other sectors should act in a way to support these policies.

Within the framework of these objectives, the study is divided into 5 main parts. In the first part, the necessity of solid waste management is explained on the concept and scope basis. In the second part, the role of public policies is touched upon, and in the third part, public and private partnerships encompassing the participation of the private sector into solid waste management are given. In the fourth part, in order to draw attention to the role of non-governmental organizations and community-based participation against public sector and private sector partnerships, the role of these organizations in solid waste management is examined. In the last part, evaluations were made regarding an inclusive approach in solid waste management and some suggestions and views are presented.

## **NECESSITY OF SOLID WASTE MANAGEMENT: HIGHLIGHTS ON THE CONCEPT AND SCOPE**

Solid waste refers to non-liquid wastes produced as a result of human activities and waste materials emerged due to some disasters. Accordingly, solid wastes can be exemplified as mud and debris emerged due to disasters, human faeces disposed of in garbage dumps, and domestic wastes such as plastic water bottles, ash, packaging materials food wastes (WHO).

Evidence is present from the early Roman Empire times that waste management systems had been organized by the public, and throughout history, the collection and disposal of waste manifested itself as a prioritized issue not only to preserve the health of the city dwellers but also to improve the aesthetic appearance of the region. In the 19th century, the sprawl of cities and the growth of industrialization led to an increased amount of waste production and a significant change in the composition of these wastes. As the interest in environmental protection increased, wastes were seen as recoverable resources with the 20th century (The World Bank Group, 2018, p. 9). Table 1 outlines how solid waste management (SWM) system works. Accordingly, the table shows that after solid waste occurs, it is collected, transported and then stored.

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Table 1. Solid waste management system

Solid Waste Formation →	Collection →	Waste Transportation →	Regular Storage
Residential areas Other institutions	From Door to Door	↓ Treatment Systems for material, energy recovery, volume reduction ↑	
Commercial institutions including hotels and markets	Fixed Station		

Source: (Shekdar, 2009, p.1439)

The right to a safe life is the right of every human being and the wastes contain a significant health risk compromising this right. The failure to carefully treat and dispose of all kinds of waste poses serious threats to human beings and environmental health. As a result of anaerobic degradation of wastes at landfills, these wastes produce greenhouse gases that are 20 times more harmful than carbon dioxide. Litter remaining on the streets causes the emergence of diseases such as malaria and plague and triggers an outbreak. This is also a major obstacle for a country to progress in line with the Millennium Development Goals (Chatri & Aziz, 2012, p. 14). Waste production rates in the world are on a rise. In this context, the annual waste generation of human beings who produced 2.01 billion tons of solid waste in 2016 is expected to rise to 3.40 billion tons by 2050 (70% increase) due to rapid population growth and urbanization. Especially, the people living in developing countries are affected by these increases. In low-income countries, more than 90% of wastes are placed in unregulated landfills or openly incinerated. These wrong practices have led to significant health, environmental and safety problems. Because the misconduct of waste management increases urban violence, increases diseases and contributes to climate change due to methane production (The World Bank, 2018). In addition, waste management costs are expected to increase more than twice in 20 years in low and middle-income countries. In terms of public expenditures on waste management services, developing countries are lagging behind developed countries (Chatri & Aziz, 2012, p. 14).

In cases when waste management is not conducted sufficiently, such as the lack of waste collection systems and also the presence of ineffective disposal systems, air, water and soil pollution are inevitable. This situation may cause the contamination of drinking water and consequently lead to infectious and contagious diseases. Waste dispersion pollutes ecosystems. Hazardous substances from electronics or industrial wastes can also harm urban dwellers and the environment. At this point, the first solution is to minimize waste. Another important solution is the reproduction of materials and wastes and the transformation of recyclable products into usable products when waste cannot be prevented. Recycling is very important because it will lead to significant resource savings. For example, it is possible to save 17 trees and achieve 50% water saving for each recycled paper. Also, serious employment opportunities are created. In Brazil, China and the US, this sector employs 12 million people (UN Environment). Within this framework, solution for waste problem can be provided with the 4R principle to be listed as Reduction, Reuse, Recycle and Recover (Akkucuk, 2018, p. 68).

While there are many tools and initiatives to be implemented in solid waste management, some elements are of vital importance for waste management. In this context, it is possible to list the basic tools and initiatives in the development of the SWM strategy (UNEP, 2013, p. 33) as in Table 2.

As can be seen from the table, SWM essentially encompasses a multi-dimensional management process. Not only the public and the private sector but also social participation are important. However, provision of environmentally conscious education to the society for this purpose, voluntary agreements, and technology selection are as important and essential as the social participation in the process.

## **GENERAL PRINCIPLES OF THE ROLE ASSUMED BY PUBLIC POLICIES IN SOLID WASTE MANAGEMENT**

The environment is a public good. The public good quality of the environment means that all the public can benefit from it and no one can be excluded from the benefit and that there is no competition in the consumption by individuals. In other words, individual consumption does not affect the public goods consumption by another individual. Additional use does not require additional costs (Samuelson, 1954, pp. 387-389). Environmental problems stem from the public good quality of pollution and market failures arising from externalities. Negative externalities caused by environmental pollution can affect the whole world since the environment is a global public good (Mutlu, 2002, p. 19). Therefore, all these features of the environment necessitate public intervention.

It is possible to monitor the role of the public sector undertaken within the framework of regulations and economic instruments. The state can take remedial or preventive policy decisions on the environment, a global public good, by taking steps on the management of (solid) waste with economic instruments such as legal regulations or taxes. Taxes, subsidies and, other economic instruments, which may have an impact on producer and consumer behaviour, may increase or decrease the price of a service. In this context, economic tools have had growing importance since the 1970s, since when the awareness of the environment has increased (Şeren, 2019, p. 88).

*Table 2. Necessary tools and initiatives in waste management*

<b>Legislation and Arrangements</b>	<b>Technology Selection</b>
<ul style="list-style-type: none"> <li>• Laws and regulations</li> <li>• Environmental responsibility</li> <li>• Compliance and enforcement</li> <li>• Norms, standards and rules</li> </ul>	<ul style="list-style-type: none"> <li>• Research for new or improved solutions</li> <li>• Technology Transfer</li> <li>• Selection</li> </ul>
<b>Education</b>	<b>Voluntary Agreements</b>
Education programs <ul style="list-style-type: none"> <li>• Advise centres</li> <li>• Awareness-raising campaigns</li> <li>• Eco-labelling</li> </ul>	<ul style="list-style-type: none"> <li>• Self-regulated</li> <li>• With certain supplier industries</li> <li>• Providing special measures under specific extended manufacturer responsibility</li> <li>• Self-regulating</li> </ul>
<b>Economic Tools</b>	<b>Monitoring and Information</b>
Subventions Taxes and charges Fees and user fees Green public tenders	*Exchange and Collection of Information <ul style="list-style-type: none"> <li>• Reporting</li> <li>• Performance Evaluation</li> </ul>

Source: (UNEP, 2013, p. 64)

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Overall, SWM refers to the process of collecting and treating solid wastes. It also offers solutions for the recycling of waste, because the presence of solid wastes in residential areas where people live has brought about various problems. Industrialization manifests itself as the most important factor in the emergence of this process (Conserve Energy Future). The increase in waste production as a result of the increase in mass production and consumption in the 1960s posed problems related to landfill. From the 1970s onwards, the environmental negative externalities created by people's occupation of valuable spaces as landfill have marked the beginning of an attitude change. In this context, landfill taxation is a well-known concept in the literature for the internalization of negative externalities such as noise, odour, groundwater pollution and air emissions (Hoogmartens, Eyckmans and Passel, 2016, p. 345). In addition, economic instruments that are frequently used by the public include tariff guarantee, tax exemptions, funds and subsidies, user fees, support for the growth of producer responsibility, landfill taxes, recycling fees and product taxes to generate energy from waste (GIZ, 2015, p.18).

Economic, administrative and informative tools in waste management are presented in Table 3 in order to present a whole picture in terms of the subject.

As can be seen from the table, policies to be put forward from a single perspective on waste management will be incomplete. If we consider waste management tools as a 3-pillar table, the table will not be balanced when one of these pillars is missing. In this case, the spectrum of policies to be implemented should be part of a whole and should support private sector participation. It should be taken into account that waste management that is not properly conducted within the scope of environmental problems is a phenomenon with negative externalities that can threaten the whole world in the context of global public goods and policies should be introduced from a long-term perspective. Based on the aforementioned facts, the best regulation is a public private sector partnership working in cooperation to educate people (Madinah, 2016, p. 64). The new environmental sector has brought along a combination consisting of complex legislation, regulations and economic instruments. Considered as a whole, these instruments make the disposal of untreated waste difficult. The collection of untreated waste is prohibited while forming new landfills. In general, the economic tools used by the state in environmental policies are waste taxes increasing the waste disposal costs and the use of green tariffs for financial relief and waste-derived products. Over the past fifteen years, both in the EU and in Japan, both regular landfill and recycling and recovery gains have been recorded. The combination of regulatory instruments and economic incen-

*Table 3. Tools in waste management*

<b>Administrative Tools</b>	<b>Economic Tools</b>	<b>Informative Tools for Waste Management</b>
Product restriction	Waste disposal tax	Eco-labelling scheme
Waste collection, reuse/ refilling and recycling aims	Landfill tax	Provision of information to the treatment facilities
Environmental treatment standards	Pay as you throw	Product and component marking
Recovery of some products thrown	Recycling loan plan	Green shopping guide
Resource allocation	Subventions for by products	Informing campaigns
Content standards for minimally recycled materials	Deposit refund systems	
Landfill restriction/ diversion aims		

Source: (Tojo, Neubauer and Bräuer, 2008, pp. 3-6)

tives has led to an increase in research and development and resulted in investments in new and more efficient waste treatment technologies. However, this change in disposal, treatment and recycling mostly resulted in poorly managed higher costs in countries aiming to take part in such a development. The actors operating in the waste sector comply with the market rules and determine the lowest cost option to fulfil their responsibilities. Therefore, regulations should be carried out and the waste sector should be made financially attractive to encourage the actors in this sector (The World Bank (b), 2018, p. 10).

Effective management of SWM is essential for the construction of sustainable and liveable cities, but in many developing countries this remains a problem. Ensuring effective waste management is a costly process and may constitute 20% and 50% of municipal budgets. In this context, it is necessary to introduce efficient, sustainable and socially supported integrated systems in order to provide this basic service (The World Bank, 2018). Public sector tries to fulfil its responsibilities regarding waste management system in accordance with public sector authorities. However, due to the characteristics of the public sector (ambiguous targets, weak institutional structure, lack of trained staff, insufficient supervision), necessary changes should be made towards working in cooperation with the private sector to carry out waste management efficiently (King'oo, 2015, p. 26). Today, the rapid increase in the urban population leads to an increase in the demand for waste management while the traditional public sector remains incapable to meet the demand. The source and institutional constraints can be shown as the reason for this incapability. The private sector is seen as an alternative to the solution of the problem and it is expected that the private sector will be able to fill the service delivery gaps with its dynamism and flexibility by establishing a partnership with the public sector (Ahmed & Ali, 2006, p. 781).

## **AN ALTERNATIVE IN SOLID WASTE MANAGEMENT: PUBLIC-PRIVATE SECTOR PARTNERSHIPS**

It becomes more strikingly evident that the public sector cannot meet the ever-increasing demand for services and needs to seek support from other segments of society. Public-private partnership (PPP) is one of the forms of this kind of cooperation. PPP is based on the recognition that both the public and the private sector can benefit from bringing together financial resources, knowledge and expertise to improve the delivery of basic services to all citizens. In addition, PPPs offer an alternative to full privatization by combining the advantages of both sectors. In this context, accountability, social responsibility, and environmental awareness of the public sector are combined with the financing, technology, management efficiency and entrepreneurial spirit of the private sector (UNDP). PPPs, which are asset or service provision agreements between the public sector and the private sector for a specific time, can be used in many infrastructure services such as solid waste management, water, energy, transportation, and telecommunication. In this sense, they exhibit a different stance from public procurement. PPP contracts are payments made for successful delivery of specified outputs and are based on performance (Pacific Private Sector Development Initiative, 2016, p. 6). PPPs can also take different forms according to the quality of the services offered. Concessions, Operation and Maintenance Contracts, Service Contracts and Build-Operate-Transfer Agreements are included in this scope (Pacific Private Sector Development Initiative, 2017, p. 6).

PPP can be defined as the control or the transfer of goods or services offered by the public sector, in whole or in part, to the private sector. PPPs involve a wide range of private sector participation in public services and serve as a potential strategic management tool. In particular, it is possible to state

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the reasons for the increase in demand for public private sector partnerships in recent years as follows (Massoud & El-Fadel, 2002, p. 621).

- Ensuring access to private capital for infrastructure investments by expanding and deepening local and international capital supply
- Improving public sector performance through innovative operation and maintenance methods
- Improving environmental protection by employing highly qualified personnel to ensure efficiency and compliance with environmental requirements
- Reducing and balancing service costs by ensuring efficient and cost-effective business operations

While municipalities are generally responsible for solid waste services, the private sector has long been informally involved in the municipal solid waste sector through outsourcing arrangements and waste collection and classification. The recent trends in the inclusion of the private sector in the municipal solid waste sector in the developing countries foresee that private sector may play an important role in fixing environmental and hygiene issues related to solid waste collection and disposal with partially stricter environmental standards. It covers the following (World Bank Group):

- Organizing waste selective initiatives as a part of a public-private partnership (PPP) solution
- Introducing more output-oriented contracts for street cleaning and solid waste collection
- Inclusion of private sector in treatment and disposal projects, promotion of technical innovation with regular landfill technology, recycling and transformation of waste into energy projects
- Participation of private sector in financing of capital investments

The reasons for the establishment of the SWM and PPP connection include the presence of risk sharing, the ability to fulfil the needs of the environmental infrastructure more swiftly, access to the know-how, cost efficiency, being a driving force for economic growth and sustainable development, allowing for new capital investments, a disciplined stance displayed by local government budgets, enabling the management and technical know-how transfer, creating opportunities for private entrepreneurs, as well as the opportunity to outsource to the public sector (Dorvil, 2017, p.12). For example, the EU supports the role of the private sector in the SWM by combining EU funds with public-private partnerships (PPP) through the European Investment Bank (EIB). Accordingly, PPP operates in landfill, waste incineration and recycling areas and there are approximately 16 large, multinational waste management operators in the EU (The World Bank, 2018, p. 98).

Public and private partnerships actors within the scope of SWM are as follows (Ahmed & Ali, 2004, pp. 469-471):

- Waste collectors
- Fixed waste receivers
- Micro intervention
- Small and large-scale recycling industry
- Non-governmental organisations (NGOs)
- Community-based organisations (CBOs)



Obstacles to PPP can prevent this partnership from time to time. In the study conducted by Ahmed and Ali, people were asked about how a better SWM service could be offered. According to results, it is possible to list the obstacles in front of PPP as follows (Ahmed & Ali, 2006, pp.789):

- The most important obstacle to PPP is the incapability of municipalities to conceptualize and implement innovative approaches.
- The public sector does not have the skills or incentives to change the style of traditional service delivery and to partner with citizens.
- Resources are inadequate.
- There is no need for municipalities to work with NGOs and citizens.
- It is not possible for NGOs to support municipalities for PPP due to lack of funds, skills and access.

There are several factors that encourage local governments to turn towards the private sector to provide solid waste management services. For example, if management is not ensured for waste collection, municipal authorities may want to show voters or ministers that they took action. In this case, the private sector is free to provide this service. The private sector is considered to be more efficient because it is expected to provide a public service better and at a lower cost than the public sector. Because competition plays a role in lowering costs at this point. The flexible structure of the private sector in the distribution of labour, the motivation sources of the personnel such as career development/payments, private sector's capacity to overcome the failure of local administrations to reveal the real costs due to the insufficiency of their accounting systems, simple administrative procedures of the private sector and the fact that private sector is relatively free from the political intervention are the main advantages. It is possible to list the PPP methods in SWM in general terms as follows (Coad, 2005, pp. 6-8):

- **Access to Expertise:** The public sector may need the private sector for a certain level of technical expertise that local governments do not have. Factors such as high level of expertise, experience and lack of political influence contribute to the decision-making capacity of the private sector. In addition, local government authorities may seek assistance from the private sector for the management of technical and complex tasks to simplify or reduce their administrative and technical responsibilities.
- **Access to Capital:** The participation of the private sector in the process may be compulsory if local governments depend on contributions from central government or donors in terms of equipment and facilities. In this context, access to capital provides planning and improves efficiency.
- When environmental legislation is inadequate or not implemented, contractual terms may be set and enforced to ensure that minimum environmental standards are complied with.
- Due to insufficient local government services and failure to prioritize poor areas, low-income regions in the cities have difficulties in receiving services. The participation of the private sector at this point, particularly the presence of small and community-based enterprises, cross-subsidization of services in the poor regions can pave the way for the provision of a service to everyone.

Although private sector partnerships are supported in SWM, in the participation of the private sector in public service provision is confronted some circumstances. The reasons for this can be listed as follows (Coad, 2005, p. 8):

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- Poor results obtained from previous experience of private sector participation
- Political view
- Resistance shown to change
- Corruption concerns
- Opposition to trade unions
- The public's fear of losing authority, power, income and influence
- Other factors

In short, both the public and private sectors have strengths and weaknesses. At this point, both sides need to work in cooperation and combine their powers by doing their best to achieve the best results (Coad, 2005, p. 8).

### **SWM and PPP in the Context of Central and Local Authorities**

It is possible to examine the structure of the public sector in two main administrative organizations as central and local government. In this context, it is considered that it will be beneficial to discuss the results of solid waste management when managed with the central public policies and local public policies. For example, Table 4 shows the positive and negative aspects of solid waste management at central and local government levels for India in line with the study by Chatri and Aziz (2012).

It is observed that SWM practices in the administrative administration sense have progressed towards a centralized municipal system. As SWM practices are considered as a public health and urban planning issue in line with the classical approach, municipal authorities have become the main actors of the process. Developing countries have mainly pursued this model in their cities and recognized that the responsibility of SWM belongs to the municipal authorities. But nowadays, many private sector operators contribute to SWM sector depending on the change in capacity. The problem here is whether or not the synergy between the two sectors contributes to providing SWM service better. PPP will increase the scope of private sector activities. The relevant regulation can increase the efficiency of the whole SWM sector and create new employment opportunities. However, since any change in the current order influences the lives of millions of vulnerable and marginal people in the cities of developing countries, it is necessary to carefully analyse the theoretical and empirical data related to the PPP applied to the SWM. Thus, it is possible to ensure optimum resource utilization and to minimize the risks by providing

*Table 4. Central and local solid waste management systems*

<b>Local</b>	<b>Central</b>
It is possible to manage health risks	There is no land which is not near the community for the local (decentralized) model
Lands are available for compost	Significant economies of scale are possible
Waste has a high degree of organic content	Waste composition with high technology yields a high degree
Compost markets are available	Health risk of inefficient disposal is high
Poor self-management risk is low	
There are many unofficial workers in SWM	

Source: (Chatri & Aziz, 2012, p. 60)

an effective PPP (Ahmed & Ali, 2004, p. 472). For example, in Kenya, the Ministry of Local Government approved the participation of the private sector through privatization of some services in order to improve management for the collection and disposal of solid wastes in municipalities in Kenya. Thus, with the privatization of SWM services in upper and middle-income areas, local authorities were able to direct some services to poor suburban areas (Henry, Yongsheng & Jun, 2006, p. 99). As a result of the evaluations made in 58 municipalities in Nepal, basic policy recommendations such as establishment of public and private partnerships for a more effective SWM, improvement of SWM, public participation and consultation, data management, updating and dissemination, strengthening of local institutional capacities, lowering costs, developing policies and strategies, supporting the re-use and recycling are listed (ADB, 2013, pp. 25-28). In Lebanon, public-private partnerships for MSW management services in the Great Beirut Region led to an increased performance efficiency and contributed to the environmental protection, given that municipalities lacked a qualified and motivated human resources base as well as financial resources. The fact that the private sector is included in the process can be associated with that it is a common practice in many communities, and it offers waste collection service to the community as per the contract made with the local government by causing the lowest collection cost. In this context, it is necessary to establish a legal framework allowing competition to be promoted. To this end, financial accountability, competitive bidding and full transparency are the main factors (Massoud & El-Fadel, 2002, p. 629).

Municipal solid waste management (MSWM) is a service that is non-exclusive and is not competitive with regard to consumption. Once it is offered to a section of the community, it also ensures the general public interest. The benefit of one person from this service does not lead to a reduction in the benefit of another. Therefore, it is not possible to exclude those who do not pay because they are public services which are of vital importance for public cleanliness and safe waste disposal and health and environmental protection. In summary, that MSW is non-exclusive, required and lack of competitiveness in consumption make MSW management a field for which local governments are responsible. The privatization of some of these services does not end the responsibility of local authorities in these services. In this regard, some financial and non-financial factors need to be addressed in developing policy and strategic plans for private sector partnership in MSW services. Some of these factors are recoverable cost, economies of scale, public accountability, financing, efficiency, corporate management and legislation (Massoud & El-Fadel, 2002, p. 621). Table 5 lists the sources and types of municipal waste. Accordingly, according to the waste source in municipalities, the type of waste also varies.

*Table 5. Sources and types of municipal wastes*

Sources	Main Waste Points	Types of Solid Wastes
Residential Areas	Houses	Food waste, paper, cardboard, plastic, textile, glass, metal, ash, special waste (bulky items, consumer electronics, batteries, oil and tires) and domestic hazardous waste
Municipal Services	Street cleaning, landscapes, parks, beaches, leisure areas	General waste from street litter, landscape and tree trimmings, parks, beaches and other recreational areas
Institutional	Schools, state centres, hospitals, prisons	Hazardous waste, food waste, paper, cardboard, plastic, wood, glass, metal, special waste,
Commercial	Shops, restaurants, markets, office building hotels	Glass, paper, food waste, cardboard, plastic, wood, metal, special wastes, hazardous waste

Source: (Shekdar, 2009, p. 1439)

No policy measures alone can be successful in improving waste management. An integrated waste management strategy requires a combination of measures. There is also no right or wrong approach. Such measures should be introduced to meet the local needs and the combination of measures must be implemented and adapted in this context. There should be both legal and economic means for a balanced policy. No matter what policies are adopted, the issues these policies plan to address should be assessed elaborately, and should be based upon the analysis of costs and benefits (GIZ, 2015, p. 18).

Affordable pricing is the ability of households to pay for a certain level of waste management services. While threshold payment for waste collection, classification/recycling and final disposal services account for 1 to 1.5% of the average disposable household income, implementations such as social measures, payment reductions, or exceptions can be realized for the low-income households. The polluter pays principle is an application providing that pollution-makers should cover the costs of management in order not to harm human health or the environment. Polluter payments, waste distribution by weight, “pay as you throw” as the bag-purchase system in Japan can be created according to the number of producers. Depending on the number of households in most OECD countries, monthly or quarterly payments are the most common payment method. In the provision of services, user fees should cover direct financial costs and associated negative environmental impacts. If the price of goods and services does not reflect the full cost, errors may arise, and government interventions may distort the market mechanism by grant, tax policy, price control (The World Bank Group, 2018, p. 11).

Solutions to be found in SWM financing can be local, national or international. For example, while small-scale financing options such as micro-finance and public-private partnerships are available at the local level, and national governments can take advantage over regional and local governments in terms of access to loan financing. In addition to this advantage, the national government can allocate funds from its national budget. They can create more funding resources than local governments by using affordable pricing and charging of services or advanced economic tools (UNEP, 2013, p. 32).

Finding funding for waste management is an ongoing problem for many developing and transition countries. Accordingly, in many countries, municipalities do not have sufficient budgets to carry out basic solid waste management operations. Low-income governments cannot even collect half of the waste they generate without financing proper treatment and disposal. Therefore, developing countries and transition countries constantly struggle to find a solution to the financing of waste collection and treatment costs. This could underline that it is necessary to attach importance to the construction of expensive disposal facilities rather than improving management by focusing on using local resources and improving local capacity. In addition, some multinational firms may be less interested in cost-effective and efficient waste management strategies that address local challenges compared to costly, capital-intensive projects that generate revenue (UNEP, 2013, pp. 31-32).

## **THE INCLUSION OF CBOs AND NGOs IN THE EQUATION IN SOLID WASTE MANAGEMENT**

It is thought that public and private sector partnerships in solid waste management can offer more effective solutions by combining their power. However, a third layer, “people”, are often ignored within the framework of service delivery. Nevertheless, citizens can also contribute significantly to service provision. At this point, people can support the private sector by paying the service fees, and can play an

active role in both public and private sector's accountability and to improve the service quality (Ahmed & Ali, 2006, p. 781).

The success of sustainable waste management is highly dependent on social participation and confidence factor. Waste managers rely on citizens believing that they consciously reduce the amount of waste they produce, classify or manage specific domestic waste, they dispose of waste appropriately, they pay for waste management services and they approve new landfills. For this, governments should primarily gain the trust of citizens. Citizens become motivated to pay the price of the services and to be aware of the environment, to comply with the rules and regulations in case the cities and countries manage to draw public interest through providing high quality services that will gain approval and trust. Although it is time-consuming to change the behaviour of the citizens, establishing a strong relationship with the public is a very important element for the waste management system (Kaza and others, 2018, p. 126). An adequately informed and aware community can help reduce the source of waste as well as classify the source of the waste properly (Chatri & Aziz, 2012, p. 59).

Akkucuk and Sekercioglu (2016), who investigated the sensitivity of a small NGO, which strives for protecting the environment within the scope of environmental sustainability and carries out activities in this field, underlined in their case study they conducted that such organizations have an effective and important role in raising public awareness regarding environmental problems, protection of habitats and implementing environment-friendly laws.

Community Based Organizations (CBOs) are another factor that should be included in the equation for local solid waste management. Although some governments view CBOs as unofficial small organizations, this does not mean that their efforts and contributions to the development of societies are ignored. CBOs, which are defined as informal institutions established to meet the needs of a community in general, are institutions that aim to provide social services and raise awareness in societies (Yaaba, 2012, p. 12).

The benefits of including CBOs and NGOs in waste management can be listed as follows (Klundert & Lardinois, 1995, p. 24).

- Increasing environmental awareness by conducting educations on environmental health
- Provision of waste transport services can in hard-to-reach areas
- Problem solving contributions at the local level, such as the creation of primary waste collection schemes
- Increasing the participation of citizens in solid waste management programs
- Gaining experience in developments at the neighbourhood level and in the informal sector
- Strengthening the organizational capacities of communities and informal individuals
- Supporting poor groups, low-income communities and waste collectors in society through technical assistance and advocacy
- Promoting income generating activities among urban poor

The role of NGOs as partner organizations in waste management systems ranges from serving as an umbrella organization in which CBOs operate to providing channels for donor financing. Additionally, as partners, they can help the informal sector gain a degree of reliability and perspective from the point of the municipality. In this scope, the motivations of the CBOs and NGOs can be listed as to provide advocacy activities that serve the public interest, to bring resources from outside, to perform their function in the private sector apart from the official decision-making structures of municipal governments,

and to conduct activities in order to improve the society and conditions (Klundert & Lardinois, 1995, pp. 12-13).

For example, India is a country which faces solid waste management problems. Accordingly, SWM is the biggest environmental problem of Indian cities and improper management of these wastes causes major harm to public health and the environment. In these cities, 90% of the SWM is disposed of by unscientific methods (Sharholly and others, 2008, p. 459). There are two approaches of PPP applications in India. The first is a technology-oriented central approach and the other is a decentralized community-based waste management system (Chatri&Aziz, 2012, p. 17). Ahmed and Mansoor's (2006) study showed that PPP is a feasible initiative. For example, in Bangladesh, the role of facilitating institutions in the development of tripartite partnerships for solid waste management services is discussed. For example, a strong partnership was observed in Khulna, where the municipality, NGOs and citizens work in cooperation for improved SWM services.

It is seen that many NGOs engaged in social goals and/or environmental health care are involved in waste management. The Balikatan Women's Movement in Manila, Philippines, is one of the biggest NGO success stories in waste management. With this movement, households classify animal and food waste (as liquid and solid). A state agency collects liquid waste every day, while dry garbage is purchased by more than 100 collectors who list them and sell their valuable components. The underlying reason for the success of this programme is the support and participation of the scrap dealers, society and local governments, the integration of the informal sector and an education campaign focusing on environmental issues. Another successful NGO initiative is ENDA-TM, a successful NGO with headquarters in Bogota, Ho Chi Minh City, Mumbai, Tunisia, Rabat, Santo Domingo and Dakar. For example, in Senegal, ENDA launched a community-based waste collection system in Rufisque, near Dakar, and established a network of urban environmental issues to exchange experience and information in the field of waste management in West Africa (Klundert & Lardinois, 1995, p. 24).

## **EVALUATIONS ON AN INCLUSIVE APPROACH IN SOLID WASTE MANAGEMENT**

The issue of solid waste, which has a complex structure in society, requires displaying a comprehensive approach. At this point, a spectrum of policies ensuring an integration which includes the private sector should be introduced while creating public policies of governments for the waste management. Decisions taken by the state alone may create difficulties in achieving the desired impact on waste management. The private sector should provide a clear plan covering the recovery of waste, reuse, recycling processes. The government can also use public policy as an instrument of incentives, for example, tax incentives can be used as a tool in the effective management of solid wastes (Igbinomwanhia & Ideho, 2014, p. 201). In the UNEP 2012, it was stated that "if waste is seen as a resource and properly managed, the increase in the amount of waste generated will not be a problem" and accordingly to the importance of the role and responsibilities of the actors involved in the solution of the solid waste problem is underlined (Niyas & Muneera, 2012, p. 19).

With the strengthening of the partnerships between sectors, the long-term vision of waste management targets in developing countries is also supported. Thus, it is possible to reach a sustainable SWM which will be stable over time, and this serves to the society, economy and environment (Klundert & Lardinois, 1995, p. 35). In the SWM, both public policies and the participation of the private sector and

the important roles of NGOs in the process reveal the necessity of putting forward a comprehensive approach. Apart from these, another important factor is human. The fact that people have knowledge and awareness in this context is undoubtedly an important factor in achieving the desired results from the policies implemented. For example, in the management of municipal solid wastes, people's attitudes towards waste, their ability or willingness to recycle will help the process progress in a positive manner. To this end, educational measures and awareness-raising campaigns may be effective. It should not be forgotten that what keeps a city keen is the desires of people living in a city to this end (Henry, Yongsheng & Jun, 2006, p. 100).

In short, if we consider solid waste management a table with three pillars, the pillars of waste management are composed of the following three elements:

1. Effective and appropriate use of local public policies
2. The private sector should be able to act jointly with the public by utilizing both financing and technical advantages of the private sector.
3. The importance of community participation should be understood and prioritized. For example, community members should be involved in the planning, implementation, and monitoring of PPPs in solid waste management (King'oo, 2015, p. 44).

In developing countries, a cultural transformation is needed to resolve waste management problems. Education and public awareness, which are the main elements of any strategy, must be assured via public participation and resource allocation. But it takes time to raise awareness and receive public support. Environmental awareness and the willingness of people to voluntarily participate in waste reduction and classification programs are indicators of social capital in the environmental field (King'oo, 2015, p. 25). At this point, it is of importance to provide the necessary elements for the sustainability of solid wastes. These include (King'oo, 2015, p. 23):

- Strategic planning
- External support
- Technical support

Such technical assistance differs from the provision of loans and grants for facilities and equipment. In this context, in developing countries, governments with limited budgets for solid waste management should implement measures to reduce and recover costs or increase revenues. Transformation of solid waste management systems into self-financing programs manifests itself as a necessity in this sense. External support, different alternative cost reduction methods, cost recovery programs can be implemented. For example, measures such as import and sales tax on certain packaged products, waste minimization, deposit reimbursement system for recyclable materials, and user service fees can be taken and positive outcomes can be achieved on waste management. In this context, carrying out pilot studies on economic incentive measures is important in terms of monitoring the results of the measures taken. Investing in private companies for solid waste management equipment and facilities, managerial expertise and technical skills offers a potential alternative to the self-financing solid waste management. Human resource development in financial planning and management is one of the main elements of the further development of self-financing plans (King'oo, 2015, p. 23).

## **Solid Waste Management in the Context of Public Policies and Private Sector Participation**

Akkucuk (2017) has pointed out that there is not a single dimension of sustainable development in his book, and there are many aspects such as politics, ecology, economy, business, supply chain management and waste management. In this context, the sustainable management of waste management, which is a dimension of sustainable development, does not take place unidimensionally, and the participation of public sector, private sector and people in SWM process leads to a better service in the context of discussion and cooperation. Thus, important behaviour changes in these areas can be observed (Ahmed & Ali, 2006, p. 791).

In Table 6, potential problems related to participation and solutions are presented.

A successful waste management policy should change not only the attitude of society but also the mind-set of society. Only through this, people show changes in behaviours such as consumption reduction, consumption habits change and wasteclassification and it may be possible for the population to contribute to waste minimizing (UNEP, 2013, p. 33).

## **CONCLUSION AND REMARKS**

The environment is, above all, a public good, and in nature it has externalities. While environmental protection will lead to positive externalities, the destruction of the environment will lead to negative externalities. Both externalities have the power to influence people. At this point, the public tries to encourage the protection and punish the destruction of the environment by both legal and financial policy measures they take. In this context, it is necessary to use public policies to tackle environmental problems. Solid wastes can also cause serious health hazards for the environment and people in case they are not regularly collected and disposed of. In this scope, a public policy at local governments level should be implemented in solid waste management. However, some issues in SWM such as waste collection/disposal costs, the difficulty faced by local administrations in financing and the failure of the central government to transfer the necessary resources, lack of technical know-how and knowledge make it necessary to ensure private sector participation accompanying the public sector. In this context, PPP manifests itself as a commonly used method in SWM. Since local units are the closest to the public at the administrative level, it is seen that they are a more efficient public administration unit in waste management.

*Table 6. Participation problems and solution offers*

Low Willingness to Participate in Collection and Recycling	<ul style="list-style-type: none"> <li>● Education</li> <li>● Exchange of Garbage for Free Bus Tickets or for Food Packages</li> <li>● Paying Households for their Participation</li> </ul>
Low Payment Willingness	<ul style="list-style-type: none"> <li>● Changing the Payment Method</li> <li>● Education</li> </ul>
Low Willingness to Keep Public Spaces Clean	<ul style="list-style-type: none"> <li>● Periodical Cleaning</li> <li>● Integrating Street Sweepers into Solid Waste Management System</li> <li>● Sharing of Maintenance Systems</li> <li>● Ensuring Education and Evaluations</li> </ul>
Low Community Priority for Solid Waste Management	<ul style="list-style-type: none"> <li>● Ensuring Appropriate Incentives</li> <li>● Consultation to the Public</li> <li>● Giving Role to the Society in Planning</li> <li>● Education</li> <li>● Evaluation of Social Needs</li> </ul>

Source: (Ntakumulenga, 1996)



Undoubtedly, it is not possible to establish a formula for an effective SWM that may be applicable in each country/region. It is also necessary to create different policy spectrums for SWM encompassing specific features of a region, city, and neighbourhoods. The aim of the present article is to demonstrate the SWM policies with the general principles and to draw attention to the importance of public and NGO participation by revealing the disadvantages of the public sector and the private sector. Each country should choose the tools that will maximize their potential. As can be seen from country examples, PPP is a widely used method in SWM. However, an NGO and CBO accompanying the PPP will undoubtedly be a manifestation of more comprehensive insight into SWM. In this scope, it is possible to formulate the inclusive approach as follows:

#### Local Public Policies+Private Sector Participation+ CBOs+NGOs

Of course, although every approach has its advantages and disadvantages, putting forward an inclusive approach in solid waste management is considered an effective and efficient approach. The fact that each component here shows a stance exhibiting approaches that will reveal their strengths and eliminate the weaknesses will be a helpful factor in ensuring that solid waste management is carried out in the best possible way. While the support of the private sector in waste management in the financial sense is an important factor, it is necessary for the public to carry out activities on this issue with all the means to raise environmental awareness. The support by NGOs and CBOs for this environmental awareness movement will undoubtedly play an important role in reinforcing the process. One aspect of the steps taken on SWM without helping people gain awareness will always be incomplete.

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## **KEY TERMS AND DEFINITIONS**

**Community-Based Organization:** Informal institutions established to meet the needs of a community

**Environmental Economics:** It is a branch of science in which the connection between environment and economy is revealed, examined and evaluated.

**Externalities:** The positive or negative effect (social costs or social benefits) arising from the production or consumption activity of a producer or consumer

**Millennium Development Goals:** At the Millennium Summit took place in 2000, a number of targets were identified and a commitment was made to a global partnership. Ensuring environmental sustainability is one of the targets set.

**Municipal Solid Waste:** Consumed or thrown away products that can be regarded as garbage such as food waste and product packaging.

**Public Goods:** Goods for which there is no competition in consumption and exclusion from benefits

**Public Policy:** Policies in which the state intervenes into the economy with various economic and social motives through the borrowing, taxes and public expenditures

**Public-Private Partnerships:** It is the partial/total control/transfer of goods or services (which will vary depending on the nature of the agreement) that is being served by the public.

**Regulations:** The economic or social regulations introduced by the public.

**Solid Waste Management:** Non-liquid wastes that can harm the environment by causing negative externalities as a result of failure to collect/dispose the waste regularly and carefully.

## Chapter 16

# Sustainable Development of Islands Using European Funds: An Upgrade of the Operative Coast of Hvar Port

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### **ABSTRACT**

*The Island of Hvar is part of Split-Dalmatia County and it is surrounded with a group of islands in Central Dalmatia. The island's dependence on the rest of Croatian mainland is inevitable and islanders' lives are still connected with the mainland. The trend of emigrating and abandoning the island is visible. Transport connections and infrastructure between the Island of Hvar and the mainland are unsatisfactory. At the moment, there is not an adequate pier for catamarans intended for a fast island-mainland travel in the area of Hvar Port. Therefore, the topic of this project and research is to present the importance of building infrastructure and the importance of a quality work of fast shipping lines between the town of Hvar and the mainland in order to enhance life quality of people who live on islands.*

### **INTRODUCTION**

The purpose of this project is to create services that will raise life quality of islanders and locals in order to remain on the island and to decrease depopulation. The financial analysis includes all investment costs for project realization upon which the amortization has been calculated. The method of discounted cash flow has been used for the financial analysis. Moreover, funding sources have also been processed and according to investment height all costs are eligible for co-financing and therefore it is not necessary to provide own funds or involvement of credit institutions.

All operative costs as well as revenues have been analyzed only for the newly built part of the Port of Hvar in order to determine the necessity and justification of using EU funds. The profit loss account is positive for all years of project duration and the net profit is minimal in relation to the amount of revenue earned. In order to justify the use of EU funds, a financial return on investment and FNPV/C have been

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calculated. Financial sustainability of the project is higher than zero over all these monitored years, so it has been proved that the project has sufficient financial resources to cover project costs.

In order to demonstrate that the project has a positive impact on the society, an economic analysis has been done. Positive and negative effects on the social well-being of the Island of Hvar have been shown in the qualitative economic analysis. Effects on reducing depopulation by creating new workplaces have been shown as the project will create at least 17 new work places indirectly through the realization of the project that will significantly affect the economic development. Upgrading the operative coast of Hvar Port1, it is expected an increase in the number of guests, who will, based on an estimated average consumption, generate HRK 3.9 million yearly which will significantly influence the opening of new SMEs. A new maritime line will have a very positive effect on the locals as it will significantly improve mobility and mainland accessibility which is an increase of 15% compared to the current situation. Taking into account financial results, unfavorable economic situation and insufficient development of ports of national importance for the Republic of Croatia, it is difficult to expect some major state funds in the following years for the Port Authority of Split-Dalmatia County.

At the same time, as the member of the European Union, Croatia has available funds from European funds intended for such infrastructural projects, i.e. projects with a negative financial analysis but with a great impact on the environment. It is necessary to ensure a combination of financial resources from EU funds, state budget, the County's budget and the financial flow of the Port Authority of Split-Dalmatia County for the realization of this project.

One of the biggest causes that slow down the development of Croatian islands is the current traffic connection that still isn't strong enough to integrate an urban centre on the coast and the surrounding islands into a unified economic centre. It has been shown that the modernisation of ferry and ship lines has a positive impact on economic and demographic development of islands (Smoljanović & Smoljanović, 2011).

The basic issue concerning the development of the Island of Hvar is the lack of interest of local and state authorities in infrastructure investments, as well as the lack of financial resources for investing in capacity increase. Another issue is also a high regulatory charge that disables larger infrastructural interventions. For this reason, the port infrastructure is getting out of date, the security is reduced, port capacities are being decreased, and transport conditions are getting worse.

A poor infrastructural condition of the port indirectly deteriorates the standard of islanders, makes it difficult to communicate within island destinations, influences emigration of families with children due to inadequate elementary and secondary education on the island, disables islanders to go to work on a different location every day, etc.

It can be concluded that transport connection of islands is a very important factor for an unobstructed further development of islands (Institute of Tourism, 2009). Connected islands have numerous advantages referring to:

- A stronger integration into the coastal transport system
- A more favorable demographic structure
- A considerable decline in depopulation

There are catamaran lines organized in the town of Hvar. The need for these lines exists not only during summer when the number of passengers, due to tourist season (Favro, 2008), is much higher, but also in low season, however the present quality, dock's safety and the annual number of catamaran

lines don't satisfy the needs of locals. The main aim of the project "An upgrade of the operative coast of Hvar Port; the Island of Hvar" is to improve conditions of public passenger transport in the port during the whole year (Favro, 2002).

This project, i.e. upgrading and deepening the operative coast of Hvar Port will improve conditions of public passenger transport during the whole year for the needs of locals.

The expected results will be the following ones:

- The acceptance of ships with the draught of 4.50m will be possible along 140.00 m of coastline or along 90.00 m of coastlines ships with the draught of 6.5 m ("Marco Polo" ferry has been taken as a relevant vessel to make calculations of ship's impact the coastal wall.)
- A better reception of fast-shipping vessels, vessels in transit and other vessels.
- 1.200,0 m<sup>2</sup> of operative area of Hvar Port.

After the upgrade, an additional catamaran line, which will run the whole year, will be introduced, and thus the needs of the locals will be fully fulfilled, with the aim to:

- Improve transport connections with islands in selected ports
- Improve accessibility to work place, education and medical services
- Increase the safety of infrastructure
- Relieve traffic along the coastline

Besides local inhabitants, benefits from this project will have:

- Regional and local self-government
- Ports with the same category (the nearest port with the same category is Bol Port on the Island of Bol; this port will benefit from the project in terms of quality and quantity regarding connectivity with Hvar Port, and relieve traffic along the coastline.

## **DEMOGRAPHIC ASPECT**

In the period between 1991 and 2001, there was a decrease in population from 4.8 million inhabitants to 4.4 million in the Republic of Croatia. Furthermore, a period of stagnation has started since 2001 with a slight decrease to 4.2 million of inhabitants in 2015 (The Town of Hvar, 2014).

The Island of Hvar as well as most Croatian islands recorded a decline in population. Table 1 presents the Census of Population from 1991 to 2011 for all islands in Split-Dalmatia County.

It is visible from Table 1 that the number of inhabitants on the Island of Hvar decreases every 10 years, following the trend of other nearby islands. Observing the population from 1857 to 2011 (Figure 1), it can be seen that trend has been present for many years (RERASD, 2011).

Given the data related only to the Island of Hvar, i.e. the municipality and two biggest towns, Figure 2 gives a comparative representation of the number of inhabitants.

As seen in Table 2, although there has been a decrease in population on the Island of Hvar, according to the Census of Population, the number of inhabitants is on the increase for the town of Hvar. This isn't surprising, as the town of Hvar is the biggest center on the island with the highest level of economic activity (Ministry of Tourism, 2015).

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Table 1. The number of inhabitants and population density on islands of Split-Dalmatia County, Censuses 1991, 2001, 2011

Island (number of villages, 2011)	Surface (km <sup>2</sup> )	Population census				
		1991	2001	2011	Index 2011/1991	Population density 2011
Brač (22)	394,57	13.824	14.031	13.956	101,0	35,4
Hvar (26)	295,71	11.459	11.103	11.077	96,7	37,5
Vis (15)	88,29	4.338	3.617	3.445	79,4	39,0
Šolta (8)	58,9	1.448	1.479	1.700	117,4	28,9
Čiovo (6)	28,8	3.142	5.387	5.908	188,0	205,1
Drvenik Mali (1)	3,3	56	54	87	155,4	26,4
Drvenik Veliki (1)	12,07	145	168	150	103,4	12,4
Biševo (1)	5,84	14	19	15	107,1	2,6
Palagruža	0,4	7	-	-	-	-
Sveti Andrija	4,6	2	1	0	-	-
Middle Dalmatian islands (80)	892,48	34.435	35.859	36.338	105,5	40,7
Middle Dalmatian islands without the island of Čiovo (74)	863,7	31.293	30.472	30.430	97,2	35,2

Source: Smoljanović & Smoljanović (2011): *Basic Characteristics of Middle Dalmatian Islands Population in 2011*, Split-Dalmatia County Institute for Public Health, Split

Figure 1. The number of inhabitants for all settlements on the Island of Brač, Hvar, Vis, Šolta and Čiovo, Censuses, 1857- 2011

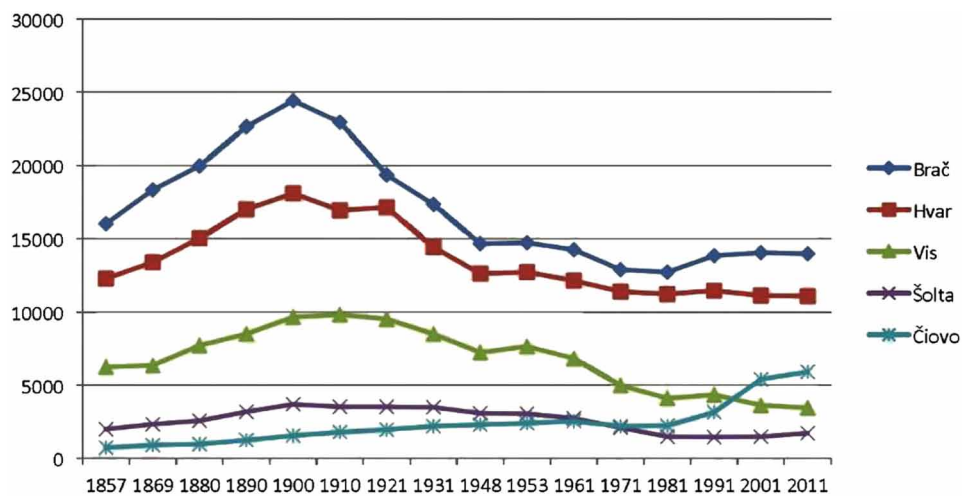




Figure 2. A comparative representation of the number of inhabitants on the Island of Hvar by settlements in 2001 and 2011

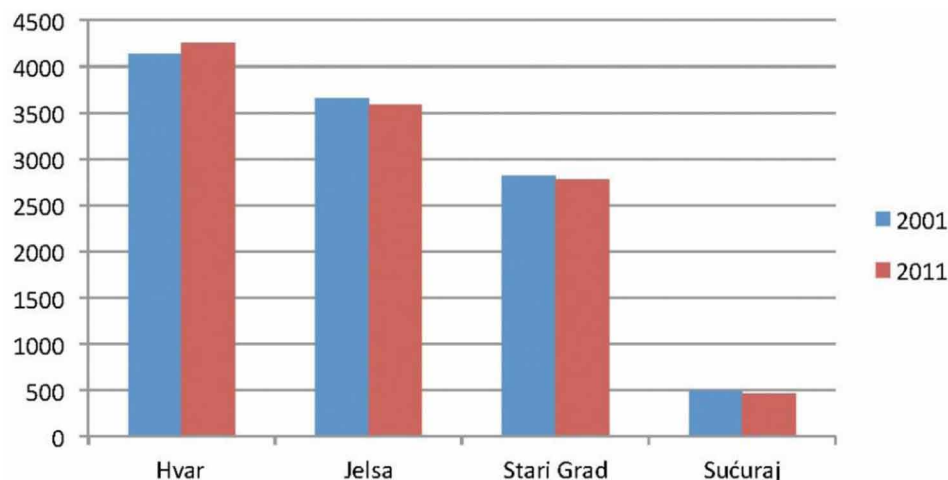


Table 2. The number of inhabitants of the City of Hvar according to Censuses

1857	1869	1880	1890	1900	1910	1921	1931	1948	1953	1961	1971	1981	1991	2001	2011
3.292	3.049	3.469	3.863	4.104	3.789	3.851	3.114	2.811	2.951	2.937	3.224	3.705	4.143	4.138	4.251

Source: Smoljanović & Smoljanović, 2011: *Basic Characteristics of Middle Dalmatian Islands Population in 2011*, Split-Dalmatia County Institute for Public Health, Split

## OPERATIONAL PROGRAMME

According to Operational Program Competitiveness and Cohesion and its specific objective 7ii1: Improving territorial cohesion, connectivity and accessibility of islands for their inhabitants, it can be concluded that this project contributes to the specific objective 7ii1 as this project aims at integrating Croatian islands (the Island of Hvar) within a wider transport network and overcome a key obstacle to local economic growth. The objective is to gradually provide sustainable and modern transport services to the Island of Hvar throughout the year regardless of tourism pressure and thereby improve accessibility of employment, education and other services to island communities.

The project is in accordance with main results of the Transport Development Strategy of the Republic of Croatia 2017-2030 in order to:

- Improve accessibility to remote areas of Croatia
- Improve the level of economic efficiency of the maritime transport system
- Enhance integration of ports into the local transport system.

This points to the need for adjusting infrastructure on the island, i.e. public transport (access roads and parking lots) and for establishing additional fast shipping lines in order to improve accessibility to remote areas of Croatia (islands) and to integrate even more Hvar Port in the system of local transport by keeping the existing transport lines and establishing the new ones.

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According to Maritime Development and Integrated Maritime Policy Strategy for the period from 2014 to 2020, it can be said that the project is in accordance with strategic objectives of creating sustainable competitiveness regarding:

- Shipping and maritime transport services
- Port infrastructure and services

The project contributes to the objective 2.2.1. of this strategy, i.e. it improves the public services system for connecting islands with the mainland and islands between each other in order to contribute to islands sustainability through the development of socially sustainable, economical and efficient system of the public coastal maritime transport service of the Republic of Croatia, which is one of the main objectives for developing good connections with islands.

According to the objective 2.2.1.1., that will redefine regular transport service system (route system, ratio of ferry, classic and fast shipping lines) by introducing a new transport line, it can be concluded that the project is in accordance with main strategic development objectives of the state.

Specific objectives of this project are:

- To increase one line that connects islands during low season
- To improve transport connections with islands in selected ports
- To improve accessibility to work place, education and medical services
- To increase the safety of infrastructure

## **FINANCIAL ANALYSIS**

According to Avelini Holjevac (2007), tasks of financial analysis are the following ones:

- To project costs and revenues, and the influence of the cash flow related to the rate of investment on the incremental basis,
- To determine the structure of financing the project and its profitability,
- To check the sustainability of projected cash flow to ensure the sustainability of the project during the planned period,
- To propose the framework of financing sources (Fridson & Alvarez, 2011).

Project duration is 25 years, and the referent values during these 25 years are monitored which is in compliance with Guide to Cost-Benefit Analysis of Investment Projects financed by the EU. Project duration includes pre-investment period of 2 years (2018-2019), and 23 years of investment and usage (2020-2042).

## **Sources of Financing**

The following financing structure detailed in Table 3 and Table 4 has been taken into account to carry out the study:

Table 3. Structure of financial analysis

13.967.830	Total investment cost
0,00	Loan
8.967.830	Amount of grant
5.000.000,00	Ministry of the Sea, Transport and Infrastructure

Source: processing of the author's article

Table 4. Structure of financing

Sources of financing	Applicable	An overview of the amount by years			UKUPNO
		2018	2019	2020	
Own funds	<input checked="" type="checkbox"/>	5.000.000,00	-		5.000.000,00
Non-refundable funds	<input checked="" type="checkbox"/>	6.872.655,89	2.095.174,57	-	8.967.830,45
Loan	<input checked="" type="checkbox"/>	-	-		-
Leases	<input type="checkbox"/>				-
TOTAL		11.872.655,89	2.095.174,57		13.967.830,45

Source: processing of the author's article

The total value of the investment is 13.967.830,45 HRK and 8.967.830,45 HRK of the total amount will be financed from the European Cohesion Fund while the amount of 5.000.000,00 HRK will be financed by the Ministry of the Sea, Transport and Infrastructure. As stated, EU grants in the amount of 6.872.655,59 HRK are also planned in 2018, which makes 85% of the funds in 2018, and 2.095.174,57 HRK in 2019, which makes 15% of non-refundable funds.

The selected statistic efficiency indicators point to marginal justification of the performance of the investment project monitored solely from the view of financial viability of the investment concerned.

As it can be seen from the table, the project isn't acceptable from the standpoint of the economic flow as the negative accumulation of the project remains. Therefore, it is not possible to calculate other indicators for capital return as given in Table 5.

The dynamic rating of project profitability is negative and therefore the project is not eligible for funding.

Table 5. Return period method

FNPV/C	-13.045.002,90
FRR/C	-6%
NPV – Financial Sustainability	-1.022.843
B/C (C)	-1,04

## **CAPITAL RETURN**

Financial Rate of Return on National Capital (FRR/K) assesses project's ability to secure an appropriate return of capital that the project bearer invested in the project (Fridson & Alvarez, 2011). FRR/K is calculated from the same projection of cash flow used for calculating FRR/C, but the overall grant (EU contribution, national support, loans, etc.), obtained for the implementation of the investment, is taken into account. FRR/K must not exceed the required return on capital for companies from the same sector because it would mean that the bearer of the project made profit on behalf of EU taxpayers, see Table 6.

## **CONCLUSION**

Project's focus is the optimization of the port that would function as a port open to public (not just transit), including the start and end of the journey with all benefits that the realization of the project would bring to the Town, County and the State. This project of upgrading and deepening the aquatorium of the operative coast of Hvar Port will enhance conditions of public transport for the locals during the whole year

- The main and the only reason for upgrading is to enhance conditions of public passengers transport in the port mainly for the locals during the whole year. After the upgrade, an additional catamaran line, which will run during the whole year, will be introduced, and thus the needs of the locals will be fully fulfilled.

The entire project envisions primarily ecological requirements in respecting the environment. Construction design will use the latest available technology to save energy.

According to predicted data, it is estimated that the passengers port could accept 3 – 5 ships with a total of 180.000 to 230.000 passengers in the first years. The aim is to increase the number to 195.000 passengers over the next 4 to 5 years and to reach 230.000 passengers annually.

Project duration is 25 years, and it includes pre-investment period of 2 years (2018-2019), and 23 years of investment and usage (2020-2042).

Financial analysis, i.e. the study envisages that the Port Authority of Split builds and manages passenger terminal, leaving economic activities to concessionaires like it has been so far.

A real financial discount rate of 4% has been applied in the financial analysis according to The Guide to CBA. All prices applied in the analysis are presented at realistic rate in 2017. Investments are distrib-

*Table 6. A brief calculation of rate of return on national capital FRR/K and FNPV/K*

FNPV/K	2.321.856
Discount rate	0,00%
NPV – Financial sustainability	2.768
B/C (K)	1,28

Source: processing of the author's article

uted through the priority investment period, i.e. three phases of the investment. The first phase begins in 2015, the second in 2018 and the last one in 2019. Distribution of national and foreign components of investment costs has also been taken into account.

Based on input parameters and obtained data regarding: 1) structure and dynamics of investment costs, 2) revenue analysis, 3) material costs analysis, 4) analysis of possible funding sources, 5) calculation of capital return, a financial analysis has been carried out and it showed:

- **Profit and Loss Account Projection:** If it is monitored for the period of 25 years, the net profit will be 391.461 HRK. There is no loss during that period.
- **Cash Flow:** Positive net revenue of the project starts in the 25th year of the project, except of the first business year due to investments. The cumulative net cash flow is negative during the whole monitored period.
- Static evaluation of project efficiency (which takes into account the following indicators: profitability of the total invested capital, profitability of own resources, turnover profitability, turnover of total invested funds, profitability from the point of view of funding sources, net revenue per employee, relation of other sources to total funds, etc.) indicates a boundary eligibility of the project.

Taking into account financial results, unfavorable economic situation and insufficient development of ports of national importance for the Republic of Croatia, it is difficult to expect some major state funds for the Port Authority of Split-Dalmatia County in the following years.

At the same time, as the member of the European Union, Croatia has available funds from European funds intended for such infrastructural projects, i.e. projects with a negative financial analysis but with a great impact on the environment.

Unlike the financial analysis that measures the return to the owner of the infrastructure, the economic analysis has been carried out to show whether the project positively contributes to the society as a whole.

Economic analysis in this study includes the conversion of market prices into economic prices, quantification of social benefits, other indirect effects, discounting of estimated costs and benefits and indicators of economic impacts.

Economic analysis conducted in this study includes several measurements of changes in economic activities:

#### 1. Consumption of passengers and crew members on a destination

The survey indicated that the average passengers' consumption in Hvar was about 29 €, and crew' about 21 €.

#### 2. Benefits of induced revenues for the local community

It is implied that the supply is done from the local market, which often generates its own revenues, profit and employment by procuring these activities for the port authority. If only 3% flows into local market as a profit to other companies, it would amount to 4.4 million HRK for 25 years.

#### 3. Inflow of construction sector

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It is estimated that from the total investment of 12.8 million HRH in the port upgrade, at least in the part of the construction, domestic construction sector will be engaged.

### **4. Increase in employment**

Besides a direct increase in employment in the Port Authority, new employments are expected with potential concessionaires in charge for conducting economic activities, local companies involved in “ship supply”, tourism and construction sector. Although the revenues from voyages and cash flow in the local economy are significant, an increase in employment of 1% is expected in the town of Hvar, which results in almost 17 employees more based on working population of 1.657 employees.

### **5. Consumption in tourism**

When passenger port becomes homeport, it is possible to create spending effects in tourism. For example, passengers decide to visit the destination one or two days before going on a cruise. The study predicts that these passengers would spend 66.3 EURO per day on average.

The result of the economic analysis of costs and benefits shows a positive result for all three scenarios projects where the economic return rate is higher than the discount rate and it amounts to 23%, the positive net current value of the project is 2.71 million HRK and the ratio of benefits and costs is higher than 1 and it amounts to 3.09 for the real scenario.

Upgrading the operative coast of Hvar is justified from the project aspect and the aspect of economy and as a good project. Financial and economic contributions to the Town and Split-Dalmatia County will be generated. Most benefits will be felt on the increase of new work places in the maritime sector, hospitality and catering industry and construction sector.

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# Chapter 17

## Integrating Performance Measurement Systems Into the Global Lean and Sustainable Construction Supply Chain Management: Enhancing Sustainability Performance of the Construction Industry

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### **ABSTRACT**

*The construction industry is one of the industries that have a great impact on the economy. A construction supply chain (CSC) is an important process affecting the circular economy (CE) and sustainability in practice. In order to analyze the efficiency of CE and CSC, a performance measurement system (PMS) is needed. At such a point, adopting a PMS to a supply chain at relatively early stages of a project could lead to sustainable supply chain management (SCM). Collaboration between all parties such as designers and contractors will be advantageous to gain competitiveness in the sector. This chapter aims to determine the need of PMS adaptation to construction supply chain process for sustainable and lean construction supply chain management based on the literature review. This chapter is expected to be beneficial for academics, researchers in the relevant field as well as policy makers and professionals.*

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## **INTRODUCTION**

Construction is the one of the most comprehensive, impactful, developing and dynamic sector in the industry. Construction has a complex organization scheme from the beginning of the project till the end and a large number of project groups involved from other sectors, and that interaction makes construction sector permanently powerful in the economy worldwide. In addition to being a large sector contributing to the economy, it is also very strong in environmental impacts. The carbon footprint and wastes that occur both during the construction process and after the construction is completed threats the environment. As long as wastes do not recycle and reuse, disposal sites fill up quickly and limited supplies are consumed more quickly.

Thus, the sustainability of the construction process is a critical approach for the sustainability of both the economy and the environment. So, the adaptation of circular economy to construction sector is important. Both issues are mutually beneficial. As a result of effective and parallel management of two (e.g. CE and construction), there will be a significant reduction in environmental footprint and waste and, will have beneficial and advantageous results for all parties. “A number of the primary aims of development, such as income generation and redistribution, employment creation, and output generation, have been satisfied by construction industry, which greatly contributes to sustainable economic development. In addition, this industry also contributes in meeting primary physical and social needs, which includes producing consumer goods, infrastructure, and shelter.” (Durdyev & Ismail, 2012)

CSC is the most concentrated area that environmental footprint occurred in construction. The main steps that carbon footprint emerged during the construction process can be classified as: extraction, transportation (transportation type), manufacturing (over-production), maintenance and disposal. Accordingly, CSC management is the key success step to provide sustainable construction and CE. Construction supply chain management (CSCM) effectiveness is directly related and vital to sustain both construction and economy. With the integration of PMS models, CSCM can reach the targeted sustainable construction and economy more systematically.

Based on an indepth literature review, this chapter aims to present five basic objectives through a literature review: 1) to identify the topic importance of construction sector in economy; and 2) to discuss the sustainability relationship between construction sector and circular economy; 3) the importance of the lean and sustainability on construction supply chain and; 4) the need of PMS for the lean and sustainable construction supply chain management; and 5) any gaps and opportunities that will be a remarkable for future research.

This chapter has been examined and divided into four parts. This first part devoted to the introduction. Background details are provided in the second chapter. In third section, future research directions according to the findings are provided. Finally, in conclusion part, the results are discussed with reference to the findings in the literature.

## **BACKGROUND**

In the industrial ecology practice and literature, the significance of the CE studies has been noted awhile. This discourse was considered for developing the concepts of green and sustainable SCM (Ehrenfeld, 1995). Circular economy (CE) is gaining importance and it is becoming important rising trend in the

world. CE can be enabled by the sustainable production process. For this reason, the two concepts (e.g. CE and sustainability) should not be considered separately due to their interactions. Pushing the limits of environmental sustainability, particularly in industries that focus on energy and materials, requires determining methods of merging sustainable supply chain strategies and CE principles and understanding its complete implications related to environment and economy (Nasir et al., 2017). One of the sectors that show the most dramatic results of circular economy and sustainability in practice is the construction sector. The contribution of the construction sector to the CE should not only be considered as the final product, but it needs to be sustainable in the production and supply chain process. In particular, construction SC process and hence construction SC problems form the majority in economy due to its complexity.

Supply chain is the most important management phase for any construction project and an important process affecting the circular economy. The breakdown and traceability of resources, information, activities, people, logistics, organisations, and products and services that use raw materials to make finished products that effectively serve their purpose have to be understood for supply chain management. The fact that no building is the same and they all have a different prototype poses difficulties for the construction industry. Supply chain management requires a strategy aligning it with the project programme. A lot of cost benefits and value are produced under the influence of early evaluation that considers the response of the SC. In order to analyze the efficiency of construction SC, construction sector seeks for integration of a performance measurement system. This integration could also lead to leaner and sustainable supply chain management that would be advantageous to all parties for take a competitive sector advantage. In this chapter part, the economic advantages of PMS integration to CSC process and, sector barriers for PMS integration and sustainable CSCM will be discussed in the light of literature review.

## **MAIN FOCUS OF THE ARTICLE**

### **Need for Circular Economy**

Since the 1970's, the concept of the CE has been enjoying a lot of attention (EMF, 2013a). It attracts policymakers to influence governments and intergovernmental agencies from local to national to regional to international levels (Geissdoerfer et al., 2017). CE was the focus of a number of reports published by Ellen MacArthur Foundation (EMF). EMF (EMF, 2013b) states that an economic and industrial system in which value creation is the goal for all chains in the system and material loops are blocked and slowed is defined as a Circular Economy. It should also be noted that the industry, government, and academia have considerably accepted this definition (Leising et al., 2018).

There is absence of sustainability in the contemporary economic system's current and conventional linear extract-produce-use-dumpmaterial and energy flow model (Frosch and Gallopoulos, 1989). Stahel and Reday (1981) described industrial strategies for dematerialization of the industrial economy, resource efficiency, regional job creation, and waste prevention by conceptualizing a loop economy. A variety of features and contributions from various concepts sharing the concept of closed loops have incorporated with the evolution of the modern comprehension of the CE and how it is practically applied to economic systems and industrial procedures (Geissdoerfer et al., 2017). As per Geissdoerfer et al. (2017), a durable design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling can result in its achievement.

The limits and challenges of CE are important for industry to adapt their firm as a part of this chain. As per the identification of Korhonen et al. (2018), limits of social and cultural definitions, limits of governance and management, limits of path-dependency and lock-in, limits of physical scale of the economy, system boundary limits, and thermodynamic limits are the six limits and challenges for the circular economy (Korhonen et al., 2018). A number of businesses worldwide, many national governments such as Finland, Sweden, The Netherlands, Canada, France, UK, Japan, and China, and the European Union (EU) are presently promoting this concept because of the framed constraints of CE (Korhonen et al., 2018).

### **Similarities Between the CE and Sustainability**

Geissdoerfer et al. (2017) overviewed the similarities between the CE and sustainability. Intra- and intergenerational commitments; global models; making the development to have non-economic aspects; system design/change and primary innovation; inter-/multidisciplinary research field; potential diversification, cost, risk, value co-creation opportunities; requirement for various stakeholders to cooperate; main implementation tools to be regulation and incentives; resources and capabilities resulting in giving private business the main role; Industry transformation depending on business model innovation (Geissdoerfer et al., 2017) are the most significant similarities.

### **Significance of the Construction Industry in the Circular Economy**

Our planet and its environmental capacity are being greatly damaged by current production and consumption models. However, they can be changed with the concept of the CE (Leising et al., 2018). A building is a sophisticated “object” having multiple layers and links various parties with its supply chain; therefore, the circular economy has a direct relationship with and affected by the construction sector. The European CE package includes the construction sector as one of its five priority sectors (Bourguignon, 2016).

As of 2017, the percentage of the construction sector in the global economy was 15%. The construction sector, with the impact of the growth policies and investment potentials of the country’s economy, has been intensified in developing countries. By 2025, it is estimated that the share of the construction sector in the entire economy will reach 17% in developing countries and 10% in developed countries.

There is a great requirement for developing the knowledge and tools to bring the concept of CE into practical use even though it is receiving a lot of global attention from politics, business, and academia (Lacy and Rutqvist, 2015; Bocken et al., 2017). (Leising et al., 2018) considered the world wide, construction-sector growth expected due to the continued low interest rates in Asia Pacific and North America. China will continue its acceleration in the same way and maintain its mobility at the construction site. In the Russian construction sector, an annual growth rate of 1.76% is expected by 2020. The fact that the construction sector has a general recovery in Russia is also an important development for Turkish companies which are very strong in the Russian market. On the other hand, there is an increasing demand for infrastructure in the African market. Moreover, 32% of the total global final energy use in 2010 was because of buildings, as per the (Lucon et al., 2014). Building material industry continues to grow in line with the growth of the construction sector as well. Hence, 40% materials that enter the global economy are consumed by the building industry (Khasreen et al., 2009). When we consider the overall; the construction sector in the world is expected to continue to grow in the coming years. Research shows that the sector will grow by 67% in 2020 compared to 2010 (KPMG, 2018).

## **Importance of the Lean and Sustainable Construction Supply Chain**

For about a few decades, Lean Management (LM) and sustainability have been established by different companies of economic sectors. Moreover, many of those companies have been more competitive and showed better results because of it (Moyano-Fuentes and Sacristán-Díaz, 2012). To minimize the disadvantages experienced in the construction sector, sustainability and lean management should be integrated into the supply chain process. CSC is a process whose management is the most critical one and has the greater impact value. The conversion process is not the process that problems arise from, they arise from different phases of supply chain. The most important problems detected in supply chain (SC) are listed as follows:

- Suppliers and clients involved in the SC were not that collaborative, committed, and organised
- Design issues (a number of alterations and varying information).
- Materials and components having poor quality.
- Lack of communication and information transfer.
- The supply chain being poorly managed, particularly in terms of planning and control.
- The workers, subcontractors, and suppliers of contractor having poor training.
- Insufficient effective methods to measure how the various parties within the supply chain are performing (Serpell & Heredia, 2004).
- Waste generation (Vrijhoef & Koskela, 2000).

With the contribution of lean to the sustainability practices, synergy can be established by integrating lean and sustainability practices. These practices can allow for the lean business practices, making the companies to show better lean performance (Dües et al., 2013). From this perspective, challenges of the CSC could be able to turn benefits and convert threats into opportunities such as minimizing the problems, increasing competitive advantage, affecting the positive economy and reducing waste through lean and sustainable management. Other areas of synergies have been listed below:

- Waste emergence is prevented as environmental pollution is reduced due to the fact that lean management enhances resource efficiency (Florida, 1996).
- The supply chain innovation is promoted (Florida, 1996).
- Differences in sustainability practices increasing the profit margins (Gordon, 2001).
- Organisational performance and competitiveness getting increased (Rao & Holt, 2005).
- Eliminating breakdowns and errors, resulting in increasing the efficiency (Koplin et al., 2007).
- Environmental goals and the green SC strategy can be achieved, and environmental practices can be adopted with the lean practices and lean SC management (Mollenkopf et al., 2010).
- Integration becomes better, information is shared all over the supply chain with more speed, and inventory degrees, surplus capacity and, transportation and production times are reduced (Carvalho, 2011).
- The customers get more value (Sertysilisik, 2016).

Construction companies should consider the supply chain among the criteria when making investment decisions. With the right planning at the very beginning of the CSC, the process and thus the

project quality will improve. This can be achieved through the lean and sustainable SC approach and the benefits cannot be overlooked.

## **Ways for Establishing Lean and Sustainable Construction Supply Chain**

Lean and sustainable CSCM can be obtained through two different strategies; Contracting and tendering strategies and, Green procurement strategies. The benefit analysis of both is summarized below with the information obtained from the literature.

### **Contracting and Tendering Strategies**

In recent times, companies have started becoming more responsible about the environment due to the major influence from stakeholders and the amendments in the laws and regulations that govern the environment (Gordon, 2001). The quality needs, such as lean and sustainability performance requirements, are dependent on contracts and specifications (Sertyesilisik, 2016). With the inclusion of experienced subcontractors and suppliers in the process, waste can be minimized in terms of sustainability and waste management. According to Howell (1999), business relationships coupled with lean thinking make immediate implementation possible. Suppliers prefer investing in development initiatives, like green SC management activities, due to these types of relationships (Caniels et al., 2013).

“Sustainability clauses, which include carbon footprint in the SC and ethical sourcing, have to be taken into consideration as there is a requirement to update company specific contracts and standard contracts. The contract has to ensure the necessary sustainability performance by enabling efficacious control mechanism. Control mechanisms for supervision and regulation of subcontractors should be covered in the contract. Every subcontractors’ and suppliers’ contract belonging to all tiers should mention all these requirements.” (Sertyesilisik, 2016) Because the contract relationship is essential to construction project from sustainability point of view to carefully draft the contract. Construction law and contract law are complicated which is why it is significant for the parties to a contract to understand contract basics and what to do if a contract is breached from the sustainability point of view.

### **Green Procurement Strategies**

The Swedish Environmental Management Council stated that environmental preferences will encourage a creative improvement of the environmental problems in the construction sector (Varnas et al., 2009). Countries with a culture of environmental awareness began to gradually adapt their procurement with respect to the environmental factors. However, environmental concerned projects experience is not enough to create a general procurement attitude so, they are faced with a number of barriers.

There are difficulties in proving the general environmental effectiveness even though we can see the success related to single environmental criteria, like energy savings (Siemens, 2003). The private sector and employees as customers made greener purchasing, which is one of the unexpected light impacts of green public procurement (Varnas et al., 2009). In the light of these researches, some barriers to green procurement are listed below:

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- Lack of environmental data (Ochoa & Erdmenger, 2003, Erdmenger et al., 2001, OECD, 2000)
- A requirement to further develop decision support techniques for sustainable purchasing developed (Powell et al., 2006)
- Green products may not always be available (ICLEI/Oko-Institut, 2007)
- Green solutions are thought to be more costly (Ochoa & Erdmenger, 2003)
- In comparison to other environmental measures, there are more complications in the enhancing the environmental performance of organisations (Murphy & Bendell, 1998)
- Ineffective coordination and communication both within the firm and between clients and suppliers (Powell et al., 2006 & Carter & Carter, 1998)

According to a number of authors, the utilization of environmental procurement preferences is necessary. With that said, the application of these types of preferences is not that easy. Henceforth, it can be seen that the methods of applying environmental procurement preferences and the problems faced by the procuring officers during work have to be studied.

### **Solutions and Recommendations**

An integrated collection of procedures for “sourcing,” “making,” and “delivering” products can be referred to as SCM. The corporate operations related to distribution, production and procurement are handled by SCM. A number of industries, such as textile industries, chemicals industries, petroleum industries, service industries, and construction sector, can make use of SCM (Akkucuk, 2016). Corporate competitiveness considers SC as its main attribute. A number of companies have their differentiation strategy based on this function (Waters and Waters, 2007). For an effective SC process, integration of lean management and sustainability tools will improve customer value and gets a competitive advantage in construction sector through meeting the success factors of SC. For this reason, companies enhancing their organizational structures by implementing new trends on construction sector.

Contracting and tendering strategies and Green procurement strategies are the main two topics that companies start to take action by training contract and procurement specialized managers. However, there is an alternative and more effective way consist that improves the lean and sustainable construction supply chain. Measuring the SC performance has potential to make a higher impact on CSCM to make the process lean and sustainable. The evaluation of SC performance is a transversal process where many factors cooperate for achieving certain strategic and logistical aims. Therefore, is a complicated task. In Situations where corporate success is dependent on SC, there is a requirement for these types of evaluations.

### **Importance of Performance Measurement**

Measuring the SC performance simultaneously with the project’s work schedule is vital for the identification of the problems caused by the SCM and for a simpler and more sustainable SC management. The ability to integrate lean and sustainability into the SC can only be achieved through performance analysis. Thus, problems in the SC diagram and delays can be detected easily and as well as measures can be taken accordingly.

Keeping SC under control is the foremost criteria to fulfill company's objectives (Maestrini et al., 2017). SCM therefore creates an SC that is seamlessly coordinated by the efficient use of assets and capabilities. To achieve this goal, measuring the performance of a wide range of tasks and directing this performance through a range of applications at the SC level is a necessary step. Performance metrics that consider multiple companies and processes can be adopted with the help of supply chain performance measurement systems (SCPMSs). Accordingly, SCPMSs can ensure further timely, conscious, and value-adding decisions, thus representing an approach for improving the SC governance (Gunasekaran et al., 2004). Well-known PMSs aimed processes and data for a single company, but SCPMSs include intercompany performance measures.

### Tools for Measuring Construction Supply Chain Performance

Sustainable production methods and manufacturing has to be competitive in order to enhance the SC with regard to sustainability performance (Caniels et al., 2013). Identifying improvement opportunities, problems, waste, bottlenecks, and success, facilitating a transparent communication and cooperation, tracking and enabling progress, providing decisions based on facts, understanding business processes, and identifying the fulfilment of the customer requirements are some of the various aims for the development of a PMS in SCs (Gunasekaran & Kobu, 2007). Therefore, SCPMS should be designed considering the entire SC. Performance measures and metrics in construction supply chains have not been discussed in that many review papers. Gunasekaran et al. (2004) has examined a variety of performance metrics across SCs. Alongside suggesting taxonomy of performance metrics, Shepherd and Günter (2007) have also critically analysed SCPMSs. Determining the main performance metrics of SCs has also been attempted by Gunasekaran and Kobu (2006), who wanted to go for performance measures that are cost-effective and provide sensible accuracy. Arzu Akyuz and Erman Erkan (2010) established a thorough viewpoint regarding various factors, like people, technology, and processes, by reviewing research related to SC, IT, and performance measurement (Balfaqih et al., 2016). With the objective of identifying widespread strategies and methods adopted in the models, articles that take into consideration SCs as complete entities have been reviewed by Najmi et al. (2013) (Balfaqih et al., 2016). Performance in a construction supply chain has to be reflected by a comprehensive review for the clear tracking of organization and budget. This is due to the fact that a number of different sector organizations widely practice SCM. The performance measurement area of construction supply chain management (CSCM) will surely get more attention as a result of this research.

The performance evaluation models are the focus of a number of different studies (Estampe et al., 2013). Efficient Consumer Response (ECR), Global Supply Chain Forum (GSCF) (Cooper et al., 1997), and SCOR (Lockamy and McCormack, 2004) are some of the SCPM models put forward lately. 16 well-known SCPMS's are as follow (Estampe et al., 2013): Activity-Based Costing (ABC), Balanced ScoreCard (BSC), Framework for Logistics Research (FLR), Supply Chain Operation Reference model (SCOR), The Global Supply Chain Forum (GSCF framework), Strategic Audit Supply Chain (SASC), ASLOG audit, Global EVALOG (Global MMOG/LE), Excellence model (EFQM), World Class Logistics model (WCL), AFNOR FD X50-605, Strategic Profit Model (SPM), Association for Operations Management (APICS), Efficient Customer Response (ECR), Supply Chain Advisor Level Evaluation (SCALE), SCM/SME.

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Two of the sixteen-SC performance measurement models listed above are on the forefront of GSCF and SCOR for the convenience of the construction sector. Estampe et al. (2013) studies presented similarities and differences between the various evaluation models. According to Estampe et al. (2013), there are eight stages of analysis that are dependent on each other and assist in identifying the properties of each model. These eight levels are: Level of supply chain maturity, Decision level, Type of bench-marking, Contextualisation, Type of flows, Quality factors, Sustainability and Human capital (Estampe, et al. 2013). While SCOR could only not meet contextualization level, GSCF is insufficient at contextualization, human capital and sustainability levels. Estampe et al. (2013) comparison table of these two models (e.g SCOR and GSCF) are briefly summarized as following paragraphs.

“In 1996, the Supply Chain Council (SCC) created SCOR. Turnover of committed capital, cost of SC, flexibility/responsiveness, and reliability of commercial performance are the four factors that can be analysed with its help. Decisions concerning the strategic planning of a firm can be implemented by applying this model at tactical and operational level to all industrial and service sector firms. Model is considered to depict “best-in-class” and can compare measures both internally and externally.” (Estampe et al., 2013).

“In 1994, the Ohio State University developed GSCF framework. How supply chain process is connected to structure can be seen with this framework. Moreover, strategic, tactical and operational are its three levels. Returns management, product development and commercialisation, supplier relationship management, manufacturing flow management, order fulfilment, demand management, customer service management and customer relationship management are the seven processes it is based on. Internal benchmarking is another feature of this framework.” (Estampe et al., 2013).

Construction companies are mostly small and medium enterprises and frequently mix up business functional units. Accordingly, GSCF framework does not support the modelling of construction supply chains (Chin, 2009). On the other hand, SCOR can be used to measure, improve and standardize SC (SCC, 2008). Moreover, modelling companies of different scales and types is made possible with the SCOR. Therefore, it is separated from all other PMSs. SCOR was found to be the most advantageous method since it was the only PMS that applicable to companies of all sizes. Plan, Source, Make, Deliver, and Return are the five key SC processes that constitute the SCOR modelling framework (Cheng et al., 2010).

Plan is the processes that balance resource for developing strategies that most satisfy the needs of a SC and it's sourcing, production, delivery, and return activities (Erkan & Bac, 2011). Secondly, source is the processes that deal with managing the services, products, subassemblies, and delivery, receipt, and transfer of raw material items (Erkan & Bac, 2011). Make deals with finalizing the products (Erkan & Bac, 2011). Deliver process is providing ready goods and services, such as distribution management, transportation management, and order managing (Erkan & Bac, 2011). Lastly, return is a post-delivery customer support and processes concerning returning or receiving returned products (Erkan & Bac, 2011).

There are four levels of model and detail of each level is increasing. And also, reliability, responsiveness, flexibility, cost and assets are the critical five performance attributes of SCOR. To improve the performance of lean and sustainable tools and to eliminate SC problems in construction sector could be able with adoption of SCOR framework. The linkages of tools will affect significantly the project final success and also by integrating the tools, the process is better managed.



## **FUTURE RESEARCH DIRECTIONS**

Lean and sustainable management and monitoring of the construction SC can be increased and measured by the inclusion of SCPMS in the process. However, detailed academic studies on the benefits of SCPMS in the construction sector could not be determined and a gap determined. In the light of this study, interviews with other stakeholders from the construction supply chain to complement data collection can be a future follow-up study. Moreover, this chapter is to be seen as among the first steps in evaluating whether PMS's really makes construction sector and their SCs more lean and sustainable. A more systematic assessment of SCPMS contribution to construction sector for lean and sustainable development goals will be desirable to future research suggestion.

While the SC performance model is being adapted, subcontractors have much significance and their selection will have to comply with a certain sub-standard, and these directly contribute to the lean and sustainable CSCM process. For assigning the supplier of sub-contractor, following choices should be considered and also seeks for future researchs in the literature; determine general sustainability requirements (e.g. sub-contracts should be made to fulfil the requirements in their own supply chains) and a requirement of initiating a development process and and improvement for the subcontractors, who are not meeting standards mentioned in the contract, so that they deliver the quality as per the contract.

## **CONCLUSION**

The companies who have the ability of getting accustomed to new trends can take advantage of the marketing opportunity that results as the society and environmental legislation are inclined towards eco-friendly products. The firms may face barriers as entering the market or reduction in their markets if they show hesitance in adapting to new trends (Sertyesilisik, 2016). Thus, companies with high adaptability capability can achieve competitive advantage by differentiating in the sector.

In the construction sector, environmental approaches and trends gain a new dimension, giving firms the advantage of both as economical and company brand value. The contribution of the construction sector to the CE and waste minimization should not only be considered at the final product level, but also at the production and supply chain levels. CSCM, which is the process by which the environmentalist approach can be examined in the most tangible way, constitutes a critical milestone for the sector.

The lean and sustainable construction supply chain management will be encouraged under the influence of creative thinking and implementing innovation alongside the availability of technology. So, the literature is becoming increasingly interested to link LM and sustainability with CSCM in terms of an integrated management system. To take this one step further, for the purpose of analysing the efficiency of construction SC, construction sector seeks for integration of a PMS. The economic advantages of PMS integration to CSC process and sector barriers for PMS integration are discussed in this chapter. As a result, it is found that SCOR, one of the PMS, is the most suitable model that adapts to construction sector.

In conclusion, SCOR needs to be adapted to the construction sector to achieve lean and sustainable CSCM. By the adaption a number of factors (e.g. barriers, aims, needs) will be achieved, such as; lacking social standards at suppliers (Preuss, 2001); prevention of loss of reputation that could be caused by inadequate environmental and social issues (Foerstl et al., 2010), (Hoejmose & Adrien-Kriby, 2012);

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differentiation for the brand as sustainability is embedded into brand knowledge and brand value (Gupta et al., 2013); focusing on decreasing costs through minimizing waste and pollution (Walker et al., 2009); demand for environmental protection (Wu & Pagell, 2011); return of investments in environmental evolution (Goger, 2013); the demand of customers (Caniels et al., 2013), (Giunipero et al., 2012); aim of gaining competitive advantage (Crespin-Mazet & Dontenwill, 2012), (Giunipero et al., 2012), (Walker et al., 2009); fiscal benefits (Giunipero et al., 2012); and government regulation (Giunipero et al., 2012), (Boiral, O. 2006).

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## KEY TERMS AND DEFINITIONS

**Circular Economy:** The circular economy is the approach that aims to using natural resources and ecosystems more effectively and also distinguish economic growth from these sources.

**Competitive Advantage:** The competitive advantage is a strategy of everything that will stand out from your competitors which will provides a unique authority according to competitors: for instance, it may be the quality of company's product or service, may be a feature that cannot be copied or differentiated from company, or it may be brand reliability, recognition or price.

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**Construction Supply Chain Management:** Construction supply chain management; is to ensure that the internal resources of the construction are integrated effectively with external resources.

**Green Procurement:** Green procurement is a type of procurement management where strategies for producing environmentally responsive products or services are combined.

**Performance Measurement Model:** Performance measurement is a way of providing information and a method of objectively measuring how tasks are performed in terms of cost, quality and time in a product, service or process.


**Supply Chain:** The supply chain is the process of starting all products and services from the supplier to the customer at the last stage; it is one of the crucial points of the companies covering all activities, human resources, technology, company structures and resources.

**Sustainability:** Sustainability is the continuations of the activities that will be carried out after the termination of the projects with start and end time.

# Chapter 18

## Current Use and Attitude Towards Learning Management Systems (LMS) in Turkish Universities

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### **ABSTRACT**

*Nowadays, online learning has become a phenomenon and many believe that e-learning can be the next revolutionary change in education. E-learning is a way of learning supported by information communication technologies (ICT) that makes it possible to deliver education and training to anyone, anytime and anywhere. Learning management system (LMS) applications are software applications for the administration, documentation, tracking, reporting and delivery of e-learning courses and programs. With the advancement of technology in general, LMS applications are increasingly becoming the preferred method for learning among students, teachers and others. LMS applications enable university students and teachers to benefit from today's technology in their learning process. LMS applications will play a major role in education, and technology will get stronger with effective usage of LMS applications. Therefore, defining the current situation in Turkey about LMS applications usage and factors affecting adoption of LMS applications are important for future LMS design and management.*

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## **INTRODUCTION**

A learning management system (LMS) is a software application that helps administering, documenting, tracking, reporting and delivering educational courses or training programs. LMSs started to be widely used in universities around Turkey. LMSs revolutionize the way instructors educate. Change in instructors' work routine is inevitable with the integration of LMS. LMSs can have important effect on instructors' performance, on productivity and on communication methods. While some instructors easily adapt to new systems some of the others resist using newly implemented systems. In this research we aim to understand use and attitudes of instructors towards this new revolutionizing technology in universities by establishing the relationship between variables to determine the faculty members' current use and attitude towards LMS in Turkish universities. The variables include the perceived ease of use, perceived usefulness, items related to assignment and assessment task of LMSs and communication and collaboration tasks of LMSs.

## **LITERATURE REVIEW**

Many theoretical models have been used to explain users' acceptance/adoption of the information system (IS)/information technology (IT). Among these theoretical models, the technology acceptance model (TAM), proposed by Davis (1989) and Davis et al. (1989), is one of the most widely accepted and applied models in a variety of domains that include related IS and IT acceptance/adoption studies (Chau, 1996; Venkatesh, 2006).

Two prominent theories drawn from Theory of Reasoned Action (TRA) of Fishbein and Ajzen (1975) were used to explain faculty members' adoption, attitude and use of LMS in the institutions. Fishbein and Ajzen (1975) indicated in Theory of Reasoned Action (TRA) that behavioral intentions are the immediate antecedents to behavior. (Alghamdi & Bayaga, 2016)

TRA explains the decision process of a human being to perform a new behavior, based on attitudes - subjective norms and behavioral intention. Individual behavior is driven by behavioral intentions where behavioral intentions are a function of an individual's attitude toward the behavior and subjective norms surrounding the performance of the behavior. (Fishbein & Ajzen, 1975) Attitude is positive or negative feelings about performing the behavior.

In agreement with TRA, Theory of Planned Behavior (TPB) proposed by Ajzen (1985; 2005) further explains how human action is guided and added a third variable to cater for deliberate behaviors. It postulates that an individual's intention to perform a behavior depends on the attitude towards performing the behavior (behavioral), the subjective norm (normative), and the perceived control of that behavior. (Alghamdi & Bayaga, 2016). In the light of previous technology adoption research and behavioral models TAM helps us testing the how attitudes of instructors effect their intention to use LMSs. LMSs have many tools that changes instructors' way of doing different tasks in faculties such as communicating with students and other faculty members, collecting assignments, assessing students. Instructors approach to task related LMS features are expected to affect their attitude towards use as well.

Technology Acceptance Model provides a theoretical framework to explain user acceptance of information technology products/systems. Technology Acceptance Model (Davis, 1989) suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it. Technology Acceptance Model (TAM) (Davis, 1989) consists of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), attitude toward using, behavioral intention to use, and actual system use.

TAM as well as TRA of Fishbein and Ajzen (1975) noted that external variables influence intentions to the extent that they affect either attitudes or subjective norms. Proper LMS usage is based on intentions of the faculty members which are linked to their expectations informed by external variables. External variables such as the institutional stands on (provision and promotion to use approved type of), age, personal experiences, resources organization, exams running, social media, etc. are influenced by how faculty members perceive the systems to work for their advantage by yielding better results without struggling in its usage and implementation processes. (Alghamdi & Bayaga, 2016).

Features of LMS that change instructors' daily work routine while doing different tasks can be listed as external factors that affect their intention to use. These features or external factors provided by LMSs require instructors to change their habits of doing specific tasks so are effective on instructors' thoughts about usefulness or ease of use of the technology, i.e. LMS. For instance, announcement of a change in the due date of an assignment through LMS or collecting assignment on an LMS platform means different things to different instructors. We want to find out how instructors' evaluations of tasks that are done through LMSs effect their perceptions about these technologies and also their intention to use.

## **METHODOLOGY**

### **Questionnaire**

We have prepared a questionnaire that includes some of the items from the questionnaire of Alghamdi and Bayaga's study (2016) and items of TAM. TAM items from Davis' study (1989), Mathieson's study (1991) and Bhattacharjee (2001) were employed in the questionnaire.

The questionnaire consisted of four sections. The first section collected information about the faculty members' demographic information, qualifications and computer skills. The second section elicited information on their personal experiences of using LMS and the type of LMS they use in their institutions, and to pick a statement on how it is used in various teaching activities. In the third section, solicited information on the preferred use and attitude towards LMS. The fourth section collected information about instructors' thoughts on ease of use, usefulness of LMSs next to their intention to use LMS currently and in the future. In one subsection, respondents were asked to label various statements regarding LMS use and attitudes from 1-4 to indicate their order of importance. In another, they were to pick a statement on the LMS resources level of access, restrictions, etc. and to whom. Other subsections required respondents to choose options related to LMS preferred usages such as for assignments, projects, online tests, examinations, communication, feedback and many more (Alghamdi & Bayaga, 2016). In the last section respondents were asked to state their agreement level in 7-point Likert scale ranging from completely disagree:1 to completely agree:7 for the statements from Technology Acceptance Model. Use and attitude towards the LMS were captured using the items relationships from the sections.

## Data Collection Method and Sample

An online self-completed survey involving questions in four sections was administered via Google drive. Introductory letter including google drive link of the questionnaire was sent to over 25.000 instructors in over 50 Turkish universities around Turkey via e-mail. A total of 115 answers were collected. Demographic information of the samples is shown in Table 1. 77% of the sample has degree of PhD or over and majority of them are assistant professor or associate professor. 63% of respondents name their skills in computer use as advanced. Less than 2% respondents are beginner in computer use or non-user. Over 75% of the sample stated that they use LMS in their teaching activities. Even if we did not follow convenient sampling method, distribution of the sample is suitable for the purpose of this study.

*Table 1. Demographic information of the sample*

Variables	Number (N)	Percent (%)
<b>Age</b>		
20-30	12	10,43
31-40	56	48,70
41-50	34	29,57
51-60	12	10,43
over 60	1	0,87
<b>Gender</b>		
Female	52	45,22
Male	63	54,78
<b>Education</b>		
Bachelor	4	3,48
Master	22	19,13
PhD or over	89	77,39
<b>University Employment Status</b>		
full time	106	92,17
part time	9	7,83
<b>Academic Rank</b>		
Assistant Professor	43	37,39
Instructor	8	6,96
Research/Teaching Assistant	23	20,00
Associate Professor	33	28,70
Professor	8	6,96
<b>Skills as a Computer User</b>		
Advanced	73	63,48
Intermediate	40	34,78
Beginner	1	0,87
Non-user	1	0,87
<b>Total</b>	115	100,00

## Data Analysis

Multiple regression analysis was conducted to examine the relationship between attitude dimensions of instructors with their intention to use and perceived usefulness and perceived ease of use of LMS.

Independent variables that are processed in our analysis are items that are related to instructors' attitude towards assignment and assessment related tasks and communication and collaboration tasks. These items effect on TAM constructs (PEOU, PU and IU) were tested. The relationships of Technology Acceptance Model (TAM) were also tested.

## RESULTS

### LMS Features

LMSs include various aspects that help instructors in their work. Main features that an LMS provides can be listed as course administration (managing class information, tracking students, etc.), teaching delivery (providing materials and resources to students), student assessment, class communication. These features have direct impact on instructors' work. When we asked instructors to put these features in order of importance. They listed the teaching delivery on top of the list and student testing at the bottom. The order and means are listed in Table 2.

### Assignment and Assessment Tasks

Instructors were asked to rate items related to assignment and assessment activities from not important at all to very important. 6 tasks that are related to assignment and assessments were asked to be evaluated. Instructor's thoughts and attitude about importance of different tasks that can be conducted through LMSs, affect their thoughts on intention to use and their perception of ease of use and usefulness of LMSs. We have tested the relationship between items of assignment and assessment tasks and items of TAM.

We conducted multiple regression analysis and added stepwise regression to see which items in assessment and assignment tasks enter as predictor of TAM constructs (IU, PEOU, PU). All items were tested to see how they are related to all TAM constructs. As a result of multiple regression analysis first item of assignment and assessment tasks which is 'distributing specifications for take home activities such as assignments and projects' were found to have significant effect on instructors' perception of useful-

*Table 2. Order of importance in LMS features*

LMS Feature	Mean	Mode
Course Administration	2,37	1
Teaching Delivery	2,15	2
Student Testing	2,98	4
Class Communication	2,49	2

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ness of LMSs and perception of ease of use of LMSs. In other words, instructors find that distributing specifications for assignments important rates perceived ease of use of LMSs and perceived usefulness of LMSs higher in agreement scale from 1 to 7. Other 5 items (tasks) were found to have no significant effect on perceived usefulness and perceived ease of use of LMSs. Also, none of the items were found to have significant effect on intention to use LMSs. The results of multiple regression analysis can be found in Table 3.

*Table 3. Results of Regression Analysis Assignment and Assessment Tasks & TAM Constructs*

Dependent Variable	Predictor Variables	Unstandardized Coefficient		Standardized Coefficient	t	Sig.
		B	Std. Error	Beta	B	Std. Error
<b>Perceived Usefulness (PU)</b>	Constant	1,93	1,071		1,801	0,075
	Distributing specifications for taken home activities such as assignments and projects.	0,457	0,228	0,231	2,004	0,048
	Allowing students to submit assignment and project work.	0,09	0,25	0,042	0,362	0,718
	Providing feedback about student performance in submitted work.	0,107	0,195	0,063	0,55	0,584
	Preparing and running online tests and quizzes.	0,265	0,212	0,195	1,25	0,214
	Preparing and conducting on-line exams.	-0,1	0,209	-0,073	-0,479	0,633
	Allowing students to review their marks to verify accuracy before finalizing results.	-0,044	0,179	-0,028	-0,244	0,808
<b>Perceived Ease of Use (PEOU)</b>	Constant	2,396	0,968		2,476	0,015
	Distributing specifications for taken home activities such as assignments and projects.	0,511	0,199	0,296	2,571	0,012
	Allowing students to submit assignment and project work.	-0,029	0,225	-0,015	-0,129	0,898
	Providing feedback about student performance in submitted work.	0,204	0,177	0,133	1,152	0,252
	Preparing and running online tests and quizzes.	-0,152	0,192	-0,125	-0,796	0,428
	Preparing and conducting on-line exams.	0,141	0,191	0,113	0,739	0,461
	Allowing students to review their marks to verify accuracy before finalizing results.	-0,054	0,16	-0,038	-0,335	0,738
<b>Intention to Use (IU)</b>	Constant	3,214	1,113		2,889	0,005
	Distributing specifications for taken home activities such as assignments and projects.	0,234	0,237	0,118	0,989	0,325
	Allowing students to submit assignment and project work.	0,123	0,259	0,057	0,475	0,636
	Providing feedback about student performance in submitted work.	0,098	0,202	0,058	0,486	0,628
	Preparing and running online tests and quizzes.	0,238	0,22	0,175	1,084	0,281
	Preparing and conducting on-line exams.	-0,199	0,218	-0,144	-0,915	0,363
	Allowing students to review their marks to verify accuracy before finalizing results.	-0,007	0,186	-0,005	-0,039	0,969



## Communication and Collaboration Tasks

Instructors were then asked to rate items related to communication and collaboration activities from not important at all to very important. Multiple regression analysis and stepwise regression were conducted to see the prediction strength of all items under communication and collaborations task on TAM constructs (PU, PEOU, and IU). Only one item which is ‘broadcasting important announcements such as updates to assignment specifications or due dates’ was found to have significant effect on PEOU of LMSs. No other significant relations were found between other items and TAM constructs. Results of the multiple regression analysis are in Table 4.

Table 4. Results of Regression Analysis between Communication Tasks and TAM Constructs

Dependent Variable	Predictor Variables	Unstandardized Coefficient		Standardized Coefficient	t	Sig.
		B	Std. Error	Beta	B	Std. Error
Perceived Usefulness (PU)	Constant	3,604	0,987		3,65	0
	Reminding students when assignments and other assessment tasks are due.	0,147	0,232	0,09	0,633	0,528
	Posting class notices such as hints about how to complete an assessment activity.	0,041	0,269	0,023	0,153	0,879
	Broadcasting important announcements such as updates to assignment specifications or due dates.	0,154	0,251	0,077	0,614	0,541
	Establishing a forum for discussion about questions that arise in class activities.	-0,052	0,199	-0,029	-0,261	0,794
	Integrating social media tools such as Facebook or Twitter into class activities.	0,111	0,149	0,082	0,739	0,461
Perceived Ease of Use (PEOU)	Constant	3,148	0,887		3,55	0,001
	Reminding students when assignments and other assessment tasks are due.	0,056	0,209	0,037	0,268	0,789
	Posting class notices such as hints about how to complete an assessment activity.	0,104	0,24	0,063	0,433	0,666
	Broadcasting important announcements such as updates to assignment specifications or due dates.	0,264	0,227	0,145	1,165	0,246
	Establishing a forum for discussion about questions that arise in class activities.	-0,06	0,171	-0,038	-0,349	0,728
	Integrating social media tools such as Facebook or Twitter into class activities.	0,093	0,135	0,076	0,693	0,49
Intention to Use (IU)	Constant	3,578	0,992		3,607	0
	Reminding students when assignments and other assessment tasks are due.	0,111	0,233	0,068	0,477	0,634
	Posting class notices such as hints about how to complete an assessment activity.	0,012	0,27	0,007	0,044	0,965
	Broadcasting important announcements such as updates to assignment specifications or due dates.	0,246	0,252	0,123	0,975	0,332
	Establishing a forum for discussion about questions that arise in class activities.	0,023	0,2	0,013	0,115	0,909
	Integrating social media tools such as Facebook or Twitter into class activities.	0,032	0,15	0,023	0,211	0,834

## **CONCLUSION**

LMS use will certainly be very important for Turkey as the number of universities with online education programs is increasing. Even if the universities are not delivering online education programs, the traditional programs also offer LMS systems as a way of enhancing the delivery of course materials to the students. In our research we tried to reach a large number of university professors by e-mail, however the return rate was very low. The percentage of professors not using any LMS was 10%. This may be misleading as perhaps the respondents who filled the survey had an interest in LMS systems and actively used the systems. The research results also give us the popularity among the LMS systems in Turkey. Moodle by far is the most popular with 31% use rate. Following that is Blackboard with 27%. Ninova and Desire2Learn are reported by 7% and 3% of the respondents. Canvas, Sakai, Edmodo, Sycourse, Adobeconnect, Itslearning, ZebraEdu, Dokeos, ODTUClass, Openedx, Wigio, Stix, Schoology, Jusur, Diigo, TheCn are also reported by a few respondents each (1 to 2%).

Sustainability in all disciplines has been under investigation by different researchers for a long time. Logistics, Supply Chain, Recycling and Energy are among the areas most frequently visited by sustainability researchers (Akkucuk, 2016; Gencer, 2016; Gencer & Akkucuk, 2016; Akkucuk, 2018). Akkucuk and Sekercioglu (2016) demonstrate a case where an NGO is working to foster sustainable ecotourism in Turkey. Sustainability in education is also a growing area of interest. LMS systems are paper free and may reduce the impact on the environment by reducing the amount of paper used and transportation costs.

In the future a different questionnaire administration system such as the face to face interview can be used in order to reach a bigger sample and avoid the non-response bias evidently present in our study. Also the study can be extended to higher education and primary education as well. This study currently featured the only research on LMS use in Turkey and therefore is a significant contribution in that sense.

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## **KEY TERMS AND DEFINITIONS**

**Blackboard:** A popular LMS used in universities.

**Higher Education:** Universities offering undergraduate and postgraduate programs.

**LMS:** Learning management systems, a set of tools intended to use the Internet as a mechanism of distributing course materials, testing and quizzes and conducting online forums among the students.

**Moodle:** A popular LMS used in universities.

**Online Education:** Delivering courses via the Internet.

**TAM:** Technology Acceptance Model.

**Turkey:** A country of more than 82 million people located in Southeast Europe.

**UTAUT:** Unified theory of acceptance and use of technology.

# Chapter 19

## Clustering Tourists Based on Reason for Destination Choice: Case of Izmir

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### ABSTRACT

*This study aims to explore the factors affecting destination choice for tourism travelers. For this purpose, a survey conducted in the İzmir province has been used to collect data as to what factors drive travelers to choose the İzmir destination. The survey contains demographic questions in addition to questions concerning the reasons for visiting İzmir. 10 multiple choice questions are used in the demographic and descriptive profile. Previous literature has been consulted in order to form 16 questions for the intent to visit İzmir. The questions on the reasons for visiting Izmir have been scaled as (1) does not influence my decision and (5) influence(s) my decision very much. Finally using cluster analysis technique, the visitors are separated into five clusters. A K-means clustering technique is applied by varying k from 2 to 10. The interpretations of the clusters are provided and shed light on the main intentions for the travelers. The cluster interpretations could be used in the area of tourism marketing. The chapter highlights the area of choosing the optimal number of clusters.*

### INTRODUCTION

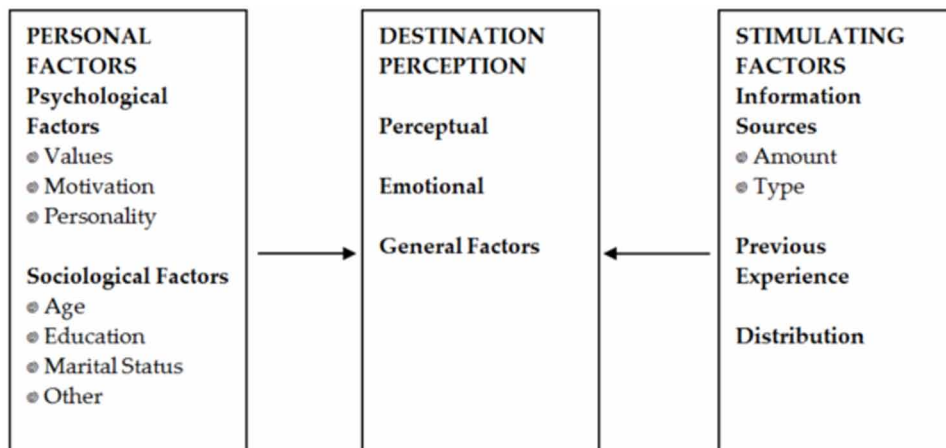
Destination is a concept that is defined by the wishes and demand for visiting a particular place, and also by travel planning, reasons for visiting, past history, culture, education and age as critical factors (Buhalis, 2000). The main reason why travelers choose a particular destination is the attractions in that destination. Among the factors that differentiate a region from another are cultural and historical values,

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arts activities, sports activities, entertainment and shopping facilities and the region’s local cuisine (Selwood, 2003). Attraction in a general sense is the focus of individual’s requests and preferences (Kutvan & Kutvan, 2013). For this reason, destination identity as a multidimensional framework can be defined as “human related attributes for a specific tourism destination” (Hosany, Ekinici, & Uysal, 2006). The factors that affect the formation of a touristic region could be evaluated in two different parts, tourism related components and components unrelated to tourism. Components unrelated to tourism are natural traits, certain values, activities and infrastructure. Tourism related elements are the associations and institutions that directly produce tourism related products. These associations and institutions are; the public services related to tourism, transportation related institutions, lodging institutions, institutions that produce exceptional goods and services, marketing and advertising companies, and other institutions that support tourism activities (Kozak, 2006). Although tourism is one of the fastest growing sectors in the global market, the ability of a destination to maintain its place in the international market depends on its ability to maintain or improve its elements that make it attractive for tourists (Özdemir, 2007). Today, in tourism activities, cultural and traditional values come to the fore and tourist priorities are directed towards destinations that maintain local values (Sünnetçioğlu, Can, & Özkaya, 2012). However, since tourism is not just tourists and the activities they desire in a destination, but a complicated formation which includes also the local population, the success of a touristic destination depends on the fact that the local population has a decent standard of living (Özdemir, 2007). Baloğlu and McCleary (1999); have organized the relationship between destination perception and personal stimulating factors as shown in Figure 1.

Factors that may be effective in the choice of destination for tourism travelers include, as shown in Figure 1, the individual’s personal factors, and the perceptions for the choice of destination. Psychological factors belonging to personal factors include the value created by the destination, the motivation of the individual in traveling and decision-making, and the personality characteristics of the individual. Another personal factor, sociological factors, consists of age, education, marital status of the individual as demographic and personal characteristics. These characteristics can cause perceptual, sensation / emotional conditioning in the perception and image of the destination as well as information sources

*Figure 1. Destination perception framework*  
 Source: Baloğlu & McCleary, 1999



### ***Clustering Tourists Based on Reason for Destination Choice***

about the destination which are the stimulating factors. Where the information comes from, what kind of it is available and how much intensity it stimulates is remembered from previous travel experiences and these are the factors affecting the perception of the destination.

## **RELATIONSHIPS BETWEEN SERVICE QUALITY, CUSTOMER SATISFACTION AND REVISIT INTENT FOR THE DESTINATION**

Customer satisfaction could be defined as the effect felt by the customer at the service or after the use of the product (Cadotte, Woodruff, & Jenkins, 1987). Oliver (1997) defines satisfaction as the reaction shown by the customer in response to the good or service they consume.

Satisfaction for the tourists in all services within the framework of the destination is made possible by the fact that the destination has many touristic products. A tourist, who visits a destination, not only stays in his place of lodging, but also visits historical and touristic places and communicates with local people and artisans. Therefore, the visiting tourists can measure the quality of the services they receive and show a positive or negative overall satisfaction at the end of the holiday. As a result of research in customer satisfaction for services, the quality of the service and the price of the service in terms of the tourists (the value of the service) are very important (Varki & Colgate, 2001; Duman & Öztürk, 2005).

## **BASIC FACTORS AFFECTING DESTINATION CHOICE**

### **Tourism Potential of the Region**

When choosing the destination, it is important that the area has a tourism potential. The main elements in destination choice are the primary sources in this area which are given as cultural, and historical (Bahar & Kozak, 2006). In order to have a sustainable tourism potential in the area it is very important to use these resources very wisely. As a matter of fact, in order to protect natural resources, cultural and historical values for years to come, local people should support all plans and projects for tourism and take part in plans and projects (Mansuroğlu, 2006). The infrastructure and superstructure of tourism, which are referred to as primary resources, are composed of elements such as the presence of travel establishments, accommodation facilities, transportation facilities, local festivals and events, the presence of entertainment places and the high availability of shopping options (McIntosh & Goeldner, 1987).

### **Destination Image**

The destination image can be considered as the sum of beliefs, thoughts, perceptions, metaphors and influences that people create in their memories related to destination. In other words, the image of the destination may have emotional content related to the evaluation of individual qualities, but it is the sum of the impressions that are cognitive (Görkemli, 2013). The cognitive element is often the result of the evaluation of the physical conditions of a region, the people and the people living in the area as a result of the evaluation of the events and phenomena, while the emotional element of the image expresses the feelings and perceptions of people about any region (İlban et al., 2008). All these elements and the perception that the destination image creates in the individual play an important role in the individual's



choice of destination. After addressing the conceptual framework of the destination image, it is necessary to address the driving and engaging factors that are directly related to the reasons for traveling and which play a role in the formation of the destination image. The emergence of non-similar needs triggers the need to travel in tourists and is called a push factor. The pull factor presents a motivation for traveling to tourists. These factors may be the attraction of a place before the tourist decides, as well as the tourism potential of the region (Wang, 2003).

## **Destination Marketing, Brand and Positioning**

The destination is seen not only as holiday resorts, cities or towns, but also as a country, a continent. Countries, regions are seen as the main sources of destination marketing in the recent period. In these markets, destinations which are not able to maintain their attractiveness, cannot be differentiated and without development and innovation will lose their place in national or international markets (Özdemir, 2008).

There are four strategic goals to consider in destination marketing and these can be listed as follows (Buhalis, 2000):

- To ensure and increase the welfare of the people in the long term
- To ensure that the visitors are satisfied and to give a feeling of satisfaction
- Support local entrepreneurs and maximize profitability
- To balance the economic, social, cultural and regional costs of the region and maximize the impact on tourism by maintaining this balance

The destination brand is the whole of the experiences that are remembered and experienced in tourism related to the consumer or our subject as a whole, with all kinds of logos, symbols and representations that give identity and originality to a destination. A destination brand may experience a positive perception of the consumers for the region as a result of past experiences for a tourist who wants to visit a place, as well as past negative experiences and experiences in the region may cause a negative perception in the individual (Caldwell & Frégre, 2004).

Destination positioning is the sum of all the impressions a destination product leaves in tourists. The image of the destination in the memory of any tourist is in the same direction of the positioning. Of course, all factors that are effective in the selection of destinations are related to each other. The positioning of the destination in the memory of the tourist depends on how effective the image of the same destination is, as well as the positioning of the market for tourists in the regions with high tourism potential. All of these items are the items that can directly affect the decision of the destination and the decision on the choice of place. We can explain these factors as follows: The factors can be separated into internal and external factors. Internal factors are psychological (getting away, self-actualization and the search for change), physical factors (resting, medical treatment, health and fitness), social factors (friend/relative visit, meeting new people, the persuasive capabilities of tour operators) and exploration factors (cultural exploration, adventure exploration, nightlife and entertainment exploration). External factors are monetary factors (transportation, food quality and diversity, lodging options, price, and security) and nonmonetary factors (image, benefits, and expectations) (Süleyman & Çelik, 2015).

## LITERATURE RESEARCH

The literature in tourism destination and destination choice is limited. We will examine the literature in Turkey in this section. Üner, Güçer and Taşçı (2007) have taken Istanbul as the rising image of tourism and as the travel destination desired by tourists visiting with variables such as her unique cultural and historical charms, fascinating views, shopping opportunities and people's hospitality. They also found that the variables such as traffic, security and infrastructure adequacy were considered worse.

İlban, Köroğlu and Bozok (2008) have studied the travelers to Gönen who visit for thermal baths in the region. As other factors in the image they have found that atmosphere, transportation, social activities and the tourists in the region have been positive. This image becomes more positive as the frequency of visits increases. They have concluded that tourists who visit the region for health purposes should be taken into account the negative assessments such as distrust and environmental pollution. Selçuk, Sağlık, Serçeoğlu and Üst (2010) have conducted research on students in Erzurum about the satisfaction with the destination and the impressions on the region as a whole. The findings indicated the students did not find the area attractive.

Lezki and Er (2010) in their research have analyzed and establishment in Eskişehir with Decision Trees and Cause and Effect Diagrams. When the number of choices and variables increases during the decision-making phase, the size of the Decision Tree is growing and the problems become more complex due to this magnitude. The resulting complex tree makes it difficult to show the cornerstones of the problem, so the Impact Diagram is used to see the foundation stones. Thanks to this diagram, the decision maker who will perform the choice of destination is provided to see the cornerstones of the situation in which he / she is located.

Ersun, and Arslan (2011) have identified the critical factors in tourism destination choice as 3E (exciting, entertainment, educational) instead of the traditional 3S (sea, sand, sun). Using this better approach they believe that the seasonality problem in tourism will be solved and a better approach diversifying the tourism portfolio will result.

As for some studies in the foreign literature, Dadgostar and Isotalo (1992) concluded that the variables such as the geographic location of the destination, transportation facilities, pricing in the destination region are the variables that directly affect the choice of destination. Chen and Kerstetter (1999) concluded that the image of the destination has a direct relationship with the destination selection process and the entertainment understanding of tourists. Kim and Richardson (2003) concluded that the phenomenon of film-borne tourism is developing rapidly and that films and moving pictures have an impact on people's choices and influence their choices. Decrop (2006) examined in depth the social and psychological phenomena that emerged during the decision of the place of destination, but did not address the mathematical / statistical aspect of the subject. Gross and Brown (2006) found that in Australia, South Australia has a lot of opportunities for tourists, such as food culture, wine and entertainment, but they have concluded it is not a case where tourists experience the lives of their tourism experiences.

## METHODOLOGY

The aim of the study is to determine the reasons of the city, which is an advanced tourism destination city, for the students who are studying in the province and what kind of an image the city has in their eyes. For this purpose, the following questions are sought:

1. Are the historical, cultural and artistic elements of Izmir effective in students visiting the city?
2. Is Izmir being a big city, having entertainment centers and being cheap turn out to be effective in students' preferences?
3. Do students' demographic properties have an impact on the reasons why they prefer İzmir?

The sample of the study consists of the students studying at the undergraduate preparatory classes of Dokuz Eylul University Foreign Languages School and studying at the graduate preparatory classes of the same school. A total of 261 students from this school participated in the survey. In the study, clustering analysis technique was chosen in order to separate the respondents into meaningful groups according to their reasons for choosing İzmir. A good example of the use of this technique in tourism literature was given in Hudson and Ritchie (2002). In this article, a total of 13,445 people in Alberta, Canada, were interviewed and five clusters were formed. In this study, we will try to interpret and interpret the sample according to the criteria of destination selection by using *K*-Means clustering technique.

To summarize the main features of the clustering technique, clustering technique in multivariate analysis methods can be called an interdependence model. That is, a particular variable (or a group of variables) is/are not labelled as “dependent”. The regression method mentioned in many previous studies is a method of dependence analysis. In the data mining terminology, the same distinction is made as “supervised learning” and “unsupervised learning”. A clustering algorithm can also be supervised (*k*-nearest neighbors algorithm), but in this case it is necessary to determine a target variable and the clustering algorithm is set to work in a way to predict this target variable in the most effective way (Akkucuk, 2011a).

Hierarchical methods can be used when the number of objects in the clustering analysis is not too high. Hierarchical algorithms start with the sets that all objects create on their own and combine objects at the closest distance. The *K*-means algorithm does not provide a hierarchical structure; it produces only the desired number of clusters. Clusters are separated by one, so an object can only be placed in a cluster (which is flexible in fuzzy clustering methods). The *K*-means algorithm can be used to change the *k* number to obtain a variety of clustering results. By comparing these results in this way, the optimal number of clusters can be determined. To begin the method, the *k* centroids must first be determined. This can be done automatically by the software or the user can export this start center to the software in a file. The fact that the centers are not too close to each other as far as possible is ideal for the operation of the algorithm. The distances between the designated centers in this first step and the other points are calculated in the second step. This distance is usually the Euclidean distance, but software applications can give different options. Each object is assigned to the nearest center and the second step of the algorithm is finished. This was the first stage of a clustering. The algorithm now calculates the centers of these clusters. If these centers do not show the same or too much change as the first entered centers, the algorithm is terminated. This termination criterion is also an option in software. In other words, there is a cluster or grouping seen in two dimensions (Akkucuk, 2011a).

Some numerical methods should be used to determine the optimal *k* level. A summary of these methods is given in Akkucuk (2011b). Examining the number of cluster elements among these methods (the ratio of the largest cluster to the smallest cluster), looking at the *F*-statistic (to see if there are significant differences between the groups according to different variables), also from the Pseudo-*F* statistic or *R*-square statistic from the sum of squares. We can speak. In this article, we will determine the most significant *k* number by looking at the number of cluster elements and starting from the interpretability criterion.

## FINDINGS

At the end of our research, 255 usable questionnaires were reached. The survey included 159 males and 96 females. Since the research is easily done on university students, 238 people are in the 15-25 age range. Likewise, they stated that their education was a high school graduate. Of the 255 people, 146 are marital status, while 8 are married.

According to the results of the survey, the average and standard deviations of 16 variables investigating the reason for visiting 10 other demographic and descriptive questions are given in Table 1. Accordingly, the most important reason for visiting is seen as entertainment and climate. The most important is the hot springs and religious charm.

One of the aims of our study is to divide consumers into meaningful clusters based on travel purposes. For this reason, *K*-Means clustering technique was used as previously described in the methodology. In addition to 16 preference variables, the variables of gender and tourism expenditure were also included. Other descriptive variables were homogeneous due to the nature of the sample. Using the SPSS 20 package program, the “*K*-Means Clustering” option under “classify program” option has been applied to two sets of sets. The most important criterion used in the selection of number of clusters was determined by determining the ratio of people with the largest number of persons to the smallest number. Table 2 shows the number of people from clusters formed from a set up to ten sets. As it is seen here, when the six-cluster solution was reached from the five-cluster solution, the ratio increased from 2.54 to 37. In addition, when five clusters to six clusters were passed, all of the clusters were kept unchanged, but only a very small two-membered cluster emerged. This has enabled us to choose a five-cluster solution for ease of commenting. When four-cluster and three-cluster solutions are examined separately, it is seen that there are some significant groups in the five-cluster solution.

*Table 1. Descriptive statistics (16 factors)*

	N	Mean	Std. Deviation
History	255	2,6706	1,18775
Culture	255	2,7490	1,13279
Art	255	2,3020	1,12898
Food	255	2,6314	1,39084
Climate	255	3,0745	1,27912
Lodging	255	2,8549	1,26371
Price	255	2,9451	1,34169
Shopping	255	2,8706	1,31725
Close	255	2,3098	1,45067
Onmyway	255	1,8471	1,19881
Bigcity	255	2,1882	1,21176
Religious	255	1,5882	,99954
Birthplace	255	1,8275	1,43687
Relatives	255	2,1686	1,36571
Hotsprings	255	1,5725	,93575
Fun	255	3,5294	1,29434

*Table 2. Cluster number of elements (descending order)*

1. Analysis	255									
2. Analysis	187	68								
3. Analysis	111	102	42							
4. Analysis	81	72	65	37						
5. Analysis	79	60	54	31	31					
6. Analysis	74	58	56	33	32	2				
7. Analysis	66	51	48	29	23	23	15			
8. Analysis	63	58	49	26	25	18	14	2		
9. Analysis	68	60	54	25	22	18	4	2	2	
10. Analysis	58	51	51	21	21	19	19	10	4	1

In the five-cluster solution, the center values of each cluster are given in Table 3 according to 18 variables for each cluster. According to the travel preferences, we can interpret the five groups of tourists:

- **Cluster 1 (Culture lovers):** This cluster of travel preferences comes to the fore as the desire to see historical cultural sites. At the same time, it affects the preferences of trying local dishes. These properties are highlighted in the table.
- **Cluster 2 (Homesick):** This group gives importance to the places of birth, the acquaintances, and the places where they live.
- **Cluster 3 (On-My-Way Trackers):** This cluster gives importance to the closeness while making travel preferences, and secondly to the fact that it is fun places and finally climate. Unlike the second set, the desire to see their acquaintances and their place of birth does not affect their preferences.
- **Cluster 4 (Disinterested):** In this group of 79 people, it was determined that the variables we used in our study were given low importance. Therefore, they either give importance to other criteria that we have not identified or do not have any specific criteria when selecting travel.
- **Cluster 5 (Shopping Lovers):** This set gives more importance to entertainment facilities and shopping facilities than other clusters when making travel preferences.

## RECOMMENDATIONS AND DISCUSSION

The fact that our survey was conducted among students of a university and only among students in a certain age / income group can be seen as a deficiency. However, in the absence of clustering analysis applications applied to the choice of tourist destinations in Turkey makes our article the first in this area. Also studies on millennials (the very young generation) are thriving today with many examples (Akkucuk & Turan, 2016). Identifying different customer groups will be useful in determining the marketing mix for tourism operators. In this respect, this article provides an example for further studies. In addition, a method which is very easy to implement in clustering analysis is proposed and it has been presented to the interest of tourism researchers.

### Clustering Tourists Based on Reason for Destination Choice

Table 3. 5 Cluster centroids in the five cluster solution

	Cluster				
	1	2	3	4	5
Gender	1,42	1,35	1,42	1,29	1,44
Spending	1,97	1,87	1,81	1,94	2,67
History	<b>3,85</b>	2,68	2,52	2,04	2,37
Culture	<b>3,57</b>	3,00	2,35	2,29	2,59
Art	3,30	2,94	1,84	1,68	2,00
Food	<b>3,83</b>	3,45	1,90	1,73	2,56
Climate	2,70	3,90	<b>3,35</b>	2,43	3,80
Lodging	2,83	3,48	2,87	1,90	3,91
Price	3,43	3,55	3,19	1,92	3,41
Shopping	2,55	3,29	3,13	2,04	<b>4,06</b>
Close	1,73	<b>4,29</b>	<b>4,42</b>	1,71	1,48
Onmyway	1,43	3,29	3,00	1,48	1,35
Bigcity	1,72	3,32	2,74	1,84	2,26
Religious	1,62	2,61	1,45	1,24	1,56
Birthplace	1,55	<b>4,39</b>	1,35	1,44	1,50
Relatives	2,58	<b>4,13</b>	1,81	1,38	1,94
Hotsprings	2,03	2,13	1,52	1,14	1,41
Fun	3,40	3,58	<b>3,90</b>	2,80	<b>4,50</b>

In the future, other provinces outside İzmir may also be covered. In addition, some factors other than the 16 factors used in this study can be used in destination selection. Perhaps there are some factors that we do not know about the group called “Disinterested” in our classification.

A different technique that can be used in tourism studies is Multidimensional Scaling. Multidimensional Scaling or MDS is the name given to a series of techniques used to create a perceptual map. In fact, the MDS technique is an umbrella term that is used for many algorithms, rather than a single technique (Akkucuk, 2011c). This technique has been applied on universities (Akküçük and Küçükancabaş, 2007), high court judges (Akküçük, Carroll and France, 2010) and patent data (Akküçük & Artemel, 2016). In tourism, it is used by different authors about the image of destination, one of which is the study of 11 Mediterranean countries using MDS (Baloglu & Brinberg, 1997). A similar method can be followed not only for the image of the countries but also for the image of the cities, and the answers to the destination selection factors may be input for such studies.

Sustainability in all disciplines has been under investigation by different researchers for a long time. Sustainability in tourism is also a growing area of interest. Logistics, Supply Chain and Recycling are among the areas most frequently visited by sustainability researchers (Akkucuk, 2016; Gencer, 2016; Gencer & Akkucuk, 2016). Akkucuk and Sekercioglu (2016) demonstrate a case where an NGO is working to foster sustainable ecotourism in Turkey. Sustainability and tourism relationship have also

attracted some attention by a number of researchers and has resulted in some seminal works (Ritchie & Crouch, 2003; Bramwell & Lane, 1993; Place, Hall, & Lew, 1998; Hassan, 2000; Hunter, 1997; Cater, 1993; Garrod & Fyall, 1998; Butler, 1999). In the future, the clustering approach we applied in this paper could be repeated using sustainable tourism related criteria and could shed light on the clusters of tourists who choose sustainable options.

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## **KEY TERMS AND DEFINITIONS**

**Cluster Selection:** Criteria used to decide the optimal number of clusters in a *k*-means clustering analysis.

**Clustering:** A group of mathematical methods to divide the objects (such as customers) into different groups. Could be a technique to perform market segmentation.

**Destination Choice:** Is the choice of a particular touristic region for travelling to.

**Destination Image:** Is the collection of general perceptions about the place visited by the individuals. These perceptions are influenced by many factors such as age, education, income, culture.

**İzmir:** Turkey's third largest city on the Aegean coast.

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**K-Means Clustering:** Is an iterative divisive clustering technique that results in  $k$  specified clusters.

**Sustainable Tourism:** Practicing tourism in a way that respects natural resources supports the local population and consumes little resources.

**Tourism:** The practice of traveling for recreation.

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