SZÉCHENYI EGYETEM
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Driver and Barrier Factors of Supply Chain Management (SCM) Implementation for Small and Medium-Sized Enterprises (SMEs)

Doctoral dissertation

Supervisor:
Prof. Peter Kelle, Ourso Family Distinguished Professor of Business Analysis

Győr, 2022

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2022 September

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AUTHOR´S DECLARATION

No portion of the work referred to in this dissertation has been submitted in support of an application for another degree or qualification of this or other university or other institution of learning.

Furthermore, this dissertation contains no material previously written and/or published by another person, except where appropriate acknowledgement is made in form of bibliographical references, etc.

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ABSTRACT

Abstract of the dissertation submitted by:

Santi Setyaningsih

For the degree of Doctor of Philosophy and titled: **Driver and Barrier Factors of Supply Chain Management (SCM) Implementation for Small and Medium-Sized Enterprises (SMEs)**

Month and year of submission: September 2022

Supply Chain Management (SCM) is a key factor in providing a competitive advantage for companies, proven by many large enterprises. However, there is an indication that Small and Medium-Sized Enterprises (SMEs) have major difficulties in implementing SCM strategy. This study examines the current situation of SCM implementation in SMEs, whether they are utilizing SCM holistically or not, and uncovers how they applied it in their business processes. The literature review revealed the common driver and barrier factors of SCM implementation. The main research question is if SMEs do not apply SCM in their day-to-day activities, what driver factors can promote and what barrier factors can hinder the implementation? Self-administered internet-mediated questionnaires have been conducted to find the opinion of the SMEs managers. Descriptive and inferential statistics have been used to analyze the surveys. This study specifically compares the answers from two different SCM environments, Hungary, and Indonesia, which are representing two very different supply chain structures. Hungary is a landlocked country that mainly utilizes land distribution. On the other hand, Indonesia is an archipelago country that has various types of distribution. This comparison can create motivation for further exploration.

Based on the literature review, we found 22 driver factors and 22 barrier factors connected to SCM implementation. Testing those factors by surveying SMEs' top management, we received several insights. Concerning the driver factor of SCM implementation, both countries have a similar result for their top two driver factors, which are Improvement of Customer Satisfaction (ICS) and Information Dissemination (ID). Those drivers have a

significant correlation to one another. It means, to implement SCM, the company is required to strengthen its ICS and ID. Interestingly, the research found that ICS is the main driving factor for SCM implementation in SMEs in both countries. Secondly, concerning the barrier factor of SCM implementation, both countries have different results. The survey concluded that the ranking of the barrier factors in the two countries are statistically different that may be explained by the different SCM structures. Indonesian companies suffer more from their organizational factors as their top-ranked barriers, while Hungarian companies evaluated lack of financial resources, employees, knowledge of SCM, and poor commitment from other SCM partners as their top barrier factors.

In conclusion, this research contributes to the academic as well as the managerial field. It extends the existing theory of SCM implementation in general. Although the literature has addressed driver and barrier factors for implementing SCM systems, limited research has been conducted to understand the implementation in different SCM environments, especially for SMEs. This study is the first ranking of the SCM drivers and barrier factors in a quantitative study comparing SMEs in different supply chain environments. Furthermore, from the managerial point of view, the findings imply solving the internal problems. The ranking of the drivers and barriers of SCM strategy implementation suggests how to use the limited resources of SMEs to improve performance and competitiveness.

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ACKNOWLEDGEMENT

First and foremost, I am extremely grateful to my supervisor, Prof. Peter Kelle for his invaluable advice, continuous support regarding supervision, answering all my questions, and also his patience during my PhD study. His immense knowledge and plentiful experience have encouraged me in all the time of my academic research and daily life. I would also like to thank Prof. László Komlósi and Prof. Zoltán Baracskai as the Board of Doctoral Program always gave me support and guidance.

I would like to thank all the members of Cohort 2018/2019 for all the laugh and care that have made my study and life in Hungary a wonderful time. Finally, I would like to express my gratitude to my parents, Sudjarwo and Puji Lestari. Without their tremendous understanding and encouragement in the past few years, it would be impossible for me to even start this PhD journey toward its completion. Last but not least, I'd like to express my gratitude to Tamás Sáfrány, for being so supportive while I worked on my thesis. Thank you for your understanding, your never-ending encouragement, and for always being there for me. Your generosity has meant more to me than you can imagine.

"Everything you want is coming. Relax and let the universe pick the timing and the way. You just need to trust that what you want is coming and watch how fast it comes. "

Abraham Hicks

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LIST OF ABBREVIATION

AHP – Analytical Hierarchy Process

ANOVA – Analysis of Variance

AVE – Average Variance Extracted

CO – Consumer Organization

CP – Competitor's Pressure

CR – Composite Reliability

CRP – Cost Related Pressure

CV – Convergent Validity

DBBP – Direct Benefit to Business Process

DOI – Degree of Internationalization

EDI – Electronic Data Interchange

ERP – Enterprise Resource Planning

EU – European Union

FL – Factor Loading

G – Globalization

GCR – Global Competitive Report

GDP – Gross Domestic Product

GDPR – General Data Protection Regulation

GL – Geographical Location

HUN – Hungary

ICA – Improve Competitive Advantage

ICS – Improve Customer Satisfaction

IDN – Indonesia

ISM – Interpretative Structural Modeling

I – Innovativeness

ID – Information Dissemination

ISe – Industrial Sector

IT – Information Technology

JIT – Just in Time

LEs – Large Enterprises

MEDI – Monitoring, Evaluation and Development of Implementation

OECD – Organization for Economic Co-operation and Development

OEP – Operational / Economic Performance

PSC – Position in Supply Chain

ROC – Reputation / Image of Corporate

SCM – Supply Chain Management

SCMPP – Supply Chain Management Partners Pressure

SIP – Shareholder / Investor Pressure

SMEs – Small Medium-Sized Enterprises

SPSS – Statistic Product and Service Solution

TMC – Top Management Commitment

TQM – Total Quality Management

USA – United State of America

VBN – Value Based Network

VMI – Vendor Managed Inventory

1. INTRODUCTION

1.1. Research Background

Scholars, as well as practitioners, have continuously referred to the concept of Supply Chain Management (SCM) since the 1980s in research and business activities. The development of SCM theory was rapid, from traditional to modern interpretation. Traditionally, SCM is considered as the management of upstream and downstream relationships to deliver the product, information, and funds (Manzouri et al., 2010). Chopra and Meindl (2016) extended the SCM concept as the direct or indirect activity with a company's partners to meet customer demand which is a major element of the company's strategy. In the modern era, with the expansion of technology, this coordination allows the virtual integration of the entire supply chain with the focus of Internet-enabled activities that are referred to as e-SCM (Giménez and Lourenço, 2008).

Based on the definitions above, SCM has the potential to create major contributions to the company's success. It enables the company to compete favorably locally and internationally in a global environment. Specifically, in the manufacturing process, SCM can improve forecast accuracy, planning and scheduling, asset utilization, and customer service. Apart from those, it can decrease inventory levels, cost of inventory, cost of logistics, and volume of errors (Koech and Ronoh, 2015). Yu and Cheng (2001) showed that SCM can streamline the manufacturing process, avoid the bullwhip effect, and improve the product and service quality. In summary, the implementation of SCM in a company will improve the company's competitive advantage (Porter 1998; Blanchard 2007; Govindan et al. 2013; Xian et al. 2018).

In a globalization era, Large Enterprises (LEs) are quicker to implement SCM strategy, but recently Small and Medium-Sized Enterprises (SMEs) are also trying to follow (Morais and Ferreira 2019; Petrou et al. 2020). SMEs are part of the largest group of manufacturing companies that provide product and service support to LEs in many supply chain activities (Baymoutt, 2015). As explained in the previous statement, SCM can bring several benefits to the company's performance. Inflexibility is the core issue for SMEs to hinder SCM implementation. Supply chain inefficiency is one of the most crucial problems facing SMEs. Compared to LEs, SMEs are more cash-focused, short-term, and uncertain (Baymoutt, 2015).

In addition, SMEs could not adopt the superior features of SCM that LEs can implement (Thakkar, et al., 2008). The reason why SMEs are more hesitant compared to LEs is the lack of financial resources, skills, knowledge, technology, and employees. The limitation of the resources will influence the quality and time that is crucial in measuring the waste of performance efficiency (Thakkar et al., 2009; Chin et al., 2012).

SMEs are critical businesses in most countries, representing 70 to 90 percent of enterprises. They provide a large contribution to entrepreneurship, gross domestic product, and employment (Thakkar, et al., 2011). In Europe, SMEs represent 99% of all European Union (EU) enterprises and employ 100 million people. SMEs are very important in Europe maintaining competitiveness and prosperity, economic and technological independence, and resilience to external shocks (European Commission, 2021). The European Commission's priorities are supporting SMEs including monetary expansion, improving employment innovation, and maintaining economic and social consistency (Keskin et al., 2010). In Southeast Asia, SMEs have been classified as 97.2% of all enterprises, 69.4% of the national workforce, and providing 41.1% of a country's gross domestic product (GDP) (ADB, 2020). Good adoption of SCM by the SMEs could provide a huge opportunity not only for the company to improve their profit but also to enhance the country's economy. Chin, et al. (2012) summarized that SCM can help SMEs to balance the costs and time constraints, it will increase the customer relationship and it will support access to the latest technology, material, process, and other methods of innovation.

Based on Eurostat's definition of the differences between each of the enterprises (2020), the following classification was adopted for SME types: micro-enterprises with fewer than 10 employees, small enterpises with 10 to 49 employees, and medium-sized enterprises with 50 to 249 employees. As a result, LEs are defined as enterprises with a workforce of more than 250 employees. According to the Indonesian government's Badan Pusat Statistik (2022), micro-enterprises have with up to 4 employees, small enterprises with 5 to 19 employees, medium-sized enterprises with 20 to 100 employees, and LEs with more than 100 employees. Difference definition above create a final decision for authors to stick with EU of SMEs definition to be generalized in these research,

1.2. Problem Statement

Considering the literature of SCM implementation as well as the entrepreneurship area, some major gaps were found summarized next. Several studies explored the area of SCM implementation of SMEs. Dubihlela and Omoruyi (2014) summarized that SMEs have barriers to implement SCM such as the lack of economy of scale, appropriate technologies, and organizational structure. The business performance can be improved by exploiting SCM strategies, adopting new technology, and restructuring operations. Baig, et al. (2020), focusing on developing countries, listed several factors that can become barriers to SCM implementation. Those are internal barriers that include lack of commitment from top management, lack of finances, difficulty to align short-term and long-term plans, difficulty in changing company practices and policies; external barriers such as government regulation, the company's partners reluctant to share information. Firm size is also a significant factor in the implementation of SCM. Rezaei, et al. (2018) focus more on high-tech SMEs claiming that cost reduction, customer satisfaction, inventory optimization, growth, innovation, and demand optimization are the drivers of SCM implementation.

Based on the literature review, we found two major gaps. One is the lack of research in evaluating and ranking the driver and barrier factors, the second is in cross-country comparison of SCM implementation at SMEs. Therefore, our study is trying to extend the literature to cover the gaps – 1) Collecting distinct samples of SMEs from two different countries with different SCM environments (Hungary and Indonesia); 2) Based on the sample evaluate the SCM implementation and rank the driver and barrier factors; and 3) In looking deeper into the SCM implementation, find the similarity or differences in the importance of driver and barrier factors under two different supply chain structures represented by the two countries. This study intends to reveal whether those driver and barrier factors can be generalized for SMEs in different SCM environments to cover the literature gap.

The reason for choosing Hungary and Indonesia as samples in this research is because these two countries have different geographical structures, different SCM environments that may influence SCM strategy implementation. Hungary is a small landlocked country still with water connections. In the capital city of Budapest, the Danube River crosses in the middle of the city, an artery, traversed by bridges and transporting barges and boats (Alvarez, 2021).

Indonesia is categorized as an archipelago country expanding around the equator and covers a distance comparable to one-eighth of Earth's perimeter (Legge, 2021). Hungary as a part of a homogenous land area can use land transportation so it has a simple SCM system compared to Indonesia. Traffic volume is also much higher for Indonesia's SCM, therefore many companies started to outsource their SCM to a third party, driven by their lower costs as well as their ability to reach remote areas throughout the archipelago (Oxford Business Group, 2012). Both countries are dominated by micro-enterprises. Based on Hungarian Central Statistical Office, at the end of 2017, there were 99% of enterprises qualified as SMEs (OECD, 2019). Hungarian SMEs, on average, employ one employee fewer than their EU peers (3.3 compared to the EU average of 4.3) (Szira, 2014). Similarly, in Indonesia where 98% of SMEs are micro-enterprises (BPS, 2018).

1.3. Research Question

In response to the above-described problems of SMEs, different research questions were analyzed in four different publications as follows:

1. Do SMEs adopt SCM in their organization structure?

   This research question is specifically addressed in the attached journal paper with the title: "Comparison of Supply Chain Management (SCM) Adoption at Small and Medium-Sized Enterprises (SMEs): A Review from Hungary and Indonesia".

2. What is the current state of research on driver and barrier factors of SCM implementation in SMEs?

   This research question is specifically addressed in the conference paper with the title: "Driver and Barrier Factors of Supply Chain Management for Small and Medium-Sized Enterprises: An Overview".

3. What is the importance ranking of the driver factors of SCM implementation in SMEs in those two countries (Hungary and Indonesia)?

   This research question is specifically addressed in the journal paper with the title: "Cross-Country Analysis of Supply Chain Management Drivers for Small and Medium-Sized Enterprises".

4. What is the importance ranking of the barrier factors of SCM implementation in SMEs in those two countries (Hungary and Indonesia)?

   This research question is specifically addressed in the journal paper with the title: "Barrier Factors of Supply Chain Management Implementation in Small and Medium-Sized Enterprises: Evidence from Hungary and Indonesia".

1.4. Research Objective

This study has the main objective to address the knowledge gap in the implementation of SCM examining the driver and barrier factors faced by SMEs. The question is whether and how do different SCM environments influence the importance of the driver and barrier factors in SCM implementation? It provides insight regarding the ranking of driver and barrier factors in two countries with different supply chain structures.

A follow-up question is how to specify which enterprise is worthy of being utilized as a reference for determining whether or not the organization can implement SCM. In general, the research is eligible for enterprises that have a product to supply, a supplier to support their production, and the product itself will be sold either directly to customers or through retailers and distributors.

1.5. Dissertation Structure

This dissertation is classified as a paper-based dissertation that consists of four papers. Each paper will be placed in one chapter. The structure of this dissertation will be as follow:

- **Chapter 2 - Comparison of Supply Chain Management (SCM) Adoption at Small and Medium-Sized Enterprises (SMEs): A Review from Hungary and Indonesia**

  This paper is based on exploratory research. It has the objective to understand the nature of the problem by comparing the SMEs in two countries (Hungary and Indonesia) on how they adopt SCM. The paper is using a survey methodology as the research strategy for the data collection. This research is intended to find out whether geographical and supply chain differences have a major effect on the adaptation level of SCM strategy, partnership, dominancy, and methods, especially for SMEs. The top management level will be

questioned in the survey. However, due to micro and small enterprises are defined as businesses with fewer than 50 employees, they may lack a suitable organizational structure or hierarchy. Overall, the questionnaire is being asked to the business leaders of the enterprises. This paper is becoming the reference for other papers that specifically examine the driver and barrier factors for SCM implementation. This research creates novelty showing how different geographical structures and SCM functionality influence the SCM strategy implementation. The results from this research serve as the starting point to examine the driver and barrier factors of SCM implementation in SMEs. Both literature review and descriptive research will be the next step for this holistic research.

- **Chapter 3 - Driver and Barrier Factors of Supply Chain Management for Small and Medium-Sized Enterprises: An Overview**

  This paper is based on descriptive research and utilizes a literature review methodology. Over fifty research papers, mainly from referred international journals have been reviewed to identify driver and barrier factors of SCM implementation. The resource of this literature review is coming from ProQuest (https://search.proquest.com/) and Science Direct (https://www.sciencedirect.com/) databases to collect a holistic list of driver and barrier factors of SCM implementation for SMEs. The findings of this research are the reference for two other papers. One of them specifically tested the driver factors: "Cross-Country Analysis of Supply Chain Management Drivers for Small and Medium-Sized Enterprises: Empirical Evidence from Hungary and Indonesia" and the other paper concentrated on the barrier factors: "Barrier Factors of Supply Chain Management (SCM) Implementation in Small and Medium-Sized Enterprises: Evidence from Hungary and Indonesia".

- **Chapter 4 – Cross-Country Analysis of Supply Chain Management Drivers for Small and Medium-Sized Enterprises**

  This paper is based on descriptive research. It utilizes survey methodology as a research strategy to collect the data also to the leaders of the enterprises. We tested the driver factors towards SMEs in two different SCM environments (Hungary and Indonesia). In Hungary, we used the SMEs database from the Hungarian Chambers of Commerce and Industry

(https://mkik.hu/en), which has a list of around 1700 SMEs. In Indonesia, the sample was selected from the Akseleran company database (https://www.akseleran.co.id/), connected to SMEs by providing loans to around 300 SMEs. Emails were sent out in two phases with follow-up texting, resulting in 105 responses from Hungarian SMEs and 124 from Indonesian SMEs. This represents a response rate of 11% for Hungary and 41% for Indonesia. The novelty of the research is that we could verify that the top 10 driver factors of SCM implementation in both countries are the same but in different rank order.

- **Chapter 5 - Barrier Factors of Supply Chain Management Implementation in Small and Medium-Sized Enterprises: Evidence from Hungary and Indonesia**
  This paper is focused more on the barrier factors of SCM implementation. It is also descriptive research with a survey methodology using the same sample as in the previous paper on the drivers of implementation. The survey revealed that the ranking of barrier factors in the two countries are statistically different that may be caused by the different SCM environments.

- **Chapter 6 - Conclusion** that contains the summary of the research connecting the results to the research questions. In general, our simultaneous research has conclusions where SMEs in Indonesia implemented the SCM strategy in a higher percentage (65%) compared to Hungary's SMEs. The complexity of Indonesia's environment seems to be the major factor of a higher percentage of SCM implementation. We found similarities in the perception of SCM methods, as both countries utilized Vendor Managed Inventory (VMI) that used to cooperate more with the supplier and Just in Time (JIT) with customers. However, the difference is that Hungary's SMEs consider collaborating with other SCM partners using 'a long-term view', 'commitment to partnership'. These results have been found from the preliminary research as we explained in Chapter 2. Furthermore, as we have more research on literature review, we collected 5 key factors that consist of 22 sub-groups. Those factors belong to both driver and barrier factors of SCM implementation. These findings lead to future research on understanding the SCM implementation from the SMEs' top management view.

We explored and presented the result of driver and barrier factors in different papers. The result of driver factor exploration is that the two driver factors that are the most important for the top management level were ‘Improve Customer Satisfaction’ and ‘Information Dissemination’. The statistical evaluation with one-way ANOVA resulted that these two factors of SCM implementation in SMEs were highly correlated.

Specifically, in the barrier factor research, it was found that top-ranked barrier factors for Indonesia's SMEs are mostly grouped by Organization factor. Those were Inadequate performance measures, Inadequate management capacity, Lack of inter-departmental cooperation in communication, and Unclear organization objectives. On the other hand, the top barrier for Hungarian SMEs has been classified into different factor groups. In detail, those are Lack of human resources, financial constraints, Employee involvement, and Lack of supply chain management knowledge exposure to employees.

In addition, the Conclusion chapter contains specific steps that SMEs' top management can do to advance their SCM implementation. The details will be covered in the ″managerial implication″ section, which will be divided into a list of action items for driver and barrier factors. It demonstrates to high management the leverage action resulting from the general research recommendation. They might choose to prioritize the driver or barrier elements in order to integrate SCM into their overall organization strategy. Furthermore, it mention also the general limitations of the studies as well as future research suggestions to broader and strengthen the results.

2. COMPARISON OF SUPPLY CHAIN MANAGEMENT (SCM) ADOPTION AT SMALL AND MEDIUM-SIZED ENTERPRISES (SMES): A REVIEW FROM HUNGARY AND INDONESIA

2.1 Paper Reference

Setyaningsih. S. and Kelle, P. (2021) 'Comparison of Supply Chain Management (SCM) Adoption at Small and Medium-Sized Enterprises (SMEs): A Review from Hungary and Indonesia', *Journal of International Studies*, 14(3), pp. 26-42, doi:10.14254/2071-8330.20211/14-3/2. (https://www.jois.eu/?706,en_comparison-of-supply-chain-management-(scm)-adoption-at-small-and-medium-sized-enterprises-(smes)-a-review-from-hungary-and-indonesia) – accepted.

2.2 Abstract

Large enterprises recognized first the importance of the Supply Chain Management (SCM) strategy to achieve competitive advantage and process efficiency. Small and Medium-Sized Enterprises (SMEs) have specific challenges in adaptation. The authors conjectured that geographical and supply chain differences have a major effect on the adaptation level of SCM strategy and methods, especially for SMEs. To investigate it, this paper compares two countries, Hungary, and Indonesia. The research focus is on SMEs, based on a cross-sectional survey of 274 Hungarian and 110 Indonesian enterprises with informants mainly related to top management. In comparison to Hungary, Indonesian SMEs have a greater application level of SCM strategy in their organization due to its larger, more complicated geographical structure and more advance SCM capabilities. However, the sample indicates that the tendencies are similar in both countries interpreting the inter-enterprise value chain and in utilizing SCM methods for cooperation with other parties, mostly using Vendor Managed Inventory (VMI) and Just in Time (JIT).

Keywords: enterprises, development, management, supply chain.

JEL Classification: O47, L32

2.3 Introduction

Small and Medium-Sized Enterprises (SMEs) are the backbone of the economy in most countries. For example, in the EU-28 Member States, the SMEs made a significant contribution with €4,357 billion of added value and employing 97.7 million people (European Commission, 2019). SMEs have simple systems and procedures, but they run the business more flexibly by fast decision making, quick response to their customer, fast feedback, in comparison to larger enterprises (LEs) (Singh et al., 2008). SMEs are also a major source of entrepreneurial skills, innovation, and employment. However, they face difficulty in the early start-up phase obtaining capital or credit which leads to the restriction of access to technologies and innovations (Szira, 2014).

Supply Chain Management (SCM) is a set of methods that are utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores to share the product or service to be produced and distributed at the right time, quantity, and location to minimize cost and satisfy its service level requirement (Simchi-Levi et al., 1999). On the other hand, the supply chain is dynamic, it involves a constant flow of information, product, and funds among different stages for customers (Chopra and Meindl, 2016). SMEs have a significant impact on SCM playing the role of suppliers, distributors, producers, and customers (Singh et al., 2008). SCM is very beneficial for SMEs to improve their competitive advantage through real-time collaboration with partners (Bátori, 2010), such as customer service improvement, improved forecast, reduced logistic cost, improved planning, and scheduling, etc. (Koech and Ronoh, 2016). However, since SMEs are relatively small in size and scale, they often have disadvantages due to a lack of supply chain workforce or a sophisticated IT infrastructure to support the SCM system (Wu et al., 2006).

Considering the literature of SCM as well as the entrepreneurship area, authors found two major gaps. First, only a few studies have addressed different SCM systems utilizing cross-country comparison perspectives from different continents. Second, few studies explored the SCM implementation for the countries in which the SME is dominated by micro-enterprises.

Kherbach and Mocan (2016) published the latest research considering logistics and SCM in the enhancement of micro-enterprises among Romanian SMEs. The study stated that the logistics function is not yet properly developed in Romania, despite some progress lately. The

main reasons are the poor transportation infrastructure, public policies, and the economic crisis. There is plenty of evidence that large companies require and support SCM software installation and application for connecting with their partner SMEs including micro-enterprises, so they can get access to sophisticated SCM tools. On the other hand, through Internet collaboration, all participants can gain a breakthrough advantage. According to Baymout (2015), smaller companies seem to use the Internet more, both in general terms (98% versus 84%) but also in most of the individual SCM application areas based on a survey in Sweden.

This study addresses those realities but extends the literature in two areas – 1) in utilizing distinct samples from two different countries (Hungary and Indonesia) with different SCM system capabilities and 2) in looking deeper into the implementation of SCM methods.

Hungary's SME sector is dominated by micro-enterprises. Hungarian SMEs employ one employee fewer on average than their EU peers (3.3 compared to the EU average of 4.3) (Szira, 2014). Similarly, in Indonesia where 98% of SMEs are micro-enterprises (BPS, 2018). These two countries have different geographical structures and SCM capabilities. In Indonesia, which is an archipelago country, SCM has critical and vital importance. The country is not a homogenous land such as China, India as well as Hungary. Indonesia has a fragmented, multimodal transportation system. Plane, ship, train, and truck are all used as alternatives for product delivery. However, Hungary as a part of a homogenous land area can use land transportation so it has a simple SCM system compared to Indonesia. Traffic volume is also much higher for Indonesia's SCM, therefore many companies started to outsource their SCM to a third party, driven by their lower costs as well as their ability to reach remote areas throughout the archipelago (Oxford Business Group, 2012). Understanding such facts may lead to valuable insight on how the adoption of SCM strategy and methods is influenced by different geographical structures and SCM capabilities.

After a brief literature review, the authors discuss the research design, the motivation, and the validity of the survey questionnaire. Next, the results of the survey are presented using descriptive and statistical analysis to compare the two countries. The authors check if the sample supports the conjecture that geographical and supply chain differences have a major effect on the adaptation level of SCM strategy and methods, especially for SMEs. Limitations and suggested future research conclude the paper.

2.4 Literature Review

2.4.1 SCM in SMEs

As mentioned in the previous section, SMEs comprise more than 90% of enterprises in most emerging countries (World Bank, 2021). SMEs act as first and second-tier suppliers for LEs. SMEs contribute to generating employment and economic growth. Besides, SMEs are also part of the largest group of manufacturing firms that can provide specialty manufacturing and support services to LEs (Thakkar et al., 2011). The meaning of SCM for SMEs is relatively different from SCM's meaning for LEs.In this case, SCM can be a set of business activities including purchasing from the open market, manufacturing, or processing of subcomponents within the plant, and delivery to LEs using hired transportation to enhance the value of end product and in turn to ensure long-term partnership (Thakkar, et al., 2008).

The definition of SCM in SMEs is an approach that helps the organization to function in a more agile and cost-effective manner by integrating the process of various partners in three levels – strategic, tactical, and operational. Globalization forces every company to serve products at lower prices, SCM can improve the performance of SMEs and increase their profitability by enhancing their ability to obtain supplies of the right quality and at the right time. But still, even though SMEs understand the benefit of SCM, most SMEs are not utilizing it well. The level of SCM implementation in SMEs is divided into two big areas such as supply chain integration and strategic planning (Baymout, 2015).

Supply chain integration, in general terms, involves information sharing, planning, coordinating, and controlling materials, parts, and finished goods at the strategic, tactical, and operational levels. The benefit of SCM integration can improve customer service and have better costs in terms of inventory management (Lam, 2013). The way of integration for SMEs in SCM could be improving by the partnership, alliances, cooperation, collaboration, trust, information sharing. Even though small enterprises do not have sophisticated information systems and technology, however, sharing can support its collaboration (Lotfi et al., 2013).

The more expansion the business of SMEs leads to the more complexity of its business in terms of size and scope. SMEs will possibly carry higher expenditure and carry more risk. Therefore, it needs to have simple financial plans and budgets for forecast-based planning where

SMEs can begin to plan their future rather than responding to changes within the marketplace. This strategic planning is a crucial point for SMEs to survive and grow. It can be tackled by good collaboration with partners in better information sharing (O'Gorman, 2001). The four strategic planning methods that SMEs can use are as follows (1) network optimization by designing the least cost network focusing on customer demand, (2) network simulation by testing alternative models to predict supply chain behavior, (3) policy optimization by developing the best operating rules, and (4) robustness designing by anticipating unforeseen circumstances and possibilities (Baymout, 2015).

Several studies examine the different implementation of SCM between SMEs and LEs (Hong and Jeong, 2006; Thakkar et al., 2008). It differs in between the priorities, external and internal control structure, and the goal of SCM processes (Hong and Jeong, 2006). Even though SMEs have less than 250 employees as well as less than 43 million Euro in terms of the balance sheet (European Commission, 2021), they can connect with SCM strategy to collaborate with LEs in several activities such as procurement, manufacturing, replenishment, and customer order (Thakkar et al., 2009).

2.4.2 Research Gap for SCM in SMEs

To achieve supply chain excellence there are two stages, the development of information technology and the change in the social system. Both provide better conditions for implementation (Kuei et al. 2002). To adapt to globalization, organizations initiate radical changes in their organizational strategies (Androniceanu and Drăgulănescu, 2012). It has a direct positive effect on the company performance (Bouwman et al., 2018) including the implementation of the SCM strategy.

A few studies focused on how far SMEs implement their SCM strategy and methods in their daily activities. LEs are well established and applied SCM due to their innovative approach and competitive advantage. Chin et al. (2012) explored that SMEs have a lack of SCM knowledge as well as underestimate the benefit to apply it in their strategy. The SCM implementation of SMEs focused on cost-effectiveness is critical for their survival and growth. The SMEs' benefits of the SCM strategy include the reduction of inventory level and lead time in the production process, accuracy on forecasting calculation, and resource planning (Koh et

al., 2007). Although SMEs understand the benefits of SCM, sometimes they need to concentrate mostly on many other problems such as a gap in finances, skills, knowledge, and technology (Chin et al., 2012).

Vaaland and Heide (2007) explored SMEs' readiness to face SCM challenges using modern planning and control methods. However, the SMEs lack the focus on the adoption of technology-based planning and control methods compared to LEs that have a larger organizational structure enabling them to separate SCM functions. Sharifi et al. (2013) revealed that SMEs typically do not consider their SCM strategy before product introduction, so they face supply chain problems that prevent the company's potential growth.

A case study that used Romanian SMEs about applying SCM strategy has revealed that the logistics part is still not properly developed although the location as well as the logistics market already improved since joining the European Union. Slowly they started to improve their logistics by gaining experience. Since SMEs dominate the Romanian economy, the development of the Romanian economy is based on the development of Romanian SMEs (Kherbach and Mocan, 2016). Authors consider two countries dominated by SMEs but having different geographical structures and SCM capabilities.

In current competitive markets, selling products and services to customers enquires relationships through many channels and marketing activities. In consequence, the manufacturer-dominated supply chain gradually decreases and turns into retailer dominated supply chain (Pan et al., 2020). Research from Gölgeci et al. (2018) presented three types of behavior of each company in the supply chain affecting the satisfaction of the collaboration. Dominance, egalitarian, and submissive are those three types of behaviors that can lead to the dynamic of power within SCM. On the other hand, Yvon, et al. (2019) explored the global existence of dominant behavior and the type of dominant supply chain practice to smaller supply chain affiliates. Both papers did not focus on the dominancy behavior of SMEs that is included in the study.

The studies mentioned above gave the idea for a new research direction. This study has a goal to see whether SMEs overlook the application of SCM strategy at their company because SMEs need to focus on several urgent things, apart from SCM focus. Previous research has also failed to explain how SCM implementation differs depending on the country's geographical and

supply chain differences. This study also looks at the interaction between SMEs and their partners in terms of SCM implementation, dominance, and collaboration variables.

2.5 Quantitative Research Design

The qualitative data method is trying to find tendencies based on personal observation of situations, events, interactions as well as document analysis using open-ended interviews with the result of in-depth and oral testimonies (Dana and Dana, 2005). However, the finding cannot be extended to a wider population with the same degree of certainty which is a major limitation of the qualitative data method (Atieno, 2009). That is the main reason why the quantitative data method has frequently been used (Hussain et al., 2019). Quantitative sampling methods are more structured than qualitative data collection methods. In this research, the authors used descriptive statistics as well as statistical analysis specifically utilize t-test analysis to describe tendencies based on the quantitative sample. Since the data covers two subsets of samples (Hungarian and Indonesian enterprises), it also helps to detect sample characteristics that may support conclusions (Thompson, 2009). The focus of its research is on SMEs, but a sample from LEs was also used as a control variable.

2.5.1 Design of Data Collection

To examine the research questions stated previously, a cross-sectional survey of Hungary and Indonesia-based companies was used. Self-administered internet-mediated questionnaires were conducted and completed by the respondents. The survey questionnaire has 3-sets of questions that contain general information about the company (three questions), strategy consciousness (two questions), and SCM cooperation with partners and applied SCM cooperation methods (four questions). The motivations, validity, and literature support behind the questions are discussed next.

2.5.1.1 General Information

The general information questions are about location, the number of employees, and approximately their net income for one year. The enterprises surveyed were classified as micro-enterprises with up to 10 employees, small enterprises with 10 to 49 employees, medium-sized

enterprises with 50 to 249 employees, and LEs with more than 250 employees (Eurostat: Structural Business Statistics, 2020).

2.5.1.2 Strategy Consciousness

The questionnaire asked respondents about the changes that the company made related to its organizational strategy. There are various routes to internationalization, one of which can be done by small firms is by changing the organizational strategy (Nummela et al., 2006). Operational efficiency and business improvement are the efforts carried out by SMEs. Those efforts can be done by implementing SCM as part of the company's strategy to achieve a competitive advantage (Wu et al., 2006). Therefore, in this section top management was asked about "When was the last time the company's strategy has changed substantially?" and "Does your strategy already include logistics and/or SCM?".

2.5.1.3 SCM Cooperation with Partners

The internally driven value chain deals with external resources flowing into enterprises, on the other hand, an externally driven supply chain deals with the resources flowing in and out between internal and external enterprises (Li and Zhang, 2012). Respondents were asked, "How do you interpret the phrase 'supply chain' at your company?" The answer could be either a corporate (internal) value chain or an inter-enterprise (extended) value chain. The difference between the value chain and the supply chain is the main driver.

A major concern for SMEs is that they are victimized in comparison to LEs. Their dominancy is relatively less due to high vulnerability to resented practices and economic, political, legal, as well as environmental pressures (Yvon et al., 2019).

The follow-up question to the top management is "What kind of supplier/customer collaboration methods does your company maintain currently?" The six methods that being considered are the Vendor Managed Inventory (VMI), Just in Time (JIT), risk sharing, financial sharing, Electronic Data Interchange (EDI), and market information sharing. With these questions, authors are trying to understand how SMEs implement SCM in their daily activities. Another question was about the dominancy that the enterprise has with its partners, "How could

you rate the power (dominance) relations between your company and your customers? Please give your answer as a proportion (a share) of 100%".

Better integration with preferred partners indicates the interest of enterprises to show their partners that they are reliable logistics service providers for long-term cooperation (Koskinen, 2009). "Do you consider that the following factors for closer cooperation with your suppliers and customers are important in your company?" The seven options were 'a long-term view', 'commitment to partnership', 'resolutions of conflict with the partner', 'effective decision-making, flexible, skilled labor force', 'inter-enterprise information flow, open communication', 'process-oriented approach', and 'common based IT and smart application'. Top management was asked to indicate their preferences on a five-point Likert scale (1 = I do not consider it as important at all, 5 = I consider it is a very important factor).

2.5.2 Translation and Adaptation

The original questionnaire was designed in English. The translation followed the forward-backward translation procedure, with independent translations (Marinozzi et al., 2009). Independent Hungarian translations were carried by three bilingual translators (native Hungarian speakers that have a background in a university profession) and Indonesian translation was carried by eleven bilingual translators (native Indonesian speakers of which one was an English instructor and ten Industrial engineers).

The goal of backward translation was to find the nearly identical result to the source of the document. The final Hungarian and Indonesian versions were then pre-tested on different samples. One misleading question from this tested questionnaire required a wording revision.

2.5.3 Sample and Data Collection

To understand the current condition of SCM strategy adoption, it required input from top management and strategic decision-makers. The authors collected the data from Hungary and Indonesia in 2018 and 2019. The pre-testing of the questionnaire has been done after the questionnaire translation process to ensure the validity of the questionnaire. Next, researchers mailed a survey to several SME communities in both countries. The enterprises were selected randomly in both countries. A cover letter explained the purpose of the survey, also showed the

contact information and the instruction on how to complete the questionnaire summarized at the beginning of the questionnaire. The researcher also got the explanation that the results are strictly confidential and only the aggregated findings are reported. The questionnaires were sent to 304 Hungarian enterprises and 150 Indonesian enterprises. It resulted a 90% return of valid questionnaires from Hungarian enterprises including 253 SMEs and 21 LEs. In Indonesia, it resulted in a 73% return of valid questionnaires with 94 SMEs and 16 LEs. LEs were used for control in this research.

2.5.4 Statistical Analysis

Statistical analytics can be a complex process, generally, descriptive methods are used to describe differences or inferential methods are used to determine the likelihood of a real difference being present in the population (Thompson, 2009). This research used both methodologies.

First, descriptive statistics will be used to highlight the characteristics in the adoption of SCM strategy and SCM method usability in Tables 3 to 6. The comparison highlights the differences between the two countries having different geographical structures and SCM capabilities. Furthermore, to measure the internal consistency, it used the Cronbach's alpha test to see if the survey questions with the Likert scale are reliable. The result of the calculations is in Tables 10 and 11. The general rule of thumb is that a Cronbach's alpha of 0.7 and above is good (Bonet and Wright, 2014), however, there is research that vaguely referred to "the acceptable values of 0.7 or 0.6" (Griethuijsen et al., 2014).

Inferential statistics is applied in the subsequent analysis to compare the two countries related to the presumed dominance in SCM cooperation as well as the importance of different SCM methods in cooperation with their partners. These results are summarized in Tables 7 to 11. The authors selected the t-statistic test with the formula:

Formula 1

T-test Statistic

$t = (m - \mu)/(s- \sqrt{n})$

Description:

t = t-test statistics

m = mean

μ = theoretical value

s = standard deviation

n = variable set size

This formula is widely used to determine the likelihood of a real difference being present in the population when the sample faces normality and independence conditions (Kim, 2015). Since the standard deviation of the variables is unknown, the sample standard deviation (SD) is used (Achi, 2019).

2.6 Data Analysis

In this section, we summarize the results of the survey and analyze them organized according to the questions of the survey (shown in *italics* in the next sections).

2.6.1 General Information about the SMEs'

Type of Enterprise in Hungary and Indonesia

The SMEs sample in this research consists of 253 Hungarian SMEs and 94 Indonesian SMEs. Besides, it used the data of Hungary's 21 LEs and Indonesia's 16 LEs as a control variable. In the sample, SMEs are dominated by micro and small enterprises in both countries (Table 2.1.).

Table 2. 1. Research Sample

Company Type	Micro Enterprises (0-9 Employees)	Small Enterprises (10-49 Employees)	Medium Enterprises (50-249 Employees)	Total
HUN SMEs	79 (31%)	110 (43%)	64 (25%)	253
IDN SMEs	65 (69%)	22 (23%)	7 (8%)	94

Source: Own Research Result

Net Income of the Enterprises in 2018

More than half of enterprises in each country still had less than a 2-million-Euro net income in 2018 (Table 2.2.). The reason why Indonesia's enterprises are more skewed towards less than 2-million-Euro net income is because of lower sales volume or cheaper product prices.

Table 2. 2. SMEs Net Income in 2018

Company Net Income 2018	Less than 2 Million Euro	2-10 Million Euro	10-50 Million Euro	More than 50 Million Euro	Total
HUN SMEs	161 (64%)	54 (21%)	32 (13%)	6 (2%)	253
IDN SMEs	92 (98%)	1 (1%)	1 (1%)	0 (0%)	94

Source: Own Research Result

2.6.2 Strategy Consciousness Analysis

Latest Period of Strategy Changes

Most of Indonesia's SMEs stated that they changed strategy substantially in the past year, however for Hungarian SMEs it was mostly in the past two or three years (Table 2.3.). The answer is confirming the expectation since the change of the company's strategy is one of the ways to keep up with the global change (Nummela et al., 2006) which showed its effects earlier in Hungary.

Table 2. 3. SMEs' Substantial Strategy Change

Organization Strategy Changes	1 Year Ago	2 Years Ago	3 or More Years Ago	Maintaining a rolling strategic plan	Total
HUN SMEs	41 (16%)	52 (21%)	94 (37%)	66 (26%)	253
IDN SMEs	49 (52%)	18 (19%)	5 (5%)	22 (23%)	94

Source: Own Research Result

On the other hand, the majority of LEs in Indonesia stated that they changed their company's strategy in the past year (Table 2.4.). This result matched with the statement from a previous study that LEs are more adept to innovation (Szira, 2014) and internationalization (Nummela et al., 2006). However, this seems to be different for LEs in Hungary where rolling strategic planning is common.

Table 2. 4. LEs Substantial Strategy Change

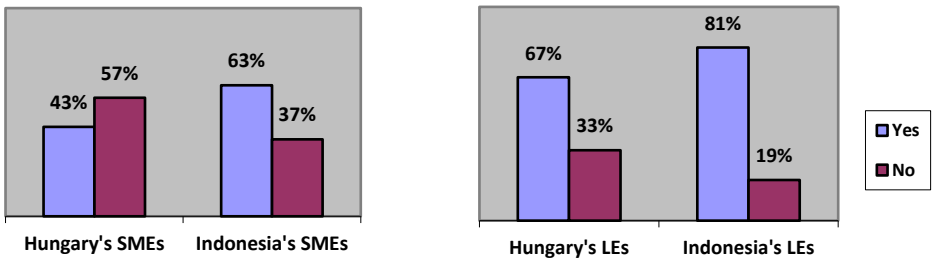
Organization Strategy Changes	1 Year Ago	2 Years Ago	3 or More Years Ago	Maintaining a rolling strategic plan	Total
HUN LEs	5 (24%)	2 (10%)	3 (14%)	11 (52%)	21
IDN LEs	9 (56%)	3 (19%)	2 (13%)	2 (13%)	16

Source: Own Research Result

Inclusion of SCM in the Organization Strategy

The survey asks whether the organization where they are working now implemented the SCM strategy or not? More Indonesia's SMEs have implemented SCM strategy (65%) in comparison to Hungary's SMEs (45%) (Figure 2.1.). The data is gathered in this research supports the hypothesis that the country's landscape and SCM functionality may influence the SCM strategy implementation. Furthermore, it reflects clearly that LEs in both countries implement more the SCM strategy in comparison to SMEs in their organization's strategy. This observation is also supporting the previous statement that LEs are well-established and applied to SCM due to their innovative approach and competitive advantage.

Figure 2. 1. Implementation of SCM in the Organization's Strategy



Source: Own Research Result

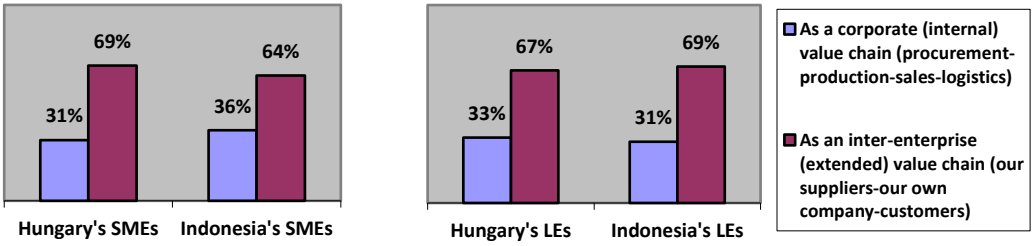
2.6.3 Supply Chain Cooperation with Partners Analysis

A strategy involves employees and strategic partners to improve continuously for the operation (Luthra and Mangla, 2018) therefore cooperation is a key issue of competitiveness.

SCM is a Corporate Value Chain or Inter-Enterprise Value Chain

The question is trying to figure out their definition related to SCM. Based on this question, in both countries, the respondents selected the inter-enterprise value chain option with more than 50% of the answers (Figure 2.2.). It happened across all enterprises, not only SMEs but also LEs. The respondents' answers quite well match with the previous study from Sukati et al. (2012) that explained SCM as a strategy that connects the enterprise's suppliers and its customers.

Figure 2. 2. Supply Chain Interpretation



Source: Own Research Result

SCM Methods Implementation in Collaboration with Partners

Table 2.5. shows that Hungary's SMEs are using more the VMI when they collaborate with the supplier site and JIT when they collaborate with the customer site. Both methods are the most used in collaboration with suppliers and customers. The least utilized method is the incorporation of both parties in sharing financial operations.

Table 2. 5. Hungary's SMEs towards SCM Collaboration Methods

Hungary's SMEs	**SCM Collaboration Methods**					
	VMI	**JIT**	**Risk Sharing**	**Sharing Financial Operation**	**EDI**	**Real-Time Sales Data**
Customer Site	21%	36%	23%	31%	21%	29%
Supplier Site	37%	25%	28%	22%	26%	22%
Both Sites (Customer & Supplier)	8%	11%	15%	9%	17%	16%
None of the Sites	35%	28%	34%	39%	37%	32%

Source: Own Research Result

Some of the results from Indonesia's SMEs are very different from the Hungarian sample as it is shown in Table 2.6. The less utilized method is the real-time sales data, and the most common utilization method is JIT. JIT is a system based on the highest supply turnover rate that can be maintained without suffering a breakdown in service attempting to create an advantage in cost and value fronts (Germain and Dröge, 1997). Similarly, the answers reflected that VMI is mostly used in cooperation with suppliers and JIT with customers. VMI is a well-known practice where vendor manages their inventory in retailers' location and decide the time of replenishment as well as total quantity by accessing retailer's inventory and demand data (Poorbagheri and Niaki, 2014). Apart from that, sharing financial operations and EDI have been highly unutilized in Indonesia's SMEs (Table 2.6.).

Table 2. 6. Indonesia's SMEs towards SCM Collaboration Method

Indonesia's SMEs	SCM Collaboration Methods					
	VMI	**JIT**	**Risk Sharing**	**Sharing Financial Operation**	**EDI**	**Real-Time Sales Data**
Customer Site	18%	40%	14%	6%	13%	9%
Supplier Site	37%	18%	37%	32%	23%	14%
Both Sites (Customer & Supplier)	6%	24%	11%	2%	9%	9%
None of the Sites	38%	17%	38%	60%	55%	69%

Source: Own Research Result

*Dominance Relationship between the Company and their Partner*s

Authors considered three dominance relationship alternatives the companies may experience with their customers: the dominance of their own company, equal dominance, and partners dominance. It was asked the proportions among the three alternatives perceived by their own company (in %). In Table 2.7., it can be seen the comparison of SMEs within the two countries and in Tables 2.8. and 2.9., the differences between SMEs and LEs are analyzed.

Partners' dominance is the highest by the perception of the Hungarian SMEs followed by equal dominance. The Indonesian SMEs have a completely reverse dominance perception, from the highest of own dominance to the lowest of partner dominance (see Table 2.7.). Table 2.7. also includes the results of the t-statistic test to reveal statistical differences. It contains, df, the statistical degree of freedom in the sample, and the corresponding t Critical two-tail value.

There is no statistical evidence that the average of the two samples is significantly different if the absolute value of the calculated sample t-statistic test is less than the Critical two-tail. The significance level is the P(T<=t) two-tail value that is compared on the commonly used alpha = 0.05 significance level. On the other hand, the larger the absolute value of the t-statistic

and the smaller the P(T<=t) two-tail value, the higher is the likelihood of a real difference being present in the population.

Table 2. 7. Comparing Dominance Relation between Partners for SMEs in Hungary and Indonesia

Dominancy Comparison For SMEs	Company's Dominance the Most		Equal Dominance		Partners' Dominance the Most	
	HUN	IDN	HUN	IDN	HUN	IDN
Mean	26.38	39.38	32.71	35.28	40.91	25.34
Variance	584.32	450.21	619.84	422.95	842.49	273.76
Observations	253	94	253	94	253	94
df	188		200		288	
t-Statistic	-4.87		-0.97		6.23	
P(T<=t) two-tail	2.27E-06		0.3308405		1.643E-09	
t Critical two-tail	1.9726626		1.9718962		1.9682352	

Source: Own Research Result

Table 2.7. shows that SMEs in the two countries have a significant difference in the company's dominancy as well as in customer's dominancy, supported by the t-statistic test (the P-values on >0.05 confidence level). However, no significant difference was seen for the equal dominancy. The reason might be that the two countries have very different SCM strategy that is related to their geographical location and the SCM structure impacted their SMEs' dominancy character. It can be seen from the table that the company's dominancy and equal dominancy have a negative result of t-Statistic. A negative t-value denotes a reversal of the effect's directionality, but it has no consequence on the significance of the difference between groups (Gillespie, 2018).

The study of Yvon, et al. (2019) is claiming that SMEs' dominancy is relatively less due to the high vulnerability to resented practices and economic, political, legal, as well as environmental pressures. Using the t-statistics test, authors check if there is a significant difference in dominancy relations between SMEs and LEs based on the sample from the two

countries. Tables 2.8. and 2.9. include the results of the t-statistic tests to reveal the statistical differences.

Table 2. 8. Dominance Relation between Partners for Hungarian Enterprises

Dominancy in Hungary	Company's Dominance the Most		Equal Dominance		Partners' Dominance the Most	
	SMEs	LEs	SMEs	LEs	SMEs	LEs
Mean	26.38	22.10	32.71	27.52	40.91	50.38
Variance	584.32	485.19	619.84	202.76	842.49	770.55
Observations	253	21	253	21	253	21
df	24		31		24	
t-Statistic	0.85		1.48		-1.49	
P(T<=t) two-tail	0.4033875		0.1463601		0.1473765	
t Critical two-tail	2.0638986		2.0395134		2.0638986	

Table 2. 9. Dominance Relation between Partners for Indonesian Enterprises

Dominancy in Indonesia	Company's Dominance the Most		Equal Dominance		Partners' Dominance the Most	
	SMEs	LEs	SMEs	LEs	SMEs	LEs
Mean	39.38	43.39	35.28	33.86	25.34	22.76
Variance	450.21	468.91	422.95	252.97	273.76	130.25
Observations	94	16	94	16	94	16
df	20		24		27	
t-Statistic	-0.68		0.31		0.77	
P(T<=t) two-tail	0.5005357		0.7552311		0.4435855	
t Critical two-tail	2.0859634		2.0638986		2.0518305	

Source: Own Research Result

The only result that supports the authors expectation is coming from Indonesia's enterprises that their own dominance is the most frequent relationship in SCM cooperation. The sample also showed that LEs were at a higher rate dominant in the relationship compared to SMEs. The comparison for other dominance behaviors is statistically not significantly different according to the t-statistics test (the P-values on >0.05 confidence level). The sample from Hungary did not show any statistical difference between SMEs and LEs in-dominance relationships. This result may be because Hungary's enterprises differently interpret the dominance relationship. Apart from dominance type behavior, they consider other types of relationships in dominance behavior, such as egalitarian or submissive type of behavior (Gölgeci et al., 2018) which possibly are frequent at Hungarian enterprises. Also, customer dominance is the most common for both SMEs and LEs in Hungary, differently from Indonesian companies where it is the least frequent dominance relation.

The Cooperation Factors between SCM Partners (Here we applied a five-point Likert scale: 1 = I consider it as not important at all, 5 = I consider it is a very important factor).

To survive in the competitive global economy, enterprises are required to create, share, disseminate appropriate up-to-date knowledge and information for supply chain integration (Lotfi et al., 2013). Several factors that support cooperation between SCM partners can improve competitive advantage. It was asked the SME managers which cooperation factors do they apply out of the following seven: 1. Created a long-term contract to improve efficiency (A long-term view); 2. Commitment to partnerships; 3. Resolution of conflicts with the partner; 4. Effective decision-making, flexible, skilled labor force; 5. Building trust and avoid the fear of sharing information (Inter-enterprise information flow, open communication); 6. Process-oriented approach; 7. Coordinate to have a similar IT-based system for the SCM cooperation (Common IT-based and "smart" applications).

To validate the reliability of the questions, authors used the internal consistency test and calculated the Cronbach's alpha values (see Tables 2.10. and 2.11.). The Cronbach's alpha is higher than the 0.70 threshold value for both countries. The reliability of Indonesian data is better ($\alpha = 0.965$) than Hungarian data ($\alpha = 0.7$).

To test the signifiecance of the difference between Hungary and Indonesia in the cooperation factors, authors used the t-statistic test. The result also shows a tendency that the SMEs from Hungary consider those cooperation factors more important and apply more frequently compared to Indonesia's SMEs. The question is whether the differences are significant or not based on the sample data? The result of the t-statistics test (the t-Statistic values and P-values > 0.05) suggests that most of the factors are significantly different in the two countries (Tables 2.10. and 2.11.). The exception is the factor 'Common IT-based and "smart" applications.

Table 2. 10. Cooperation Factors between SCM Partners for SME (1)

Cooperation Factors with SCM Partners	*A long-term view*		*Commitment to partnerships*		*Resolution of conflicts with the partner*		*Effective decision-making, flexible, skilled labor force*	
	HUN	***IDN***	***HUN***	***IDN***	***HUN***	***IDN***	***HUN***	***IDN***
Mean	4.63	3.49	4.48	3.69	4.66	3.39	4.17	3.64
Variance	0.37	1.63	0.46	1.83	0.31	1.75	0.69	1.85
Observations	253	94	253	94	253	94	253	94
df	109		111		106		120	
t-Statistic	8.34		5.39		9.02		3.53	
P(T<=t) two-tail	2.50749E-13		3.96637E-07		8.72012E-15		0.0005913	
t Critical two-tail	1.9819675		1.9815667		1.9825972		1.9799304	

Table 2. 11. Cooperation Factors between SCM Partners for SMEs (2)

Cooperation Factors with SCM Partners	*Inter-enterprise information flow, open communication*		*Process-oriented approach*		*Common IT-based and "smart" applications*	
	HUN	***IDN***	***HUN***	***IDN***	***HUN***	***IDN***
Mean	3.92	3.44	4.02	3.29	3.35	3.23
Variance	0.92	1.60	0.79	1.24	1.24	1.36
Observations	253	94	253	94	253	94
df	135		140		160	

t-Statistic	3.39		5.70		0.84		
P(T<=t) two-tail	0.0008931		6.71192E-08		0.3995800		
t Critical two-tail	1.9776922		1.9770537		1.9749015		

Source: Own Research Result

2.7 Conclusion

Since there is limited research on the impact of the country specifics on SCM implementation, the authors tested this connection. The starting point of this research was to collect survey data on how companies utilize SCM strategy in their organization, how they cooperate with their SCM partners including the dominance relationship, and which SCM methods are used in their daily operations. It was conjectured that geographical and supply chain differences have a major effect on the adaptation level of SCM strategy, partnership, dominancy, and methods, especially for SMEs. To test it, authors used the data sets from Hungary and Indonesia as the two countries have a major difference in geography and SCM strategy. In the sample, it had also LEs' data and used them as control variables for comparisons. The major findings are summarized in the next paragraphs related to the adaptation of organizational and SCM strategy, cooperation with their supply chain partners, and utilization of different SCM methods.

In the organizational strategy implementation, most of Indonesia's SMEs changed their strategy just lately while Hungary's SMEs earlier, that may be because the global change showed its effects earlier in Hungary. Most of Hungary's LEs in the sample did not specify a change date in their organizational strategy rather applied a rolling horizon so they could continuously change their strategy and adapt quickly to global changes as suggested by Androniceanu and Drăgulănescu (2012). For the SCM strategy, the sample is supporting the authors expectation that LEs are more advanced in implementing SCM strategy compared to SMEs having deficiency in supply chain workforce or sophisticated IT infrastructure. It is valid in both countries. However, if it is considered only SMEs, then only Indonesia's SMEs are using the SCM strategy in a higher percent. This result supports the main hypothesis that the country's more complex landscape and advanced SCM infrastructure has a large positive influence on SCM strategy implementation.

Concerning the cooperation with supply chain partners, a large majority of SMEs in both countries agree that the supply chain is more an extended inter-enterprise value chain between suppliers, their own company, and customers, rather than a corporate (internal) value chain. The collaboration with another party in SCM pushes them to become a connected unit. It creates a dependency on SCM, so it is reliant on information and physical flows. However, the dependency itself also influences the dominancy of the players either positively or negatively (Yvon et al., 2019). According to the survey data, customer dominance is the highest by the perception of Hungary's SMEs followed by equal dominance. Indonesia's SMEs have a completely reverse dominance perception, from the highest of their own dominance to the lowest of customer dominance. It resulted also that in Indonesia, LEs have more dominance in SCM partnerships compared to SMEs. The authors supported these statements also by statistical significance tests. On the other hand, there is no significant difference in the proportion of other comparisons.

The implementation of the different SCM methods also has several similarities between the two countries. There is a similar perception towards VMI that is being used to cooperate more with suppliers and JIT for cooperation with customers. However, there is a considerable difference in non-utilized methods, such as 'Sharing Financial Operation' for Hungary's SMEs and 'Real-Time Sales Data', 'EDI', and 'Sharing Financial Operation' for Indonesia's SMEs. This research also examines which factors are considered important for the cooperation between partners in SCM. The answers show a tendency that the SMEs from Hungary consider those factors such as 'a long-term view', 'commitment to partnership' more important and apply them more frequently compared to Indonesia's SMEs. The result of the t-statistics test suggests that most of the factors are significantly different in the two countries. The exception is the 'Common IT-based and "smart" applications' factor.

In conclusion, the results of this study indicate that the infrastructure, the landscape, and SCM capabilities of a country highly influence the SCM strategy implementation and to some degree influence the SMEs' perceptions of SCM partnership as well as the SCM method implementation.

2.8 Limitation and Future Research Opportunity

The present research is subject to several limitations. The two countries in this research represent two types of SCM structures. In Indonesia, SCM is essential due to the archipelago landscape while it has lower importance than SCM in Hungary having a homogenous land. However, this research still cannot be generalized globally since different cultures, backgrounds, and infrastructure in other countries might have a different impact on the implementation of SCM methods. Second, most of the sample is micro and small enterprises that might have resource constraints that necessitate further process adaptations to SCM models as well as high cooperation with their SCM partners. Third, this research is not able to cover all areas from these two countries, one of the major reasons is the population in Indonesia is concentrated mostly in the West Java area and Budapest area in Hungary. However, other areas are under-represented.

The findings from this research also provide avenues for further research. First, adding more countries, for example, a developed country, to the study would be a fruitful extension. Similar research has been published by Zhu et al. (2008) that explored cross-country analysis for environmental supply chain management practices. The expansion from current research can be beneficial for the management of countries that are still not able to utilize the benefits of SCM methods and the close relationship between partners. Second, expand the number of SMEs to cover larger areas in the countries. Third, from this sample, it can be seen that most of Hungary's SMEs still do not have SCM strategy in their organization, hence further research is needed regarding barriers or challenges and drivers to implement SCM strategy. Several studies that explored the barrier and driver factors such as research from Koh et al. (2011); Meyer and Tores (2019) and Abualrejal et al. (2017) can become references for further research. Fourth, further extending the research methods, including a case study approach could enhance the research and evaluation.

3. DRIVER AND BARRIER FACTORS OF SUPPLY CHAIN MANAGEMENT FOR SMALL AND MEDIUM-SIZED ENTERPRISES: AN OVERVIEW

3.1 Paper Reference

Setyaningsih**,** S., Kelle, P. and Maretan, A.S. (2020) 'Driver and Barrier Factors of Supply Chain Management for Small and Medium-Sized Enterprises: An Overview', In: *58th International Scientific Conference Economic and Social Development*. [online] Budapest: Hungary, pp: 238-249.

3.2 Abstract

Small and Medium-Sized Enterprises (SMEs) have not got appropriate attention in the Supply Chain strategy area, though they are integrated in big supply chains, having an important role in the economic growth of every country. The purpose of this research is to explore the role of drivers and barriers in the Supply Chain Management (SCM) implementation in the practice of SMEs. Small companies often operate with limited financial, management, knowledge, and technology resources. However, implementing the SCM strategy in the organization could secure a favorable position, build a competitive advantage as well as improve the organization's performance. Over fifty research papers, mainly from referred international journals have been reviewed to identify focus areas of research. Based on the review, variables for a future research agenda are being proposed. This paper has identified five key drivers (market pressure, social pressure, organizational culture, organizational characteristic, and corporate strategy) with 22 variables as a subgroup. Besides, we identified five key barriers (organization, financial, knowledge, technology, and outsourcing) with also 22 variables as a subgroup that can support experts to implement SCM. This research will contribute academically to provide additional literature for SCM focusing on SMEs and is also the basis of a future research investigating the effect of geographical structure and supply chain structure on the importance of drivers and barriers in SCM.

Keywords: barriers, drivers, small and medium enterprises, supply chain management

3.3 Introduction

Traditional SCM considers the forward flow of materials and the backward flow of information (Manzouri, et al., 2010). However, according to Chopra and Meindl (2016), SCM is part of the company's strategies in which to collaborate directly or indirectly between related parties to meet customer demand. Another definition from Stadtler, et al. (2015), SCM is a system of some organizations that are implicated, through upstream and downstream connections, in the different procedures and actions that create value in the type of products and services for their ultimate consumer.

Based on the definitions above, SCM gave several strategic benefits to the organization process. Firstly, it can support reducing the production, delivery, and distribution costs, inventory, secures manufacturing flexibility, and drives for more productivity (Hsu, 2005). Besides, it also can streamline the manufacturing process, avoid the bullwhip effect, and improve the product and service quality (Yu and Cheng, 2001).

Despite the several benefits for the organization, SMEs could not fully adopt the superior features of SCM strategy in comparison to large enterprises (Thakkar, et al., 2008). Research from Meehan and Muir (2008) found that SMEs faced several barriers such as lack of skilled personnel in SCM, experience, lack of power, and trust. They identified that the fundamental reason was a lack of interest participating in the SCM strategy.

SMEs currently have an important role in economic development due to an attractive and effective innovation system (Neagu, 2016). In the OECD countries, SMEs are the predominant form of enterprise, up to 99% of all firms, and provide as a main source of employment to 70% (OECD, 2016). The importance of SMEs in the supply chain and the specifics of SCM strategy implementation for SMEs requires specific research consideration.

In response to the current problems of SMEs above, this research aims to achieve the following objectives:

1. To map the current state of research on driver and barrier factors of SCM implementation in SMEs.
2. To identify important directions for future research in SCM implementation for SMEs

In summary, to cover the objectives mentioned above, this study utilized a literature review method to examine the SCM implementation in SMEs in a broad picture. The paper is

organized as follows: section two presents the methodology used which also includes the descriptive analysis of this literature review process. Section three deals with the driver and barrier factors of SCM implementation. Section four provides future research directions based on the current findings and limitations of our research.

3.4 Research Methodology

A systematic literature review was conducted to summarize the drivers and barriers of SCM strategy implementation for SMEs. A literature review is one of the research methods to understand the literature before shaping, argument, and justification. This type of literature review is used usually to answer a highly structured and specific research question (Arshed and Danson, 2015). Our research uses a procedure that is quite similar to the research conducted by Seuring and Müller (2008) in the process of retrieving and selecting the articles. The following phases were adopted from their research: sourcing, screening, analyzing the articles, and describing the sample characteristics.

3.4.1 Sourcing of the Articles

For the literature review, the first important step is defining clear boundaries to eliminate the articles that are not directly related. In our sample, we used only the articles that have been in peer-reviewed scientific journals in the English language with specific research focused on drivers or barriers for SCM strategy implementation in SMEs. We conducted a structured keyword search in ProQuest (https://search.proquest.com/) and Science Direct (https://www.sciencedirect.com/) databases. We considered all articles published until 2020 containing the key word combinations and the number of retrieved articles as described in Table 3. 1. We did a quick content check, to decide whether the articles included or excluded in the next research analysis phase. A total of 838 articles have been selected in this sourcing phase.

3.4.2 Screening the Articles

At this screening phase, we checked the abstracts of the papers and retained those that covered research about SCM in the SME context. In the beginning, only one of the authors did the screening process. The unclear abstracts were categorized as a backlog and being discussed with

another author through an in-depth discussion about whether to exclude or include the paper for further processing. This screening process successfully identified 66 relevant papers. The articles that being gathered by search keywords in a broad term that included many articles that did not unequivocally incorporate with “SCM strategy” and “SCM for SME”.

Table 3. 1. Number of Articles Retrieved based on Keywords Search

No	Keywords Used for Search	Articles Retrieved
1	Barrier and Supply Chain	188
2	Challenges and Supply Chain	182
3	Driver and Supply Chain	175
4	Adoption and Supply Chain	199
5	Supply Chain and Small and Medium-Sized Enterprise	94
Total Number of Articles Retrieved		**838**
2nd & 3rd Phase	(Removing Duplication and Abstract Judgement)	54

The focus articles will be classified into

- Drivers of SCM implementation (Chand, et al., 2018; Narimissa, et al., 2019; Akhtar, 2019; Saeed and Kersten, 2019; Micheli, et al., 2020; Sajjad, et al., 2019; Shabbir and Kasim, 2018 and Susanty, et al., 2018) and
- Barriers of SCM implementation (Parmar and Shah, 2016; Zaabi, et al., 2013; Jayant and Azhar, 2014; Majumdar and Sinha, 2018; Mafini, 2016; Govindan, et al., 2013; Gupta, et al., 2020; Rahman, et al., 2011; Manzouri, et al., 2010; Farooque, et al., 2019; Dubihlela and Omoruyi, 2014; Salami, et al., 2013; Fawcett, et al., 2008; Narimissa, et al., 2019; Masete and Mafini, 2018; Sajjad, et al., 2019; Gorane and Kant, 2015; Meehan and Muir, 2008 and Ozen, et al., 2020).

After the iterative process of analysis, a total of 54 final articles were selected as the final sample (Table 3.1.). Figure 3.1. summarizes this literature research process.

Figure 3. 1. Structured Literature Review Process

Source: Own Development

3.4.3 Analyzing the Articles

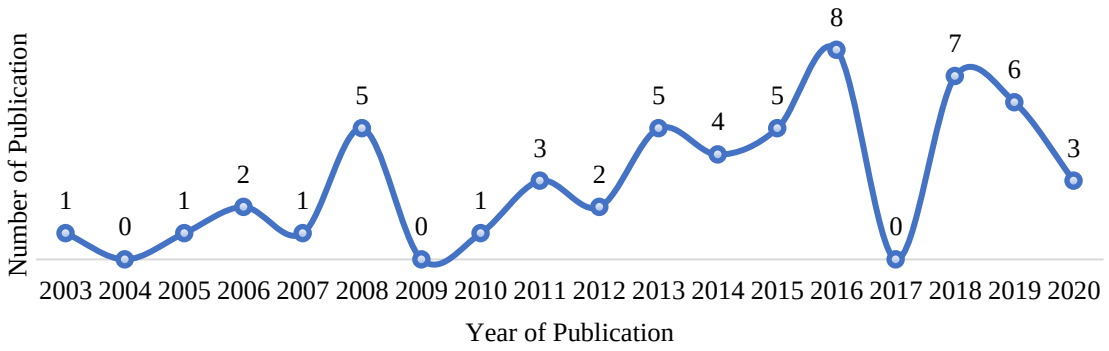
In this phase, we extracted and documented the information from 54 articles and utilized content analysis to make sure to provide valid inferences from texts to the context of its use (Krippendorff, 2004). Hence, we always discussed if there is a doubt for further decision. The following questions should be answered by each article:

- What year and which journal was the article published?
- What kind of driver or barrier factors for SCM have been identified in the article?
- Which industrial sector is the main focus area?
- Which country is included in the context of its research?
- Does this article relate to SMEs as the main focus?

3.4.4 Sample Characteristic

The characteristics of the selected 54 articles are described by the distribution of publication year, journal, and the context of countries. It can be seen from Figure 3.2. that the research period of 2005-2020 shows a growing research interest in our focus area.

Figure 3. 2. Distribution of Articles per Year

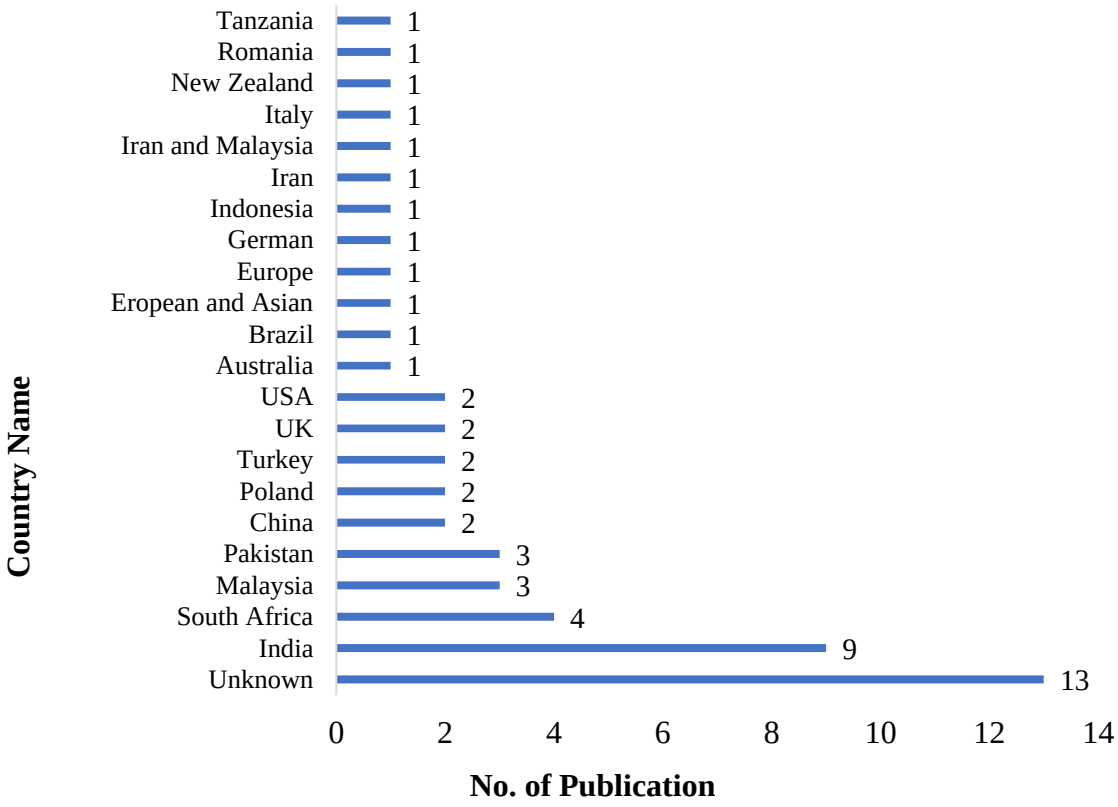


Furthermore, the selected articles come from a broad set of journals (Table 3.2.). Figure 3.3. shows the allocation of research context by countries. India has the highest number of case studies on SMEs that implement SCM strategy in their organization.

Table 3. 2. Distribution of Reviewed Articles by Journal

Journal Name	**No. of Papers**	**%**
Journal of Manufacturing Technology Management	4	7%
Supply Chain Management: An International Journal	4	7%
Applied Mechanics and Materials	2	4%
IIMB Management Review	2	4%
International Journal of Production Economics	2	4%
Journal of Cleaner Production	2	4%
Journal of Modelling in Management	2	4%
Resources, Conservation & Recycling	2	4%
Social and Behavioral Sciences	2	4%
Sustainability	2	4%
Others	30	56%
Grand Total	**54**	**100%**

Figure 3. 3. Distribution of Review Articles by Country



3.5 Result and Discussion

We divide the finding into 2 big areas. The first area is drivers of SCM implementation that include 31 articles, representing 57% of the total articles reviewed. The other area, barriers of SCM implementation include 23 articles representing 43% of total articles reviewed. As shown in Figure 3.2., the drivers and barriers of SCM implementation are becoming a popular research area, currently not only being investigated in the manufacturing field but also in the SME field. SCM can be successfully implemented by classifying and evaluating the drivers and barriers according to the organization's condition (Parmar and Shah, 2016). SCM's partners' pressure, the direct benefit of the use of its system to the process business, and top management commitment are the drivers that have the highest mention in several articles. It is explaining that top management can influence much the organization move towards their goal (Parmar and Shah, 2016). On the other hand, a direct benefit that can get by an organization to their process

business are more effective and efficient related to several phases such as production, inventory process, delivery product or service, etc. (Hsu, 2005). Table 3.3. below mentioned all driver factors that influence the SCM implementation.

Table 3. 3. Critical Drivers of SCM Implementation

Factor	Sub Factor	Literatures
Market Pressure	Improve competitive advantage	Saeed and Kersten (2019); Hanif and Usman (2018); Tripathy, et al. (2016); Meehan and Muir (2008)
	Competitor's pressure	Saeed and Kersten (2019); Meyer and Torres (2019); Fawcett, et al. (2008); Akhtar (2019); Gandhi, et al. (2015); Micheli, et al. (2020); Namagembe, et al. (2016); Bagchi, et al. (2005)
	Shareholder/Investor Pressure	Saeed and Kersten (2019); Thakkar, et al. (2008); Micheli, et al. (2020)
	Institutional pressure	Saeed and Kersten (2019); Diabat, et al. (2014); Akhtar (2019); Gandhi, et al. (2015)
	SCM partners' pressure	Saeed and Kersten (2019); Sillanpaa, et al. (2013); Leyh and Thomschke (2015); Jabbour, et al. (2011); Shabbir and Kassim (2019); Fawcett, et al. (2008); Huang, et al. (2015); Tripathy, et al. (2016); Susanty, et al. (2018)
	Reputation/image of corporate	Saeed and Kersten (2019); Sajjad, et al. (2019)
	Globalization	Saeed and Kersten (2019); Fawcett, et al. (2008); Huang, et al. (2015); Diabat, et al. (2014); Chand, et al. (2018); Jain and Benyoucef (2008); Kot (2018); Kherbach and Mocan (2016)

	Improve customer satisfaction	Power (2008); Narimissa, et al. (2019); Sajjad, et al. (2019)
Societal Pressure	Value-based networks	Saeed and Kersten (2019); Koh, et al. (2007)
	Consumer organization	Saeed and Kersten (2019); Huang, et al. (2015); Diabat, et al. (2014); Akhtar (2019); Micheli, et al. (2020); Susanty, et al. (2018)
	The direct benefit of the use of its system to the process business	Power (2008); Chin, et al. (2012); Tummala, et al. (2006); Sillanpaa, et al. (2016); Narimissa, et al. (2019); Jabbour, et al. (2011); Shabbir and Kassim (2019); Sajjad, et al. (2019); Chan, et al. (2012)
Organizational Culture	Innovativeness	Saeed and Kersten (2019), Chin, et al. (2012), Sillanpaa, et al. (2013); Quayle (2003); Sillanpaa, et al. (2013); Kherbach and Mocan (2016)
	Information dissemination	Saeed and Kersten (2019); Hanif and Usman (2018); Power (2008); Tummala, et al. (2006); Sillanpaa, et al. (2016); Leyh and Thomschke (2015); Jabbour, et al. (2011); Shabbir and Kassim (2019); Fawcett, et al. (2008); Talib and Hamid (2014); Chan, et al. (2012)
Organizational Characteristic	Position in supply chain	Saeed and Kersten (2019)
	Industrial sector	Saeed and Kersten (2019)
	Size	Saeed and Kersten (2019); Micheli, et al. (2020)
	Geographical location	Saeed and Kersten (2019)
	Degree of internationalization	Saeed and Kersten (2019); Chand, et al. (2018)

Corporate Strategy	Top management commitment	Saeed and Kersten (2019); Hanif and Usman (2018); Sillanpaa, et al. (2013); Leyh and Thomschke (2015); Narimissa, et al. (2019); Sajjad, et al. (2019); Talib and Hamid (2014); Gandi, et al. (2015); Susanty, et al. (2018)
	Cost related pressure	Saeed and Kersten (2019); Sillanpaa, et al. (2013); Susanty, et al. (2018)
	Operational/economic performance	Saeed and Kersten (2019); Tummala, et al. (2006); Narimissa, et al. (2019); Sajjad, et al. (2019); Talib and Hamid (2014); Gandhi, et al. (2015)
	Monitoring, evaluation, and development of implementation	Sillanpaa, et al. (2013); Narimissa, et al. (2019); Varma, et al. (2016)

The financial barrier, resistance to change from the employee, lack of awareness from management, and support from top management are the most significant barriers. However, all of those factors are also important because it will affect the relationship between one and another organization in supply chain collaboration. Table 3.4. below contains all the barrier factors that influence the SCM implementation.

Table 3. 4. Critical Barriers of SCM Implementation

Factor	Sub Factor	Literatures
Organization	Absence of training classes/ consultancy/ supervise progress	Govindan, et al. (2013); Ozen, et al. (2020); Parmar and Shah (2016); Zaabi, et al. (2013); Majumdar and Sinha (2018); Mafini (2016); Manzouri, et al. (2014); Gorane and Kant (2014);

		Kumar, et al. (2015); Mafini and Omoruyi (2013)
	Inadequate supplier commitment/ reluctant to share information	Govindan, et al. (2013); Ozen, et al. (2020); Mafini (2016); Kot (2018)
	Inadequate of Inter-departmental coordination in communication	Govindan, et al. (2013); Gupta et al. (2020)
	Inadequate of involvement of top management in adopting SCM	Govindan, et al. (2013); Majumdar and Sinha (2018); Ozen, et al. (2020); Parmar and Shah (2016); Zaabi, et al. (2013); Gupta, et al. (2020); Manzouri et al. (2014); Salami, et al. (2015); Gorane and Kant (2014); Jayant and Azhar (2014); Rahman, et al. (2011); Kumar, et al. (2015)
	Lack of management capacity	Govindan, et al. (2013); Parmar and Shah (2016)
	Big effort to change organizational strategy	Majumdar and Sinha (2018); Mafini (2016), Manzouri, et al. (2014); Salami, et al. (2015); Gorane and Kant (2014); Masete and Mafini (2018)
	Unclear organization objective	Parmar and Shah (2016); Zaabi, et al. (2013); Majumdar and Sinha (2018); Dubihlela and Omoruyi (2014); Gorane and Kant (2014)

	Inadequate performance measure	Manzouri, et al. (2014); Masete and Mafini (2018)
Financial	Financial constraints	Govindan, et al. (2013); Majumdar and Sinha (2018); Parmar and Shah (2016); Sajjad, et al. (2019); Gorane and Kant (2014); Jayant and Azhar (2014); Mafini and Omoruyi (2013); Katunzi and Zheng (2011)
	High investments and less ROI (Return on Investments)	Govindan, et al. (2013); Ozen, et al. (2020); Majumdar and Sinha (2018); Gupta, et al. (2020); Mafini and Omoruyi (2013)
	Superior execution and preservation cost	Govindan, et al. (2013); Majumdar and Sinha (2018)
Knowledge	Inadequate of SCM system exposure to experts	Govindan, et al. (2013); Gupta et al. (2020); Jayant and Azhar (2014); Rahman, et al. (2011); Ahweda, et al. (2016); Masete and Mafini (2018); Katunzi and Zheng (2011)
	Lack of awareness and participation on SCM	Govindan, et al. (2013); Majumdar and Sinha (2018); Ozen, et al. (2020); Parmar and Shah (2016); Majumdar and Sinha (2018); Salami, et al. (2015); Sajjad, et al. (2019); Farooque, et al. (2019)
	Lack of motivation and employee involvement	Parmar and Shah (2016); Majumdar and Sinha (2018);

		Mafini (2016); Sajjad, et al. (2016); Gorane and Kant (2014); Rahman, et al. (2011)
Technology	Lack of new technology, materials and processes	Govindan, et al. (2013); Majumdar and Sinha (2018); Ozen, et al. (2020); Parmar and Shah (2016); Zaabi, et al. (2013); Majumda and Sinha (2018); Gupta, et al. (2020); Dubihlela and Omoruyi (2014); Gorane and Kant (2014); Quayle (2003); Chand, et al. (2018); Jayant and Azhar (2014); Katunzi and Zheng (2011)
	Recent exercise inadequate of the flexibility to change into new system	Govindan, et al. (2013); Jayant and Azhar (2014)
	Lack of human resources	Govindan, et al. (2013); Majumdar and Sinha (2018); Ozen, et al. (2020); Rahman, et al. (2011)
	Fear of failure	Govindan, et al. (2013); Majumdar and Sinha (2018); Sajjad, et al. (2019); Jayant and Azhar (2014)
Outsourcing	Lack of standard SCM system to collaborate with suppliers	Ozen, et al. (2020); Parmar and Shah (2016); Manzouri, et al. (2014); Salami, et al. (2015); Switala (2016)
	Lack of Customer Satisfaction Index	Parmar and Shah (2016); Mafini (2016); Gupta, et al. (2020); Garuna and Kant (2014); Ahweda, et al. (2016)

	Lack of Trust among SCM partners	Majumdar and Sinha (2018); Mafini (2016); Gupta, et al. (2020); Manzouri, et al. (2014); Sajjad, et al. (2019); Gorane and Kant (2014); Rahman, et al. (2011)
	Unwilling to share risk and rewards between SCM partners	Govindan, et al. (2013); Ozen, et al. (2020), Manzouri, et al. (2014); Sajjad, et al. (2019)

3.6 Conclusion and Future Research

Implementing SCM strategy provides improvement in competitive advantage of organizations as it has been proven by large companies and it can be also a great opportunity for SMEs. Consequently, the implementation of SCM in SMEs has received growing research interest. Larger companies have more resources in terms of people, finances, and other factors. However, several barriers can be found for the SMEs related to SCM strategy implementation. On the other hand, globalization amplifies drivers for SMEs to improve their supply chain performance. This research provided a structured review of the literature to gain in-depth understanding as well as a compilation of current driver and barrier factors of SCM implementation. From the literature review we could identify 5 key factors and 22 sub-groups both for the drivers and for the barriers of SCM implementation. Major problems are related to the organization structure, financial dimension, pressure from an internal or external organization, technology development, and outsourcing capability. Limitations of this research include that we only considered articles being published in English and used only two sources to gather the articles (ProQuest and Science Direct) which might limit the support of our conclusions.

This paper is part of a broader research scope to understand the effect of different SCM structures on the implementation of SCM strategy. Selecting two different countries that have different geographical and SCM structure, can be an approach investigating this effect. Using the results of this paper, we can explore the different opinions towards driver and barrier factors of SCM implementation. Further research can be built by measuring the main drivers and

barriers of SCM strategy implementation for SMEs. On the other hand, multiple case studies in different countries and industry areas can also be valuable resources to enhance the conclusions.

4. CROSS-COUNTRY ANALYSIS OF SUPPLY CHAIN MANAGEMENT DRIVERS FOR SMALL AND MEDIUM-SIZED ENTERPRISES

4.1 Paper Reference

Setyaningsih. S., Czakó K. F., Vasic T. and Kelle, P. (2021) 'Cross-Country Analysis of Supply Chain Management Drivers for Small and Medium-Sized Enterprises', *Polish Journal and Management Studies*, 23(1), pp. 352-369, doi:10.17512/pjms.2021.23.1.22. (https://pjms.zim.pcz.pl/resources/html/article/details?id=217312) – accepted.

4.2 Abstract

Supply Chain Management (SCM) drivers are the key factors in successful SCM strategy implementation. SMEs with limited resources need to focus on the top drivers to improve performance and competitiveness. The paper explores which driver factors have the largest importance according to the opinion of the top managers of SMEs. Two developing countries were compared which have different supply chain environments mainly due to their geographical structure. Information from top managers of 105 Hungarian and 124 Indonesian SMEs was collected using an online questionnaire. The data was analyzed using statistical methods. This study is the first to rank SCM drivers in a quantitative study comparing SMEs in different supply chain environments. The findings reveal that from 22 driver factors both countries perceive the same top 10, however in a different ranking order. Improvement of customer satisfaction and information dissemination are the top two drivers, which are highly correlated.

Keywords: Supply Chain Management, Drivers, Small and Medium-sized Enterprises, Cross-country comparison.

4.3 Introduction

Supply Chain Management (SCM) strategy implementation improves the company's competitive advantage (Xian et al., 2018; Govindan et al., 2013; Blanchard, 2007; Porter, 1998). The SCM drivers are key factors in successful SCM strategy implementation. Managers focus on the top drivers, which impact their competitive advantage and performance. Many large companies implemented SCM strategies early to keep up with globalization, but recently also small and medium-sized enterprises (SMEs) followed, intensively joining the international marketplace (Morais and Ferreira, 2019; Petrou et al., 2020). SMEs are a vital part of the economy in most countries. In Europe, 93% of the non-financial businesses are classified as SMEs and employ about 70% of the workforce (Eurostat, 2016). SMEs distinguish themselves from larger enterprises in business capabilities and practice, growth ambition, business environment, and business characteristics (Gherhes et al., 2016).

To advance a company in internationalization requires using business networks to join global supply chains, which will achieve better company performance (Wach et al., 2020). Trade fairs present chances to establish a business relationship that leads to global supply chain access (Measson and Hunt, 2015). However, there are still few SMEs that have achieved world-class status. The reason is that most SMEs still utilize simple procedures, immediate feedback, short-term decision-making (Singh et al., 2008), and whose main motivation is short-term profit (Wahjudi et al., 2020). An additional barrier that SMEs have, apart from the shortage of other resources, is the employees' knowledge due to fast employee turnover and lack of training (Long et al., 2013; Belitsli et al., 2020). To compete in a fast-changing competitive market, SMEs require advanced Information Technology (IT) for better internal efficiency (Singh et al., 2008). Even though lots of progress is already reported in the literature, still a low percentage of SMEs (28%) are utilizing full SCM strategy implementation. The reasons, according to Power (2008) are the fear of new adjustment, high satisfaction from the current business process, level of understanding of new technology, time-consumption and high expenses.

This paper's motivation is to understand how different supply chain environments influence the SCM drivers according to the opinion of the top managers of SMEs. The underlying hypothesis is that the supply chain structure influences the importance of drivers in SCM strategy implementation. Taking into consideration the effect that different types of

geographical and SCM structures have, this will enhance the existing literature (Akhtar, 2019; Chand et al., 2018; Diabat et al., 2014; Givondan et al., 2013). This study analyses a sample of Hungarian and Indonesian SMEs from reputable institutions of those two countries representing all locations. The main goal is to expand the current literature by ranking the factors and sub-factors of the drivers; hence, the SMEs can prioritize SCM implementation. These factors are being measured and ranked for the first time in a quantitative study comparing SMEs in different supply chain environments.

4.4 Literature Review

Even though SCM has several functions, Tummala et al. (2006) stated that procurement, inventory management, and logistics are the most crucial. The literature review of Power (2005) summarized that the SCM strategy could boost the customer service level, bring cost-effectiveness, and share benefits from the companies that have been well integrated into the SCM link. Research that has been conducted in European companies found that Enterprise Resource Planning (ERP) systems have already been properly developed to provide electronic links with SCM partners. Collaboration between suppliers and customers towards coordination of inventory management and supply chain design proved to improve company performance (Bagchi et al., 2005).

The literature on the drivers of SCM implementation mostly discusses larger organizations in developed countries. Tummala et al. (2006) assessed the SCM implementation based on a survey of 129 managers in the SCM area. The descriptive analysis revealed that performance measurement, the atmosphere of trust within SCM partners, and top management commitment were key SCM success factors for those midwestern companies in the USA. In another research done on New Zealand companies that had interviews with 29 senior managers in 23 companies revealed that customer pressure, and public networks pressure such as scientific communities, and research centers were the key external drivers (Sajjad et al., 2019). In addition, they verified that SCM implementation could enhance the competitive advantage of a company by cost reduction, operational effectiveness, sales increase, and long-term survival. Diabat et al. (2014) analyzed the enablers of sustainable SCM in the textile industry in five textile plants using a questionnaire. The analysis used interpretative structural modelling (ISM) and it summarized

13 enablers as the influence factors of sustainable SCM implementation. The enablers that have a close relationship with SCM are customer satisfaction, employment stability, and improvement of product characteristics. A case study of German enterprises showed that data sharing from several parties in SCM integration affected the success of SCM implementation. Leyh and Thomschke (2015) used literature review and interviews to conclude that top management support, organizational structure, and organizational culture were the driver factors of SCM implementation.

Looking at the organizational characteristics, research has found the primary driver of SCM implementation depends on the industry sector (Walker et al., 2008), geographical location (Bai et al., 2014), position in the supply chain (Varsei et al., 2014) and the size of the company (Zhu and Sarkis, 2007). Both academics and practitioners were analyzing the implementation of SCM in various aspects such as lean, digital, knowledge management, integration process, etc. for large enterprises in developed countries (Büyüközkan and Göçer, 2018; Ugochukwu et al., 2012; Hochrein et al., 2015; Marra et al., 2012; Power, 2005; Setyaningsih et al., 2020). Kot et al. (2020) summarized that SCM implementation can differ in the context of considered economies; in developed countries, the impact is higher than in developing countries. Though, we could only find a few papers focusing on the drivers of SCM implementation for SMEs in developing countries.

Looking into the Asian perspective, some research was conducted in India and Pakistan. Other research has been done on developing countries, including Brazil, Poland, and Kazakhstan. Chand et al. (2018) investigated the driver factors ranked for SCM implementation in mining equipment manufacturing of Indian companies. It used the Analytical Hierarchy Process (AHP) and summarized several factors of SCM such as laws and regulations, supplier capability, shorter product life cycle, and customer service expectancy. Research on the Pakistani fast-food industry by Hanif and Usman (2018) gathered data from a questionnaire given to 105 multinational and local companies in Rawalpindi and Islamabad. The comparison between multinational companies and local companies provided interesting insight. The research found several drivers on SCM implementation, such as top management commitment, customer focus, IT, and competitive advantage improvement. The second research from Pakistan by Akhtar (2019) focused on the manufacturing sector and emphasized green supply

chain management in three specific fields, textile, chemical, and pharmaceutical industries. Partial least squares structural equation modelling was used to analyze the result from 263 respondents. Consumer, institutional, and competitor pressures were the significant enablers towards competitiveness within SCM.

Jabbour et al. (2011) identified the factors that affect SCM practices in the Brazilian electro-electronic sector through a survey conducted with 107 respondents. Using one-way ANOVA and Kruskal-Wallis tests, the results revealed that size, position, and bargaining power were the most important driver factors to implement SCM. Kot and Grondys (2018) summarized that for Poland and Kazakhstan´s SMEs the end customer is the main driver for SCM implementation. Kumar et al. (2015) identified the critical success factors and disclosed the impact on SMEs' performance, but they did not analyze the determinants of the significant drivers. The single country case studies cannot be transferred to another type of supply chain structure (Tummala et al., 2006; Sajjad et al., 2019; Hanif and Usman, 2018; Akhtar, 2019; Jabbour et al., 2011). The larger the area for the business geographically, the more logistics is considered as the backbone for SCM strategy (Haag and Sandberg, 2020).

A literature gap has been revealed in cross-country comparison of SCM drivers, especially for SMEs in developing countries with different supply structures. Also, the ranking of the importance of drivers is an understudied area.

To fill in the above research gaps, SMEs in two developing countries were compared that have different supply chain structures mainly due to their different geographical structures. Hungary and Indonesia are two emerging markets with very different supply chain environments. Hungary is a landlocked country, adjacent to several countries, not connected to the sea, and located in central Europe at the crossroads of four main European transportation corridors (Alvarez, 2021). On the other hand, Indonesia is an island nation in South East Asia with 17,500 islands. The landscape varies from mountain to green fertile rice fields, tropical rainforest, savannahs, and beaches (Wolters, 2020). The difference in the geographical structure of Hungary and Indonesia results in a very different supply chain structure.

SMEs are important in both countries. Specifically, Hungarian SMEs employ 70% of the workforce. The number of SMEs is slightly higher than the average in Europe with 98% of the total number of firms (SBA, 2018). Similarly, in Indonesia, SMEs represent 90% of all firms outside the agriculture sector and provide a job for over 97% of the country's workforce (OECD, 2018). Currently, both countries are classified as middle-income countries with growing economies based on the Global Competitiveness Report (GCR, 2019). Hungary and Indonesia are close in rank, Hungary is 47th meanwhile Indonesia has a rank of 50. Hungary, which is classified as a small country, is considered a growing market and classified as a commodity importer (GEP, 2020). Indonesia is strong in Southeast Asia based on its market size and macroeconomic stability (GCR, 2019).

Based on a survey given to SMEs we compared two countries with different types of geographical and supply chain structures. The main hypothesis for this research is that different SCM environments have a major influence on the ranking of driver factors of SCM implementation. Using statistical methods, the differences in the ranking of the drivers were analyzed.

4.5 Research Methodology

The quantitative analysis of the research requires a larger sample size, so a survey questionnaire was deemed as the most appropriate way to capture a wider SME community with external reliability and validity, as was suggested by Roopa and Rani (2017). A questionnaire was distributed by email to compare SMEs' attitudes towards the driver factors of SCM implementation. The different locations of respondents of countries make it beneficial to use this type of survey.

4.5.1 Sample

The scope was limited to two countries, Hungary, and Indonesia. The sample population consisted of top managers and strategic decision-makers of SMEs. The sample in Hungary is based on the government directory of the Hungarian Chambers of Commerce and Industry (https://mkik.hu/en), which has a list of around 1700 SMEs. In Indonesia, the sample was selected from the Akseleran company database (https://www.akseleran.co.id/), connected to

SMEs providing loans to around 300 SMEs. An email was sent with an explanatory letter on the purpose of the research and a link to the online questionnaire to the respondents in both countries. Based on this, we filtered the invalid email addresses. Emails were sent out in two phases with follow-up text messages, resulting in 105 responses from Hungarian SMEs and 124 from Indonesian SMEs (see Table 4.1). This represents a response rate of 11% for Hungary and 41% for Indonesia. We received quite a low response rate for the Hungarian data. This is not uncommon as previous research from Bartholomew and Smith (2006) also found a low response rate from small businesses, especially using mail surveys compared to larger firms or the general industrial population.

Table 4. 1. Sample Demographics

Measure	**Items**	**Hungary (n_1 = 105)**		**Indonesia (n_2 = 124)**	
		N	**%**	**N**	**%**
SME's Type	Micro	51	49%	71	57%
	Small	35	33%	39	31%
	Medium	19	18%	14	12%

Source: Own Research Result

For SME types, the Eurostat 2020 classification was used: micro-enterprises have up to 10 employees, small companies with 10 to 49 employees, and medium-sized companies with 50 to 249 employees. Lussier and Sonfield (2015) described small enterprises to be more likely to employ non-family member managers and engage in the formulation of a succession plan. Small enterprises utilize more outside advisory services, and the style of their operation is also more formal compared to micro-enterprises.

The respondents provided information on the market serviced, the number of employees, the net income in the past two years, and the role of responsibility within the organization. Additionally, they were required to analyze specific driver and barrier factors of SCM. Key informants in this research had to have relevant knowledge about the study and were willing to share their experiences. Also, they were required to hold a formal position in the company. They were the gatekeeper of deeper analysis relied on as an expert. In this case, owners, managers, or decision-makers were key representatives of SMEs (McKenna and Main, 2013). The majority of key informants from both countries were the owners of the businesses. A total of 55% of the

respondents in Indonesia and 54% in Hungary were the owners of SMEs. Additionally, 26% of Indonesian respondents and 14% of Hungarian respondents had the title of director. The others were commissioners, managers, and professional employees connected to the SMEs.

Most of the SMEs in Hungary are in Budapest, as it is the capital city (43% of the respondents). Furthermore, 67% had less than 2-million-euro net income, which classified them as micro-enterprises in Europe. In Indonesia, most companies are on Java Island, which is the center of business. 68% of the SMEs have less than 1-billion-rupiah net income, and 21% receive in between 1-10 billion rupiah. In total nearly 90% of SMEs had less than 2-million-euro net income, which classifies them as micro-enterprises in Indonesia. In terms of the sector of industry, Indonesia is mostly dominated by food and beverage industries (32%), followed by trade (13%), and Hungary is dominated by trade (25%) and machine engineering (7%).

4.5.2 The Research Design

Based on the survey, we intend to identify the perceptions towards the drivers of SCM implementation focusing on SMEs. The selection of the survey questions is based on a literature review conducted in our previous research (Setyaningsih et al., 2020). Five main driver factors and 22 sub-factors have been identified from the extensive literature review research (see Table 2). By using the survey method, this approach allows the use of statistical calculation to objectively analyze the data where the results can be generalized to other populations (Johnson and Christensen, 2008). The application of a questionnaire facilitates finding the variability in distinct events (Saunders et al., 2009). A self-administered questionnaire was used in this research that was distributed by email.

4.5.3 Survey Instruments

A 22 questions measurement was operationalized using previous studies (Fawcett et al., 2008 and Govindan et al., 2013). The original English questionnaire was translated into Hungarian and Indonesian. The language comparability was tested by experts from the engineering logistics and management field resulting in minor changes in wording.

The data collection required four months total in 2020. Questions on general information and driver factors of SCM implementation were asked from the representative sample. Response

options for the drivers were scored on a 7-point Likert scale (1 = Not at all, and 7 = Serious driver). Also, the background of the company's information and respondent's data was asked. Table 4.2 shows the construct items, the main factors, and the sub-factors (with brief notation); it contains their means, and standard deviation. Table 4.2 also includes the Cronbach's α values for the main factors showing that the reliability and internal consistency is appropriate (higher than 0.7 suggested by Bonett and Wright, 2014).

Table 4. 2. Construct Measures

Factor	Sub Factor	HUN		IDN	
		Mean	Std. Dev	Mean	Std. Dev
Market Pressure (HUN: α = 0.77, IDN: α = 0.85)	Improve competitive advantage (ICA)	5.26	1.29	5.52	1.38
	Competitor's pressure (CP)	4.47	1.46	5.07	1.50
	Shareholder / investor pressure (SIP)	2.87	1.90	4.27	1.78
	Institutional pressure (IP)	2.76	1.72	3.84	1.91
	SCM partners pressure (SCMPP)	3.27	1.70	4.64	1.62
	Reputation/image of corporate (ROC)	4.83	1.68	5.52	1.48
	Globalization (G)	4.10	1.66	4.85	1.61
	Improve customer satisfaction (ICS)	6.07	1.26	6.05	1.24
Social Pressure (HUN: α = 0.60, IDN: α = 0.70)	Value based network (VBN)	4.19	1.74	4.03	1.76
	Consumer organization (CO)	3.87	1.80	4.16	1.68
	Direct benefit to business process (DBBP)	5.22	1.50	5.64	1.44
Organizational Culture (HUN: α = 0.70, IDN: α = 0.77)	Innovativeness (I)	5.18	1.38	5.84	1.39
	Information dissemination (ID)	5.72	1.32	5.91	1.21
Organizational Characteristic	Position in supply chain (PSC)	4.55	1.38	4.90	1.54
	Industrial sector (ISe)	4.14	1.55	5.05	1.42
	Industry size (ISi)	4.00	1.58	4.90	1.46

(HUN: α = 0.81, IDN: α = 0.87)	Geographical location (GL)	4.24	1.61	5.20	1.44
	Degree of internationalization (DOI)	3.81	1.76	4.45	1.71
Corporate Strategy (HUN: α = 0.80, IDN: α = 0.89)	Top management commitment (TMC)	5.58	1.52	5.59	1.36
	Cost related pressure (CRP)	5.26	1.39	5.65	1.23
	Operational/economic performance (OEP)	5.43	1.29	5.73	1.09
	Monitoring, evaluation, and development of implementation (MEDI)	5.08	1.47	5.56	1.31

Source: Own Research Result

In our case, only Hungarian data for social pressure factor has a less than 0.7 value of Cronbach's α, although it still can indicate an acceptable level of reliability according to Hulin et al., (2001). Additional control variables contained general information including the location of the company, size of the firm by average number of employees within a one-year operation, their net income within two years of performance, as well as the type of industry sector. Respondents were required to specify their position to verify that they have an important managerial role in their company.

4.6 Results

The mean scores for each sub-factor are included in Table 4.2. The ranks from the highest in importance regarding the driver sub-factors of SCM have been calculated based on the responses of a five or above (%5-7) in the Likert scale. The ranks are listed in Table 4.3 with the sub-factor notation used in Table 4.2.

Table 4. 3. Ranking of Driver Factors

Factor	**Sub-Factor**	**HUN**		**IDN**	
		Rank	**%5-7**	**Rank**	**%5-7**
Market Pressure	ICA	18	34%	9	83%
	CP	5	54%	12	69%

	SIP	14	46%	19	49%
	IP	19	39%	22	39%
	SCMPP	11	44%	17	60%
	ROC	13	38%	10	82%
	G	9	51%	16	62%
	ICS	10	45%	1	90%
Social Pressure	VBN	2	57%	21	44%
	CO	6	53%	20	45%
	DBBP	7	52%	6	82%
Organizational Culture	I	4	58%	3	85%
	ID	8	49%	2	89%
Organizational Characteristic	PSC	3	54%	14	69%
	ISe	12	42%	13	73%
	ISi	15	42%	15	66%
	GL	1	67%	11	69%
	DOI	22	28%	18	51%
Corporate Strategy	TMC	21	30%	7	80%
	CRP	20	36%	5	85%
	OEP	17	41%	4	88%
	MEDI	16	38%	8	83%

Source: Own Research Result

Table 4.4 summarizes the top ten drivers that influence the implementation of SCM. It also includes the results of the F-test statistics and whether there is a significant statistical difference between the two countries in the perception of the importance of the drivers.

Table 4. 4. Top 10 Ranked Drivers

Factor	Sub-Factor	HUN Rank	IDN Rank	F-Test	p-value	Statistical Result
Market Pressure	ICS	1	1	0.01	0.91	No Significant Difference
Organizational Culture	ID	2	2	1.26	0.26	No Significant Difference
Corporate Strategy	TMC	3	7	0.00	0.97	No Significant Difference
Corporate Strategy	OEP	4	4	3.76	0.05	No Significant Difference
Market Pressure	ICA	5	9	2.14	0.15	No Significant Difference
Corporate Strategy	CRP	6	5	5.03	0.03	Significant Difference
Social Pressure	DBBP	7	6	4.62	0.03	Significant Difference
Organizational Culture	I	8	3	12.86	0.00	Significant Difference
Corporate Strategy	MEDI	9	8	7.09	0.01	Significant Difference
Market Pressure	ROC	10	10	10.86	0.00	Significant Difference

Source: Own Research Result

These 10 sub-factors from Table 4.4 (see Table 4.2 for full forms of abbreviations) are the most important factors as drivers to implement SCM. Surprisingly both countries have the same top 10 drivers although in a different ranking order. The improvement of customer satisfaction (ICS) and information dissemination (ID) are the top two drivers in both countries. For the statistical evaluation with one-way ANOVA, the p-value can be used to test the null hypothesis as the variances of the groups, in this case Hungary and Indonesia, are homogenous (Çavuş et al., 2016). It can be statistically stated that there is a significant difference if the p-value < 0.05, which is the alpha universally used in biostatistics, social science, and other parts of the implementation (Gelman, 2013). No statistically significant difference was found from the top 5 factors in Hungary. Those are the ICS, ID, TMC, OEP, and ICA factors.

Table 4. 5. Correlation Matrices for Top 10 Driver Factors

	ICS	ICA	ROC	DBBP	I	ID	TMC	CRP	OEP	MEDI
HUN										
ICS	1.00	0.19	0.58*	0.32*	0.32*	0.62*	0.55*	0.23*	0.31*	0.49*
ICA	0.19	1.00	0.06	0.18	0.29*	0.21*	0.36*	0.35*	0.27*	0.26*
ROC	0.58*	0.06	1.00	0.20*	0.23*	0.40*	0.45*	-0.07	-0.10	0.26*
DBBP	0.32*	0.18	0.20*	1.00	0.30*	0.30*	0.34*	0.41*	0.50*	0.37*
I	0.32*	0.29*	0.23*	0.30*	1.00	0.52*	0.57*	0.16	0.27*	0.54*
ID	0.62*	0.21*	0.40*	0.30*	0.52*	1.00	0.60*	0.23*	0.31*	0.44*
TMC	0.55*	0.36*	0.45*	0.34*	0.57*	0.60*	1.00	0.39*	0.49*	0.57*
CRP	0.23*	0.35*	-0.07	0.41*	0.16	0.23*	0.39*	1.00	0.71*	0.38*
OEP	0.31*	0.27*	-0.10	0.50*	0.27*	0.31*	0.49*	0.71*	1.00	0.53*
MEDI	0.49*	0.26*	0.26*	0.37*	0.54*	0.44*	0.57*	0.38*	0.53*	1.00
IDN										
ICS	1.00	0.67*	0.67*	0.39*	0.54*	0.57*	0.52*	0.45*	0.56*	0.45*
ICA	0.67*	1.00	0.62*	0.46*	0.44*	0.47*	0.53*	0.35*	0.50*	0.40*
ROC	0.67*	0.62*	1.00	0.38*	0.58*	0.52*	0.51*	0.39*	0.53*	0.52*
DBBP	0.39*	0.46*	0.38*	1.00	0.32*	0.28*	0.63*	0.55*	0.58*	0.52*
I	0.54*	0.44*	0.58*	0.32*	1.00	0.63*	0.39*	0.36*	0.45*	0.49*
ID	0.57*	0.47*	0.52*	0.28*	0.63*	1.00	0.35*	0.29*	0.43*	0.42*
TMC	0.52*	0.53*	0.51*	0.63*	0.39*	0.35*	1.00	0.63*	0.68*	0.72*
CRP	0.45*	0.35*	0.39*	0.55*	0.36*	0.29*	0.63*	1.00	0.73*	0.60*
OEP	0.56*	0.50*	0.53*	0.58*	0.45*	0.43*	0.68*	0.73*	1.00	0.76*
MEDI	0.45*	0.40*	0.52*	0.52*	0.49*	0.42*	0.72*	0.60*	0.76*	1.00

Notes: ICS, improve customer satisfaction; ICA, improve competitive advantage; ROC, reputation of corporate; DBBP, direct benefit to business process; I, innovativeness; ID, information dissemination; TMC, top management commitment; CRP, cost related pressure; OEP, operational/economic performance; MEDI, monitoring, evaluation, and development of implementation. *Correlation is significant at the 0.05 levels.

4.7 Conclusion

This study has expanded our prior literature review of driver factors in SCM implementation for SMEs (Setyaningsih et al., 2020) using survey research and by ranking the key drivers in two countries with different geographical structures and SCM environments. The results partly support our underlying hypothesis that the supply chain structure influences the importance of the selected 22 driver factors and their ranking. However, both countries have the same top ten driver factors in implementing SCM (see Table 4.2. for a review of the driver factors of SCM implementation), so the dependence on the SCM specifics is minor for the two compared countries.

This study contributes to the existing theory on the driver factors of SCM implementation. Although the literature has addressed drivers and critical success factors for implementing SCM systems (Leyh and Thomschke, 2015), limited research has been conducted when considering developing countries that have different SCM environments.

This study is also contributing to the managerial level. In practice, SMEs are still having difficulties in implementing SCM strategy. We provided major support by ranking the driver factors that can help allocate the resources of implementation. The top management of companies must keep in mind that these two countries, which have different geographical structures, still have similar top driver factors that influence the SCM implementation in SMEs. Half of the top drivers have no significant difference in top management's perception; those are Improve Customer Satisfaction (ICS), Information Dissemination (ID), Top Management Commitment (TMC), Operational/Economic Performance (OEP), and Improve Competitive Advantage (ICA) factors. Both countries have the same top two drivers, which are ICS and ID, and those drivers have a significant correlation to one another. It means that to implement SCM, the company is required to strengthen its ICS and ID.

Interestingly, the research found that improvement of customer satisfaction (ICS) is the main factor for SCM implementation in SMEs in both countries. The finding is supported by a couple of studies that stated the importance of this factor. A company that has a high value of customer satisfaction is making an impact on day-to-day customer happiness that leads to long-term loyalty maintenance (Heikkilä, 2002; Sun et al., 2005; Sáenz et al., 2017). Customer satisfaction is largely described by attitudinal and emotional response (Ji and Prentice, 2021).

Customer service is the main enabler of customer satisfaction. Competitors' pressure (CP) is another factor that forces a firm to give a better offer to the customer. It can support the company, firstly, by identifying customer requirements and develop strategies, and secondly, by allowing competitors to create a rivalry in the service levels (Sun et al., 2005). Continuous evaluation, improvement, and further implementation (MEDI) have been proven to be the predecessor of customer satisfaction and customer retention (Shokouhyar et al., 2020). It can be done by referring to customer inquiries and complaints, meeting customer satisfaction by changing the specification of current products or services or being innovative (I).

The most important factor that also supports the success of customer satisfaction improvement is information dissemination (ID) (Heikkilä, 2002; Yu et al., 2013; Sáenz et al., 2017). It is known from the results of its study that this factor is the second most important factor that influences SCM implementation in SMEs and influences the achievement of customer satisfaction. SCM links the internal functions within the company and integrates them with the external functions. In this case, suppliers and customers need to manage their information circulation. By exchanging the specific essential information, it can improve the effectiveness of SCM. The more symmetric the information is across stakeholders, the less uncertainty companies have (Shabbir and Kassim, 2018). Specifically, talking about ID, it is classified as crucial and proprietary information. Appropriate information spread across external parties will impact the decrement of operational cost and improve customer service levels such as product development lead times, new product flexibility, and low inventory (Pandey et al., 2010).

These two factors of ICS and ID have no significant differences statistically for the two countries. The results should be generalized in order to be implemented in other SMEs from other different geographical structures. Based on Table 5, it can be concluded that ICS and ID have a significant correlation in both countries. It means that these two factors influence each other so as to implement SCM in SMEs. The correlation value is classified as higher for Hungary compared to Indonesia.

Findings from the current study have further suggestions for the decision-makers in SMEs to implement SCM. The first step is to create an objective for customer satisfaction. The management of companies are required to collaborate with their partners (supplier, distributor,

retailer, etc.) to have a similar objective. Hence, they require managing several operation processes in order to become lean and structured (Jayanth et al. 2020). Manufacturing flexibility is also one of the keys to a successful company. By collaborating with other company partners, management could identify the procedures and activities that are crucial to improve response rate and customer satisfaction (Sáenz et al., 2017). The collaboration itself cannot be separated from information sharing. However, SMEs need to identify their business environment and plans in order to avoid any unnecessary negative impact on the company itself (Kumar et al., 2016). Management requires professional practice to ensure the implementation and development of information and sharing in the support of collaboration.

4.8 Limitation and Further Research

This study compares SMEs in two countries with emerging markets that could extend to other emerging markets or be compared with other market types. The survey utilizes one respondent from each company. Often other decision-makers in top decisions could also be involved. There is an opportunity to increase the sample size by adding other companies from different databases to avoid bias in the results.

The European companies were restrained in providing very detailed information due to the requirements of the General Data Protection Regulation (GDPR) compliance implemented in 2018. Hence several companies avoided participating in this survey, which they thought would break the regulations. Also, this study utilizes only survey research; adding other methodologies such as qualitative interviews and case studies could expand the results.

The findings of this study will motivate further research. The improvement of customer satisfaction proved to be the major driver so it would be beneficial to create a model of SCM implementation based on the sub-factors of this driver. Various sectors of industries may have different preferences toward SCM strategy implementation. It would be beneficial to find industry-specific preferences of driver factors as well as the SCM implementation itself.

5. BARRIER FACTORS OF SUPPLY CHAIN MANAGEMENT IMPLEMENTATION IN SMALL AND MEDIUM-SIZED ENTERPRISES: EVIDENCE FROM HUNGARY AND INDONESIA

5.1 Paper Reference

Setyaningsih. S. and Kelle, P. (2021) 'Barrier Factors of Supply Chain Management Implementation in Small and Medium-Sized Enterprises: Evidence from Hungary and Indonesia', *Economics and Sociology*, 14(4), pp. 73-88, doi:10.14254/2071-789X.2021/14-4/4. (https://www.economics-sociology.eu/?852,en_barrier-factors-of-supply-chain-management-implementation-in-small-and-medium-sized-enterprises-evidence-from-hungary-and-indonesia) – accepted

5.2 Abstract

Small and Medium-Sized Enterprises (SMEs) have major difficulties in implementing Supply Chain Management (SCM) strategy. Previous studies show that different types of industries in size, focus, and location have different SCM implementation problems but there is a lack of research on the effect of supply chain structure. This paper addresses this gap by comparing the barrier factors of SMEs with different supply structures. The survey revealed the ranking of the barrier factors in two countries and analyzes the effect of the different SCM structures. With a more complex supply structure, the Indonesian companies suffer more from their organizational factors as their top barriers in the rank order: inadequate performance measure, and management capacity, lack of inter-departmental cooperation in communication, and unclear organization objective. While Hungarian SMEs, having a simpler supply structure, evaluated that lack of financial resources, employees, knowledge of SCM, and poor commitment from other SCM partners as their top barrier factors. The outcomes of this research provide valuable knowledge to managers in priorities of SCM strategy implementation depending on the complexity of their supply structure.

Keywords: Strategy implementation, supply chain structure, survey, statistical analysis.

JEL Classification: M10, O57, L26

5.3 Introduction

Since the emergence of Supply Chain Management (SCM) in the 1980s scholars and practitioners have utilized this term continuously either for their research as well as in business practice (Manzouri et al., 2010). The concept of SCM can be summarized in five words, plan, source, make, deliver, and return. The procedure is interconnecting ultimate suppliers and customers (Blanchard, 2007). On the other hand, the SCM can be defined as a process to fulfill customer requests with several functions such as managing the flow of products, information, and funds (Chopra and Meindl, 2015). Several successful SCM strategies that can be applied by the companies include (1) market saturation driven, (2) agile operational company, (3) freshness oriented, (4) logistic optimizer, (5) customer customizer, and (6) trade-focused (Bowersox, 2002). A strong SCM implementation results in several benefits such as an accurate forecasting process, reduced inventory level, improved planning, and scheduling, decreasing lead time, reduced logistic costs, and improved utilization of resources (Koech and Ronoh, 2015).

Despite all the important benefits mentioned above, many organizations, especially SMEs, are continuing to face barrier factors that prevent them from implementing the SCM strategy (Parmar and Shah, 2016). Resource gaps have been found in small enterprises such as lack of financial resources, skills, knowledge, technology, and employees. Consequently, the management of small enterprises depends on the suppliers or consumers that already had strong access to those resources (Chin et al., 2012). The limitations of resources also include the quality and time that are crucial to measuring the waste of performance efficiency (Thakkar et al., 2009).

SMEs are the critical actors in the level of regional and national development in most countries. In Europe, SMEs represent 99% of all European Union (EU) enterprises and employed 100 million people. SMEs are very important in maintaining competitiveness and prosperity in Europe, economic and technological independence, and resilience to external shocks (European Commission, 2021). In addition, SMEs are also managing several problems in rural areas such as high unemployment level and increase income level (Straka et al., 2015). The European Commission's priorities are supporting SMEs including monetary expansion, improving employment innovation, and maintaining economic and social consistency (Keskin et al., 2010). In Southeast Asia, SMEs have been classified for 97.2% of all enterprises, 69.4% of the national workforce, and 41.1% of a country's gross domestic product (GDP) (ADB,

2020). Apart from economic development, SMEs are also the foundation of the invention and throughput improvement (Herr and Nettekoven, 2017). Therefore, having SCM strategies in the organization, will support the increment of profit and impact the country's economy.

The objective of this article is to analyze the barrier factors of SCM implementation in emerging markets with different supply structures. The barrier factors have been categorized based on a literature review. The study also aims to reveal the ranking of these factors within the emerging market itself. To measure the difference of perception towards these barriers a questionnaire was distributed to several SMEs in Hungary and Indonesia. These two countries have different geographical structures that may influence SCM strategy implementation. Hungary is a small landlocked country still with water connections. In the capital city of Budapest, the Danube River crosses in the middle of the city, an artery, traversed by bridges and transporting barges and boats (Alvarez, 2021). Indonesia is categorized as an archipelago country expanding around the equator and covers a distance comparable to one-eighth of Earth's perimeter (Legge, 2021).

This article contains five sections: (1) literature review of barrier factors of SCM implementation, (2) methodology of the study from data collection to the analysis tools evaluating the results, (3) comparison results from the managerial point of view regarding the barrier factors of SCM implementation, (4) discussion of the implication of results to theory and practice, and (5) conclusion with limitations and future research opportunities.

5.4 Literature Review

The rapid rate of change in global markets causes many companies to work hard to be more responsive, try to meet customer needs and requirements for higher value-added products and services (Agus, 2015). The implementation of SCM has become an integral part and essential to a company's success and customer satisfaction. The reason is that this strategy has the power to boost customer service, reduce operating costs and improve the financial status of the company (Kleab, 2017). The goal of SCM is to provide the right product at the right time in the right quantity and quality in the right status to the right location (called 6R) minimizing the total cost (Wei and Xiang, 2013). Despite emerging benefits that a company can get from SCM, different barriers prevent companies from implementing SCM successfully.

5.4.1 Barriers of SCM

Several studies have examined challenges that hinder SMEs from implementing SCM (Mafini, 2016; Manzouri et al., 2010; Dubihlela and Omoruyi, 2014). Govindan et al., (2013) divided the factors into five groups: organizational, financial, technology, knowledge, and outsourcing. The barriers of SCM implementation in SMEs are different from those of large enterprises. For SMEs, the personal views of owners are also becoming a factor that influences a company's performance, especially to initiate a new strategy for better results.

The organization is defined as a stable association of people engaged in concerted activities, stress over commonalities, and overlook diversity to achieve the goal (Wu, 2008). The organization itself is classified as an internal barrier factor of SCM implementation. Employees' SCM competencies and organizational SCM knowledge positively influence the successful SCM performance in a similar magnitude (Flöthmann et al., 2018), complemented by the resistance of changing from the employees (Kot et al., 2018). The interconnection between one party and another to exchange several resources is the foundation of achieving SCM's goals for customer satisfaction (Chopra and Meindl, 2015). Therefore, the lack of commitment from suppliers to exchange resources and deprived connection between departments inside the organization will influence the success of SCM implementation (Talib et al., 2011; Teller et al., 2016; Zachariassen and Liemp, 2010). Furthermore, the implementation can be more successful having the full support from top management (Majumdar and Sinha, 2018; Talib, et al., 2011). If the company initially does not have an SCM strategy, there is resistance from the whole management to start something new due to the complexity to install it (Manzouri et al., 2010; Halldórsson et al., 2008).

The success of an organization lies in how it can prioritize the money for the important stuff in the organization (Delkhosh and Mousavi, 2016). This is the reason why finance also becomes the barrier factor of SCM implementation as one of the key resources deficient for SMEs (Parmar and Shah, 2016). It is in line with Hoberg et al. (2017) affirming that inventory control is affected by financial constraints and the cost of capital for the company. At the beginning of SCM implementation, the company needs to adopt innovative technologies and strategies to stay competitive in the market. To install the technology that can connect with other

parties needs a high financial investment from the beginning. Supply chain performance is a mediator factor towards the linkage between SCM and financial optimization according to Agus (2013). All in all, companies will achieve their financial goals through SCM implementation.

Several studies have been conducted related to knowledge management (KM) in SCM (Marra, 2012; Salazar et al., 2017). Companies' leadership is the driver of the SCM system. SCM knowledge that is possessed by the leader will be inspired and elevated to a senior management position (Terziovski and Hermel, 2011). There was a lack of understanding of the importance of SCM, which is shown in Huber and Sweeney (2007) based on the sample of Ireland's small firms, in which only 25 percent adopted SCM program, and only 9 percent of them have a dedicated supply chain or logistics manager. The gaps in SCM understanding are connected to the awareness of key supply chain costs. The low awareness of the SCM also resulted in low employee motivation and involvement towards its implementation (Gorane and Kant, 2015).

To accommodate the flow of resources between the companies and trading partners or suppliers, information technology companies are developing numerous software tools (Ruppel, 2004). There is a small number of SMEs that can have the latest information systems or technology because of the expensive updates (Gorane and Kant, 2015). It is hard for SMEs to have a fast response in changing their current technology to a new one (Govindan et al., 2013). Other barrier factors include the fear of failure and the age-based self-image of entrepreneurs as mentioned in Yasir et al. (2018).

Outsourcing is a strategic development that creates integration with the company's partners (Borgström and Hertz, 2010). Supplier as a partner in the day-to-day process of integration has a key role in SCM implementation. However, the cooperation is not always smooth. Lack of standards between the two companies is becoming one of the barriers to collaborating (Ozen et al., 2020), including a customer satisfaction index (Gorane and Kant, 2015). To have a successful integration with partners, all parties need to build strong trust and commitment along with power, communication, uncertainty, and performance (Paluri and Mishal, 2020). Therefore, they need to understand the requirement of risk-sharing to implement SCM, not only the rewards such as more benefit, more demand, less production cost, etc. (Tse et al., 2018).

5.4.2 Gap in Barrier Factor Research

In barrier factor research most research is on large enterprises in developed countries. One of the studies from Fawcett et al. (2008) conducted a quantitative and qualitative analysis in the USA regarding benefits, barriers, and bridges to successful collaboration in the strategic supply chain. They utilized 3 types of methods to gather the data such as literature review, cross-functional mail survey as well as in-depth case analysis. The study reveals that customer satisfaction and service are perceived as more important than cost savings. All managers agreed that technology, information, and measurement system are the major barriers to successful supply chain collaboration. Manzouri et al. (2010), Rahman et al. (2011), and Parmar and Shah (2016) are focusing on the analysis of barrier factors of SCM implementation. SMEs perceived SCM as a strategic tool for achieving customer satisfaction by higher investment in advanced information technology according to Kumar et al. (2015). Parmar and Shah (2016) reviewed 33 articles on the specific issue of finding barrier factors of SCM implementation. They group the barrier factors into five categories: strategic, individual, cultural, technology, and organizational barriers. Sajjad et al. (2019) used the interview method to gather information from 29 senior managers of New Zealand-based companies about the internal and external barrier factors of SCM implementation. The internal factors are the financial, organizational structure, and company behavior. The external factors are the supply and demand-side obstacles, government regulations, and cultural issues. Meehan and Muir (2008) evaluated the barriers to SCM implementation in the UK. They gathered responses by a questionnaire from 60SMEs and found that most of them agreed that lack of trust among SCM members, lack of employees' knowledge, and geographical distance from customers and suppliers were the main barrier factors of SCM implementation.

Only a few articles are specific for SMEs context for developing countries. We summarize them next. Dubihlela and Omoruyi (2014) utilized face-to-face interviews in South Africa using structured questions and successfully gathered 249 usable questionnaires. The main result is that SCM is not well adapted for SMEs in developing countries due to their size and shortage of investment in technology. Therefore, economies of scale, organizational structure, and technological challenges have a negative direct impact on the SCM implementation. Another research in South Africa conducted by Masete and Mafini (2018) found a slightly different

result. By managing qualitative interviews in 17 universities, they found that stakeholder buy-in, knowledge of SCM, supply chain systems and processes, procurement policy and practices, stakeholder change management, human resource management, and organizational culture are the barrier factors to implement SCM. Two studies were conducted in the developing country of India. Jayant and Azhar (2014) classified the barrier factors of SCM implementation by interviewing various department managers, successfully gathering 138 responses revealing that market competition and lack of top management support were the top barriers to implement SCM. On the other hand, Govindan et al. (2013) gathered the data from interviews with industrial experts in Indian manufacturing industries finding that the lack of technology is the most crucial obstacle to implement SCM strategy. Different type of research has been conducted by Manzouri et al. (2010) comparing manufacturing companies in two countries (Malaysia and Iran) and analyzed the barrier factors of SCM implementation. They surveyed 132 automotive companies and found similar obstacles in both countries such as lack of expertise and lack of awareness about SCM which became a major limitation to use SCM strategies.

Based on several studies mentioned above, different types of industries in size, focus, and location have different barriers related to SCM strategy implementation. Therefore, this study is essential in focusing on SMEs in developing countries and compares two of them with different SCM structures (Hungary and Indonesia). This paper addresses the gap through the identification of barrier factors by literature review and grouping them, conducting a survey, analyzing the perceptions about the barriers of SMEs, ranking, and comparing the barriers in Hungary and Indonesia.

5.5 Research Methodology

5.5.1 Survey Strategy

This study is based on a semi-closed survey where the questionnaire was distributed online. It has the advantage of a low budget and short duration and can easily plot the result by chart or graph with the ability to see real-time data (Nayak and Narayan, 2019). Historically, the survey research successfully applied in a large population of data gathering (Ponto, 2015). For this paper, we accommodate an online questionnaire with 33 questions regarding the barriers of SCM implementation in SMEs. Google form was used with two different links based on

countries. For Indonesian respondents, the link is https://bit.ly/3enp12x-DriversandBarriersSCMIndonesianVersion, and for Hungarian respondents https://bit.ly/3fjbIBh-DriversandBarriersSCMHungarianVersion. The questionnaire was distributed online from September to December 2020 to top managers of Hungarian and Indonesian SMEs. The authors achieved 105 responses from Hungarian SMEs and 124 from Indonesian SMEs (see Figure 5.1.).

Figure 5. 1. Sample Demographic Hungary and Indonesia

Source: Own Research Result

The validity of the construct measurements is assessed in several ways such as factor analysis and measurement indicator reliability.

5.5.2 Measurement and Analysis Plan

The first eleven survey questions contain the basic information about the respective SMEs, including the location of the company, their product or service, the number of employees, net income in the past two years, and the respondent's job title in the company. The main 22question items (see Table 5.1.) are evaluated on a seven-point Likert scale ranging from 1 = Not at all barrier, to 7 = Serious barrier. For the validity of the questions, Cronbach's α confirms the reliability (Huang, et al., 2015). Furthermore, to assess convergent validity (CV), we calculated Factor Loading (FL), Composite Reliability (CR), and Average Variance Extracted (AVE) measures in Table 5.2.

To analyze the results, descriptive analysis is utilized by engaging with the statistical software of Statistic Product and Service Solution (SPSS) version 20. Table 5.1. contains the means, standard deviations, and Cronbach's α. ANOVA was utilized to detect differences

between experimental group means, in this case between Hungarian and Indonesian SMEs (Sawyer, 2009) in Table 5.4. While analyzing the data, the items require to be coded in SPSS. Consequently, 22 items (sub-factors) were labeled based on each barrier according to the group factors, for example, Org1, K2, OS2, etc. (see Table 5.1.).

5.5.3 Data Collection

The online questionnaire was pursued to the owners, directors, managers, senior employees as well as consultants who handle SMEs and understand SCM strategy. The target respondents are from two countries, Hungary, and Indonesia. To select the population, the authors targeted the government directory of the Hungarian Chambers of Commerce and Industry (https://mkik.hu/en), which publishes a list of around 1700 SMEs. In Indonesia, the sample was selected from Akseleran company (https://www.akseleran.co.id/), one of the crowd founding peers to peers lending companies in Indonesia that are connected to SMEs and has a list of around 300 SMEs. Besides, personal networking and the author's connection with other SMEs were also included.

A cover letter was attached to the questionnaire explaining the purpose of the study and the contents of the survey questionnaire. The data collection has been conducted within 4 months (September to December 2020). The authors achieved 105 responses from Hungarian SMEs and 124 from Indonesian SMEs (see Table 5.2.) representing a response rate of 11% for Hungary and 41% for Indonesia.

5.6 Data Analysis

5.6.1 Measurement Model Assessment

To ensure that the construct measurements have sufficient quality, the measurement model is assessed in several ways such as factor analysis and measurement indicator reliability. The construct reliability calculation is based on Cronbach's α value. It can be seen from Table 5. 1. that each factor has a Cronbach's α greater than or equal to 0.7, suggesting that the factors are acceptable or reliable in terms of their construct for both countries.

Table 5. 1. Construct Measures Reliability

FACTOR	SUB FACTOR	HUN		IDN	
		Mean	**Std.Dev**	**Mean**	**Std.Dev**
Organization (HUN: α = 0.895, IDN: α = 0.922)	Lack of training courses/ consultancy/institutions to train, monitor/mentor progress specific to each industry (Org1)	3.83	1.55	4.77	1.55
	Poor supplier commitment/unwilling to exchange information (Org2)	4.43	1.55	5.29	1.44
	Lack of Inter-departmental co-operation in communication (Org3)	4.00	1.97	5.34	1.41
	Lack of involvement from top management (Org4)	3.82	2.01	5.14	1.52
	Inadequate management capacity (Org5)	4.13	1.69	5.34	1.38
	Big effort to change organizational strategy (Org6)	4.02	1.68	5.08	1.43
	Unclear organization objective (Org7)	4.26	2.05	5.32	1.57
	Inadequate performance measure (Org8)	4.23	1.79	5.35	1.32
Financial (HUN: α = 0.924, IDN: α = 0.867)	Financial constraint (F1)	4.59	1.57	5.12	1.82
	High investments and less return-on-Investments (F2)	4.42	1.61	5.06	1.64
	High implementation and maintenance cost (F3)	4.37	1.77	5.17	1.47

Knowledge (HUN: α = 0.923, IDN: α = 0.925)	Lack of supply chain management knowledge exposure to employee (K1)	4.47	1.67	4.98	1.49
	Lack of awareness and participation in supply chain management (K2)	4.32	1.64	5.16	1.46
	Lack of motivation and employee involvement (K3)	4.49	1.65	5.30	1.44
Technology (HUN: α = 0.799, IDN: α = 0.881)	Lack of new technology, materials and processes (T1)	4.04	1.57	4.75	1.63
	Current practice lacks flexibility to switch over to new system (T2)	4.00	1.65	4.86	1.53
	Lack of human resources (T3)	4.67	1.62	5.25	1.40
	Fear of failure (T4)	3.27	1.72	4.90	1.80
Outsourcing (HUN: α = 0.876, IDN: α = 0.933)	Lack of standard supply chain management system to collaborate with suppliers (OS1)	3.70	1.62	4.74	1.64
	Lack of Customer Satisfaction Index (OS2)	3.74	1.70	5.22	1.51
	Lack of Trust among supply chain management partners (OS3)	3.88	1.80	5.10	1.54
	Unwilling to share risk and rewards between Supply Chain Management partners (OS4)	3.90	1.76	5.17	1.46

Source: Own Research Result

Furthermore, to assess convergent validity (CV), we calculated Factor Loading (FL), Composite Reliability (CR), and Average Variance Extracted (AVE). CV refers to the extent to which a test measures the same thing as other tests intended to measure that construct (Thoma et al., 2018). It is assessed by examining the AVE that provides the total of the variance that a

construct gain from its items concerning the amount of the variance due to the measurement error (Fornell and Larcker, 1981). In Table 5.2., all the AVEs for the two countries are greater than 0.50 at the construct level. It suggests that the discriminant validity of constructs has been established.

Table 5. 2. Construct Measures Validity

FACTOR	SUB FACTOR	HUN			IDN		
		FL	CR	AVE	FL	CR	AVE
Organization	Org1	0.846	0.90	0.54	0.697	0.89	0.50
	Org2	0.772			0.563		
	Org3	0.609			0.671		
	Org4	0.686			0.773		
	Org5	0.732			0.767		
	Org6	0.699			0.612		
	Org7	0.761			0.803		
	Org8	0.725			0.759		
Financial	F1	0.819	0.88	0.71	0.875	0.79	0.57
	F2	0.878			0.821		
	F3	0.832			0.522		
Knowledge	K1	0.776	0.77	0.53	0.677	0.77	0.52
	K2	0.748			0.718		
	K3	0.654			0.771		
Technology	T1	0.768	0.80	0.50	0.766	0.81	0.52
	T2	0.79			0.854		
	T3	0.567			0.647		
	T4	0.689			0.573		
Outsourcing	OS1	0.557	0.81	0.51	0.679	0.84	0.57
	OS2	0.735			0.802		
	OS3	0.748			0.792		
	OS4	0.806			0.752		

Source: Own Research Result

Having evaluated the measurement model and assessed its result, data evaluation can be continued with ANOVA as well as the top-ranked barrier in each country which is related to the country's characteristics.

5.6.2 Descriptive Analysis

The mean score for each item was already specified in the previous Table 5.1., hence in below Table 5.3., the rank of the means has been measured from the lowest in importance to the highest (RANK). Furthermore, (%5-7) means the response ranking that is calculated from the percentage of respondents that respond to the survey items a five or above (important barrier or above).

Table 5. 3. Item Rankings of Barriers of SCM Implementation

FACTOR	SUB FACTOR	HUN		IDN	
		RANK	%5-7	RANK	%5-7
Organization	Org1	18	34%	20	60%
	Org2	5	54%	6	77%
	Org3	14	46%	3	77%
	Org4	19	39%	12	76%
	Org5	11	44%	2	80%
	Org6	13	38%	15	74%
	Org7	9	51%	4	77%
	Org8	10	45%	1	79%
Financial	F1	2	57%	13	68%
	F2	6	53%	16	68%
	F3	7	52%	10	71%
Knowledge	K1	4	58%	17	63%
	K2	8	49%	11	69%
	K3	3	54%	5	75%
Technology	T1	12	42%	21	56%

Technology	T2	15	42%	19	62%
	T3	1	67%	7	73%
	T4	22	28%	18	57%
Outsourcing	OS1	21	30%	22	57%
	OS2	20	36%	8	73%
	OS3	17	41%	14	68%
	OS4	16	38%	9	72%

Source: Own Research Result

The result from this study can support the managers to implement better the SCM strategy in their organization by appropriate priority and resource allocation. Nearly 70 percent of the technology factor score for “Lack of Human Resource” (T3) a five or higher identified as the top barrier for Hungarian SMEs. On the other hand, Indonesian leaders identified “Inadequate Management Capacity” (Org5) and “Inadequate Performance Measures” (Org8) are the top barrier of SCM implementation for SMEs. It received a 79 percent score (Org5) and an 80 percent score (Org8). Overall, the top barrier factors of SCM implementation were identified to be relatively different based on each country. It is possibly due to different types of country’s characteristics.

Based on the top 5 barrier factors to implement SCM in those 2 countries, we would like to see whether it has a statistically significant difference or not. Using one-way ANOVA will create a p-value that can be used to test the null hypothesis if the variances of the groups in this case Hungary and Indonesia are homogenous (Çavuş et al., 2016). The significance level is shown when the p-value < 0.05 of alpha (0.05 is universally used as border value for several practices including biostatistics, social science, and other implementations, Gelman, 2013). It resulted that all those 5 top factors have statistically significant differences between those countries. It supported the statement where the barrier in each country can be varied regarding SCM implementation.

Table 5. 4. Top 5 Barrier Factors of SCM Implementation

FACTOR	SUB FACTOR	HUN RANK	IDN RANK	F-Test	p-Value	Statistical Difference Result
Organization	Org8	10	1	29.42	1.5E-07	Significant
	Org5	11	2	35.25	1.1E-08	Significant
	Org3	14	3	35.71	8.8E-09	Significant
	Org7	9	4	19.82	1.3E-05	Significant
Knowledge	K3	3	5	15.84	9.3E-05	Significant
Technology	T3	1	7	8.53	0.00384	Significant
Financial	F1	2	13	5.48	0.02008	Significant
Knowledge	K1	4	17	6.12	0.0141	Significant
Organization	Org2	5	6	19.04	1.9E-05	Significant

Source: Own Research Result

5.7 Discussion and Conclusion

5.7.1 Managerial Implication

The survey revealed that the ranking of the barrier factors in the two countries are statistically different that may be caused by the different SCM structures. Indonesian companies suffer more from their organizational factors as their top-ranked barriers show while Hungarian companies evaluated that lack of financial resources, employees, knowledge of SCM, and poor commitment from other SCM partners as their top barrier factors.

Four of the top-ranked barriers for Indonesian SMEs are in the Organization factor group in the rank order: Inadequate performance measure (Org8), Inadequate management capacity (Org5), Lack of Inter-departmental cooperation in communication (Org 3), and Unclear organization objective (Org7). These top barriers are based on internal system problems. This ranking is also supported by the effects of government policy toward SMEs. The Indonesian government has taken an action to empower SMEs from 1966-1988. The government assisted SMEs in numerous plans, such as capital or credit schemes support, technical assistance, and

large corporate partnerships (Maksum et al., 2020). The government support accelerated the activity of SMEs by simplification of the licensing procedure to start a business, permit fee relief for SMEs' establishment, simplification of tax administration, and provision of special allocation funds. The government is also trying to increase business opportunities for SMEs with supply chain partnerships (Kemenkeu, 2020). Indonesia's government has already supported 100% of the collaboration in SCM. Hence, the main problem is inside the organization. This finding has implications for owners and managers to solve the internal problems, start to commit, and set a goal related to the implementation of SCM strategy emphasizing its several advantages.

The Lack of motivation and employee involvement (K3) is the fifth-ranked barrier in Indonesia. The limited number of human resources is a common issue for SMEs in Indonesia. Therefore, apart from focusing on the internal organization, managers should shape and strengthen employees' mindset to always being innovative. The study from Games and Rendi (2019) found out that knowledge management and risk-taking are the ways to lower negative innovation results. The finding is also in line with the research from Hamdani and Wirawan (2012) that focuses on the open innovation framework. They resumed that the innovative supply chain framework can be one of the ways to succeed and sustain Indonesian SMEs.

Contrary to Indonesia, the top barriers of Hungarian SMEs are in several different factor groups. Lack of human resources (T3) as a part of the technology factor is the first-ranked barrier of SCM implementation. Based on the European Commission report (2020), in the economically active population, only 4.4 million people were employed. The qualified workforce has several advantages to work in larger enterprises, government institutions, rather than SMEs so they have shortages in qualified human resources.

Financial constraint (F1) is the second-ranked barrier factor in Hungary. The Lack of motivation and employee involvement (K3) is the third-ranked barrier in Hungary. This is the only barrier that is also top ranked in Indonesia (# 5). Like the Indonesian government, the EU also subsidies to the economic development of Hungarian SMEs, in specific Structural Funds and the Cohesion Fund were available in the 2007–2013 period. Even though SMEs thought that this subsidy is still not enough to implement the SCM strategy. However, it was found that

this fund had a substantial positive impact on the number of workers, sales income, gross value added as well as operational revenue (Banai et al., 2020).

Lack of supply chain management knowledge exposure to employees (K1) is the fourth-ranked barrier in Hungary. Hungarian SMEs can slowly invest in SCM either in the knowledge of SCM for their employee or in the technology. There is also a supporting statement from the study of Vécsey and Shehu (2016) that Hungarian SMEs have easier access to get a bank loan. There is strong advice from previous research that the Hungarian government needs to enhance the socio-economic element of the entrepreneurial atmosphere, having more entrepreneurial education, workshop, and conferences (Fogel and Zapalska, 2001).

Concerning the organization factor, it turns out that lack of commitment or unwillingness to share the information from the supplier (Org2) was classified as the fifth top barrier factor in Hungarian SMEs implementing SCM. This can be classified as an external system barrier. To have better information sharing, companies need strong trust. However, to strengthen trust, parties require a contractual-based partnership and sharing information decrease the partner's uncertainty behavior (Kwon and Suh, 2005; Shin et al., 2019). It is important to the top management level to prioritize their actions to improve the implementation of SCM in their business strategy based on the finding that has been achieved in this study.

The SMEs´ top managers in Hungary and Indonesia can prioritize their actions to improve the implementation of SCM strategy based on the findings of this study. These findings could also provide a benchmark to SMEs in other countries with different complexities in their supply structure. Indonesia has several types of transportation such as land, sea, and air transportation that categorize the complexity. The simpler the supply chain structure of a country, the more similarity it has with the Hungarian scheme rather than Indonesian, and vice versa.

5.7.2 Future Research and Limitation

The current study has several limitations. Firstly, it seems that the differences in supply chain structure might have a major effect on the ranking of the barrier factors of SCM implementation. This study delivers some understandings from Hungary and Indonesia with distinct characteristics, especially in their geographical structure that influences the SCM structure. Adding more countries might provide support or reject the hypothesis. Secondly, even though

the best visions come from the top-level managers of the companies, the insights from the middle and lower levels of management could enrich the information and strengthen the results of the study. Thirdly, this study is utilizing an online questionnaire and literature review methodology. Additional qualitative methods including interviews or case studies could extend the findings. On the other hand, a conceptual framework study can find how the different barrier factors influence each other regarding the success of SCM implementation. Further research could provide insight from the government's point of view why despite major governmental support, SMEs are still deficient in implementing SCM strategies.

6. CONCLUSION

6.1 Review

Supply Chain Management (SCM) has the potential to make a significant contribution to the global economy, it allows the organization to compete favorably both domestically and internationally. The dissertation evaluated the driver and barrier factors of SCM implementation for Small and Medium-Sized Enterprises (SMEs) contributing to the theory and practice of SCM implementation. We focused on SMEs because of their business value (around 90% of all businesses in several countries) and difficulties of SCM implementation compared to Large Enterprises (LEs). In the first step of the research, we created survey questions on the current implementation of SCM, then listed the types of SME methodologies SMEs can utilize.

The implementation and methodologies may be different, depending on the supply chain structure. We chose Hungary and Indonesia as the sample for two different supply chain structures to compare. In Chapter 2, this research question was examined. A study titled "Comparison of Supply Chain Management (SCM) Adoption at Small and Medium-Sized Enterprises (SMEs): A Review from Hungary and Indonesia" was presented. In this journal publication, we also attempted to compare and contrast the implementations of Large Enterprises (LEs) and SMEs. Several findings are discussed in this work, including:

1. In comparison to Hungary's SMEs, which have mostly changed their organization plan in the last two or three years, the majority of Indonesia's SMEs changed their organization strategy more frequently.
2. Indonesia´s SMEs have implemented more SCM tools compared to Hungary´s SMEs. However, LEs implemented the most SCM tools in both countries.
3. SCM interpretation was seen by SMEs and LEs in Hungary and Indonesia as inter-enterprise value chain collaboration between suppliers, their own organization, and customers.
4. In terms of the methodologies that companies often utilize, SMEs in Hungary and Indonesia are more likely to use VMI to interact with suppliers and JIT to collaborate with customers.

Despite the fact that only two countries are included, the study's findings can be used as a starting point for further research. Meanwhile, the sample in these two countries is primarily made up of SMEs, with fewer LEs. Furthermore, the enterprises profiled in this journal study focused on a specific region in each of the two countries, such as West Java in Indonesia and Budapest in Hungary where most businesses are located. The countries' other regions are underrepresented.

If we evaluate the second finding considering the previous results, we may look into the reason why SMEs aren't utilizing the SCM strategy more. What kind of motivators and impediments do they face in implementing SCM? The study of this question was discussed in Chapter 3 based on the conference paper with the title ″Driver and Barrier Factors of Supply Chain Management for Small and Medium-Sized Enterprises: An Overview″. We went deeper into the existing research in those areas to draw conclusions.

We used literature research methodology to identify the relevant papers. Finding the proper sources is one of the most significant components in obtaining a good outcome for this study. We decided to conduct our investigation using Proquest and Science Direct databases. The difficult aspect of finding literature answering our objectives was to determine the correct and specific keyword combinations in the first stage of the investigation.

In the end, we used 5 keyword combinations to find the papers contained in those two platforms. Those were barrier and supply chain, challenges and supply chain, driver and supply chain, adoption and supply chain, supply chain, and small and medium-sized enterprise. Even though we applied only five keyword combinations, we retrieved around 838 related articles. The number of these articles was too large to evaluate all of them, the authors did second and third selection by removing duplication and by abstract judgment. We investigated the correlation of the articles with the research question. Therefore, finally we reduced the number of articles from 838 to 54 articles. Those papers covered all the driver and barrier factors of SCM implementation in SMEs.

Despite the fact that the literature search had limitations, such as the use of only English literature and two research platforms, it could produce a captivating outcome identifying 5 factors and 22 sub-groups for both driving and barrier factors. The study's findings are summarized as follows:

Table 6. 1. List of Driver Factors of SCM Implementation

DRIVER FACTORS	
Market Pressure	Improve competitive advantage
	Competitor's pressure
	Shareholder/Investor Pressure
	Institutional pressure
	SCM partners' pressure
	Reputation/image of corporate
	Globalization
	Improve customer satisfaction
Societal Pressure	Value-based networks
	Consumer organization
	The direct benefit of the use of its system to the process business
Organizational Culture	Innovativeness
	Information dissemination
Organizational Characteristic	Position in supply chain
	Industrial sector
	Size
	Geographical location
	Degree of internationalization
Corporate Strategy	Top management commitment
	Cost related pressure
	Operational/economic performance
	Monitoring, evaluation, and development of implementation

Table 6. 2. List of Barrier Factors of SCM Implementation

BARRIER FACTORS	
Organization	Absence of training classes/ consultancy/ supervise progress
	Inadequate supplier commitment/ reluctant to share information
	Inadequate of Inter-departmental coordination in communication
	Inadequate of involvement of top management in adopting Lack of management capacity
	Big effort to change organizational strategy
	Unclear organization objective
	Inadequate performance measure
Financial	Financial constraints
	High investments and less ROI (Return on Investments)
	Superior execution and preservation cost
Knowledge	Inadequate of SCM system exposure to experts
	Lack of awareness and participation on SCM
	Lack of motivation and employee involvement
Technology	Lack of new technology, materials, and processes
	Recent exercise inadequate of the flexibility to change into new system
	Lack of human resources
	Fear of failure
Outsourcing	Lack of standard SCM system to collaborate with suppliers
	Lack of Customer Satisfaction Index
	Lack of Trust among SCM partners
	Unwilling to share risk and rewards between SCM partners

Source: Own Research Result

These research findings were used as the primary motivation for two more studies, which were discussed in two chapters. Chapter 4 focuses on the driver factors based on the journal paper with the title ″Cross-Country Analysis of Supply Chain Management Drivers for Small and Medium-Sized Enterprises″. Next, Chapter 5 is focused on the barrier factors based on the journal paper with the title ″Barrier Factors of Supply Chain Management (SCM) Implementation in Small and Medium-Sized Enterprises: Evidence from Hungary and Indonesia″.

The main research question for both chapters is related to the importance ranking of the factors in SCM implementation in SMEs. Because of the limited resources, the companies need to know how to prioritize their activities to improve the execution of the SCM strategy. We did a comparison between Hungary and Indonesia to see the effect of different SCM environments. When we conducted the survey, we prepared a set of questions that addressed both driver and barrier variables. We calculated the internal consistency and reliability. The findings of this research were separated into two separate journal papers.

Based on the mean evaluation score we prepared the ranking of the drivers. The respondents have presented the answers on a 7-point Likert scale. With a Cronbach's coefficient of more than 0.7, all driver and barrier factors were deemed acceptable. Only Hungarian data for social pressure as a driver factor has less than 0.7 value but still can be considered reliable according to Hulin et al., (2001).

Based on the analysis, the top 10 driver factors of SCM implementation for SMEs:

Table 6. 3. Top 10 Driver Factors of SCM Implementation

Factor	Sub- Factor	HUN Rank	IDN Rank
Market Pressure	Improve customer satisfaction (ICS)	1	1
Organizational Culture	Information dissemination (ID)	2	2
Corporate Strategy	Top management commitment (TMC)	3	7
Corporate Strategy	Operational/economic performance (OEP)	4	4
Market Pressure	Improve competitive advantage (ICA)	5	9
Corporate Strategy	Cost related pressure (CRP)	6	5
Social Pressure	Direct benefit to business process (DBBP)	7	6
Organizational Culture	Innovativeness (I)	8	3
Corporate Strategy	Monitoring, evaluation, and development of implementation (MEDI)	9	8
Market Pressure	Reputation/image of corporate (ROC)	10	10

Source: Own Research Result

If we examine closely, we can see that the top ten factors in both countries are the same. The distinction is found only in the rank order. It indicates that both countries share the same factors but with a different importance ranking. Improve customer satisfaction (ICS) and Information dissemination (ID), in particular, were ranked first and second in both countries.

The management of SMEs thought that SCM can improve customer satisfaction and be able to disseminate the information. Heikkilä, 2002; Sun et al., 2005; Sáenz et al., 2017 found that a company's high value of customer satisfaction has an impact on day-to-day customer happiness, which leads to long-term loyalty. Concerning the ID, it is possible to improve the effectiveness of SCM by communicating certain vital information. The less uncertainty firms have, the more symmetric is the information sharing among stakeholders (Shabbir and Kassim, 2018). We demonstrated that there is a substantial correlation between ICS and ID for both countries. It means that in order to deploy SCM, the company's ICS and ID must be strengthened.

Based on the evaluation of the barrier factors, herewith the top 5 factors are:

Table 6. 4. Top 5 Barrier Factors of SCM Implementation from Two Different SCM Structure (Hungary and Indonesia)

FACTOR	SUB FACTOR	HUN RANK	IDN RANK
Organization	Inadequate performance measure (Org8)	10	1
	Inadequate management capacity (Org5)	11	2
	Lack of Inter-departmental co-operation in communication (Org3)	14	3
	Unclear organization objective (Org7)	9	4
Knowledge	Lack of motivation and employee involvement (K3)	3	5
Technology	Lack of human resources (T3)	1	7
Financial	Financial constraint (F1)	2	13
Knowledge	Lack of supply chain management knowledge exposure to employee (K1)	4	17
Organization	Poor supplier commitment/unwilling to exchange information (Org2)	5	6

Source: Own Research Result

In contrast to driver factors, the results for barrier factors are a little more scattered. We can't do a standardized formula of barrier factors on a greater scale because of this difference. It could refer to the peculiarities of each SCM environment. According to the chart above, the majority of the top five barrier factors for Indonesia are related to the organization factor, inadequate performance measure (Org8) emerging as the most significant barrier factor. On the

other hand, Hungary had a more erratic barrier from several factors such as human resource (T3), financial constraint (F1), motivation and employee involvement (K3), SCM knowledge exposure to the employee (K1), and poor supplier commitment/unwillingness to exchange information (Org2). Based on the outcomes of its studies, the senior managers of SMEs in Hungary and Indonesia can prioritize their activities to improve the execution of the SCM strategy.

6.2 Managerial Implication

The findings of the driver and barrier factors research, which are provided in Chapters 4 and 5, give an insight into the top management level of SMEs regarding the implementation of SCM as well as future transformation possibilities. The top management level of SMEs can take some actions referring to research results of driving factors or barrier factors, or a combination of both as it is detailed next.

6.2.1 Driver Factors List of Action

If we look at the research on driver factors, the top two drivers can be utilized as a guide to choosing which actions should be prioritized. Improved Customer Satisfaction (ICS) and Information Dissemination (ID) are the two main drivers of SCM deployment. Due to a high correlation between these two drivers, it is best to deploy them both at the same time. According to the findings of the driver factors research, the following are some measures that can be followed to begin SCM implementation:

1. It was discovered that customer satisfaction is one of the most important factors in SCM implementation. On the other hand, according to another study, a company that places a high priority on customer satisfaction has an impact on daily consumer happiness, which leads to long-term loyalty (Heikkilä, 2002; Sun et al., 2005; Sáenz et al., 2017). If the SCM is successfully implemented, managers or leaders can estimate how many percentages of customers will have long-term loyalty. It can also figure out how much profit the company makes. If it has a positive effect, it's a good idea to make ″Improved Customer Satisfaction″ (ICS) a whole company goal.

2. A company's goal necessitates participation from all of the company's divisions or each individual employee. Leaders might have a kick-off meeting at the start of the implementation to present their goal for improving customer satisfaction. Align the main goal with the work goals of each division or employee.

   Employees in charge of warehouses, for example, can undertake inventory optimization to ensure that not only the entire cost of ordering (manufacturing), holding, shortages, and wastage are minimized, but also that client demand is met (Tabrizi et al., 2022).

   Another example is from the perspective of the quality department, where implement one of the SCM methods, such as Total Quality Management (TQM). This tool has the goal to provide a high-quality product or service that meets the customer's expectations (Othman et al., 2020). TQM has both a short and long-term influence, according to Ghobadian and Ghallear (1997). For the short-term influence, the company´s profit can be increased, and in the long-term influence improves the market share.
3. On top of the previous point, the top management level can assess their position at the start of the year based on the level of satisfaction they received from customers. Every business process should provide data for measurement. After that, create a list of how they are dissatisfied with the company. Since some of the divisions already used at least one of the SCM methods, therefore at the end of the year the company can measure the customer satisfaction again, to see if it has improved or not with the SCM adoption that they have previously implemented. In this scenario, we can determine whether the customer satisfaction gap is positive or negative. If customer satisfaction has improved, it is worthwhile to deploy more SCM techniques.
4. Not forget to mention Information Dissemination (ID) in the implementation of SCM, top management can also communicate with their relevant parties such as distributors, suppliers, or retailers about their target to implement SCM. In this case, emphasize to all parties that less hidden information be transferred between each other. The benefit is possible to improve the effectiveness of SCM by communicating certain vital information. The less uncertainty companies have, the more symmetric the information is among stakeholders (Shabbir and Kassim, 2018). By having symmetric information, the organization has more

relevant data, which can aid in improved customer delivery and possibly boost customer satisfaction.

5. The option to push the implementation of SCM is going back to the SMEs´management decision. If they are not comfortable with the most important driver of ICS and ID, they can choose another from the top 10 ranks based on the characteristics of their company. They can choose Top Management Commitment (TMC) which also becomes the 3rd rank from Hungarian SMEs' point of view. In this case, the leaders can buy the SCM system and push the implementation directly in their company. Another choice, if maybe Operational/economic performance (OEP) becomes an important driver for the SCM implementation, the company can start to do a financial calculation by buying the SCM system or directly use SCM methods compare to the target profit based on SCM implementation itself. This Operational/economic performance (OEP) factor is the 4th rank of driver factors from both countries also specified as an important factor.

6.2.2 Barrier Factors List of Action

In particular, according to the results of the barrier factors research, these two countries (Hungary and Indonesia) are in different places on the top five list. The actions listed below can be used as a model by SMEs not just from those two countries, but also from other countries. The SMEs themselves can determine whether their country's characteristics are similar to those of Hungary or Indonesia. Due to its geographical location, Hungary has a simpler SCM structure rather than Indonesia.

Let's look at the barriers that Indonesian SMEs encounter. The top five are all related to the organization, such as Inadequate performance measure (Org8), Inadequate management capacity (Org5), Lack of inter departmental co-operation in communication (Org3), and Unclear organization objective (Org7). The following are some activities that top management can take to address the issues:

1. The top management level is needed to choose to focus on which barrier factors want to be solved.
2. If we want to focus on clear performance metrics and objectives, we need to define goals for all employees at the beginning of the year. The program is usually called employee goal-

setting. In this program, the management requires to share the organization's vision and also set precise goals for each employee with quantitative targets. With this well-documented goal-setting report, the measurement of their performance can be easily seen. The employee's goal should be in line with the organization's goal.

3. On the other hand, if top level management decides to focus on the lack of inter-departmental communication, a large conference with managers from all departments is required to underline the importance of holding regular meetings with internal parties in the company. The rationale for this is that by holding regular meetings, you may enhance comfort and eliminate the difficulty in speaking between departments, resulting in better inter-departmental communication.
4. If the decision is made to prevent insufficient management capacity, as a result, to deploy SCM, top-level management must incur the risk of hiring some additional employees with specific SCM backgrounds who can help with the progress of SCM implementation itself.

On the other hand, for the Hungarian SMEs barrier factors, the top list is lack of human resources (T3), financial constraint (F1), lack of motivation and employee involvement (K3), lack of SCM knowledge exposure to employee (K1) and poor supplier commitment/unwilling to exchange information (Org2).

1. Unfortunately, if the barrier is financial, it is also vice versa with the other barrier factors, because taking action against the other barrier factors will almost certainly necessitate more financial decisions. SCM entire packages cost a lot of money, but organizations can choose to deploy them gradually by focusing on the areas that need to be improved. The strategy will be implemented across several years, for example with the first year focusing on the inventory system, the second year on the procurement system, and so on. As a result, in the end, the organization can ultimately integrate SCM over a longer period.
2. If top level management is attempting to address a lack of motivation and employee involvement, they can begin to establish rewards and bonuses for employees who initiate SCM implementation, even if it is only in their own department.
3. To address the lack of SCM knowledge exposure among employees, the organization's HR department should develop a training model for employees that is relevant to their job

description. It must be determined what type of SCM module each employee needs. As a result, there will be no excuse for a lack of SCM understanding in the future, and they will be able to begin implementing the SCM approach in their operations.

4. To improve communication with suppliers that are hesitant to disclose such information, CEOs from each firm should meet face to face to develop a single aim. The goal could be to increase sales in the next years to increase profit. As a result, a large meeting for both organizations with the leaders as attendees will be required later. The CEO must underline and explicitly say that in order to reach the goal, communication must be strengthened, and there must be no barriers to providing information that all parties require.

Overall, these four research have common limitations. To begin with, the study only looked at two different geographical structures: Hungary and Indonesia. Including more countries in the investigation could either confirm or refute the initial hypothesis. Another limitation of the research, we gathered information from SMEs' top management; however, information from the middle and lower levels of management could further reinforce the study's findings. Finally, we may improve the data collection methods. We employed survey research and the data collected was analyzed quantitatively. However, incorporating qualitative methods such as interviews and case studies could improve the reliability of our findings. Due to the rules of the General Data Protection Regulation, European companies were restricted from providing particularly extensive information (GDPR). In the end, several companies declined to participate in the survey research because they believed it would violate the rules. This is becoming a major issue in gathering data in Hungary; yet, we have decided to use the most recent number of respondents until a set period of data collection has passed.

Based on the findings, we propose some further studies such as:

1. As the improvement of customer satisfaction (ICS) has been identified as a key driver, it would be useful to develop a conceptual framework based on the ICS for SCM implementation based on the sub-factors of this driver.
2. Another conceptual framework study from the standpoint of barrier factors could show how each subfactor influences the success of SCM implementation.

Further research could provide insight from the government's point of view why despite major governmental support, SMEs are still deficient in implementing SCM strategies.

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APPENDIX

Appendix A. Preliminary Questionnaire

This questionnaire used for the paper with title ″Comparison of Supply Chain Management (SCM) Adoption at Small and Medium-Sized Enterprises (SMEs): A Review from Hungary and Indonesia″.

Part 1 General Information

(1). Seat of the company (city):

(2). The average number of employees (2018):

a) 0-9 employees
b) 10-49 employees
c) 50-249 employees
d) more than 250 employees

(3). Net income: …….in thousand EURO (2018):

a) less than 2 million Euro
b) 2-10 million Euro
c) 10-50 million Euro
d) more than 50 million Euro

Part 2 Strategic Strength of Your Enterprise

(1). When was the last time the company's strategy has changed substantially?

a) 1 year ago
b) 2 years ago
c) 3 or more years ago
d) We are maintaining a rolling strategic plan

(2). Does your strategy include logistics and/or supply chain chapter or sub-chapter? (Yes/No)

Part 3 Co-Operation with Partners (In the Supply Chain)

(1). How do you interpret the phrase of 'supply chain' at your company? (Please mark your answer in the appropriate place

a) as a corporate (internal) value chain (procurement-production-sales-logistics)

b) as an inter-enterprise (extended) value chain (our suppliers-our own company-customers)

(2). What kind of supplier/customer collaboration methods does your company maintain currently? (Please mark your answer in the appropriate place)

	Supplier site	Customer site
a) Vendor Managed Inventory (VMI)		
b) Just in Time delivery and/or Postponement		
c) Risk sharing		
d) Sharing financial information with a partner (open book)		
e) Electronic data interchange (real-time inventory, etc.)		
f) Sharing market information (such as real-time sales data) with partner(s)		

(3). How could you rate the power (dominance) relations between your company and your customers? Please give your answer as a proportion (a share) of 100%)

a) .... % MY COMPANY plays a more DOMINANT role,

b) .... % we are EQUALLY dominant with our partners,

c) .... % our CUSTOMERS are more DOMINANT.

(4). Do you consider that the following factors for closer cooperation with your suppliers and customers are important in your company? (Please mark your answer in the appropriate place) (1 - I do not consider it as important at all, 5 - I consider it is a very important factor)

1 I do not consider it as important at all

2 Quite Important

3 Average

4 Important

5 I consider it is a very important factor

a) A long-term view
b) Commitment to partnerships
c) Resolution of conflicts with the partner
d) Effective decision-making, flexible, skilled labour force
e) Inter-enterprise information flow, open communication
f) Process-oriented approach
g) Common IT-based and "smart" applications

Appendix B. Driver and Barrier Factors Questionnaire

This questionnaire used for the below papers:

- Cross-Country Analysis of Supply Chain Management Drivers for Small and Medium-Sized Enterprises.
- Barrier Factors of Supply Chain Management (SCM) Implementation in Small and Medium-Sized Enterprises: Evidence from Hungary and Indonesia.

Part 1 General Information

(1). Postal code of your city in your country:

(2). Location of the company (city):

(3). The average number of employees (2019):

a) 0-9 employees
b) 10-49 employees
c) 50-249 employees
d) more than 250 employees

(4). Net income: …….in thousand EURO (2018):

a) less than 2 million Euro
b) 2-10 million Euro
c) 10-50 million Euro
d) more than 50 million Euro

(5). Net income: …….in thousand EURO (2019):

a) less than 2 million Euro
b) 2-10 million Euro
c) 10-50 million Euro
d) more than 50 million Euro

(6). Industry sector:

a) Mining
b) Leather, fur, and shoemaking industries
c) Tobacco industry

d) Health and social care

e) Food and beverage production

f) Construction industry

g) Wood, paper and cellulose industries

h) Machine Engineering

i) Property and business services

j) Trade

k) Crafts and home-made products

l) Metallurgy

m) Public administration, property protection

n) Agriculture, forestry, fisheries

o) Printing services

p) Education

q) Financial services

r) Accommodation services, hospitality

s) Freight, warehousing, post, telecommunications

t) Textile industry

u) Chemical industry

v) Electrical energy, gas-, steam-, water supply

w) Others

(7). Do you know about Supply Chain Management System:

a) Yes

b) No

Part 2 Driver Factors of Supply Chain Management

The following is a questionnaire on the driver factors that could have encourage your company in the implementation of Supply Chain Management. To what extent do the items act as a driver factor to supply chain management integration? Please respond to this questionnaire on a seven point scale.

Choose between:

1 - Not at all driver

2 - Low level driver

3 - Slightly driver

4 - Moderate level driver

5 - Serious driver

6 - Very serious driver

7 - Extremely serious driver

MARKET PRESSURE

(1). Improve competitive advantage

(2). Competitor's pressure

(3). Shareholder / investor pressure

(4). Institutional pressure (Example: Bank, financial institute, other stakeholder to adopt Supply Chain Management)

(5). Supply chain management partners pressure

(6). Reputation/image of corporate

(7). Globalization

(8). Improve customer satisfaction

SOCIAL PRESSURE

(1). Value based network

(2). Consumer organization

(3). Direct benefit to business process (example : decrease delivery time, decrease inventory stock, etc)

ORGANIZATIONAL CULTURE

(1). Innovativeness

(2). Information dissemination

ORGANIZATIONAL CHARACTERISTICS

(1). Position in supply chain

(2). Industrial sector

(3). Industry size

(4). Geographical location

(5). Degree of internationalization (Multinational organizations receive more pressure to adopt supply chain management practices)

CORPORATE STRATEGY

(1). Top management commitment

(2). Cost related pressure

(3). Operational/economic performance

(4). Monitoring, evaluation and development of implementation

Part 3 Barrier Factors of Supply Chain Management

The following is a questionnaire on the barrier factors that hinder your company in the implementation of Supply Chain Management. To what extent do the items act as a barrier factor to supply chain management integration? Please respond to this questionnaire on a seven point scale.

Choose between:

1 - Not at all barrier

2 - Low level barrier

3 - Slightly barrier

4 - Moderate level barrier

5 - Serious barrier

6 - Very serious barrier

7 - Extremely serious barrier

ORGANIZATION

(1). Lack of training courses/ consultancy/institutions to train, monitor/mentor progress specific to each industry

(2). Poor supplier commitment/unwilling to exchange information

(3). Lack of Inter-departmental co-operation in communication

(4). Lack of involvement from top management

(5). Inadequate management capacity

(6). Big effort to change organizational strategy

(7). Unclear organization objective

(8). Inadequate performance measure

FINANCIAL

(1). Financial constraint

(2). High investments and less return-on-Investments

(3). High implementation and maintenance cost

KNOWLEDGE

(1). Lack of supply chain management knowledge exposure to employee

(2). Lack of awareness and participation on supply chain management

(3). Lack of motivation and employee involvement

TECHNOLOGY

(1). Lack of new technology, materials and processes

(2). Current practice lacks flexibility to switch over to new system

(3). Lack of human resources

(4). Fear of failure

OUTSOURCING

(1). Lack of standard supply chain management system to collaborate with suppliers

(2). Lack of Customer Satisfaction Index

(3). Lack of Trust amont supply chain management partners

(4). Unwilling to share risk and rewards between Supply Chain Management partners

Part 4 Additional Information

(1). What is the name of your company?

(2). Tell us your title in your company?

Appendix C. Industry Sector Detail

Table C.1. Number of Enterprises based on Industry Sector for Comparison of Supply Chain Management Adoption in Small and Medium-Sized Enterprises

INDUSTRY SECTOR	HUN		IDN	
	Total	%	Total	%
a) Mining	3	1.1%	2	1.8%
b) Leather, fur, and shoemaking industries	5	1.8%	0	0.0%
c) Tobacco industry	7	2.6%	1	0.9%
d) Health and social care	2	0.7%	4	3.6%
e) Food and beverage production	34	12.4%	35	31.8%
f) Construction industry	15	5.5%	7	6.4%
g) Wood, paper and cellulose industries	7	2.6%	0	0.0%
h) Machine Engineering	8	2.9%	0	0.0%
i) Property and business services	15	5.5%	8	7.3%
j) Trade	56	20.4%	11	10.0%
k) Crafts and home-made products	4	1.5%	4	3.6%
l) Metallurgy	5	1.8%	0	0.0%
m) Public administration, property protection	6	2.2%	0	0.0%
n) Agriculture, forestry, fisheries	5	1.8%	4	3.6%
o) Printing services	5	1.8%	2	1.8%
p) Education	0	0.0%	0	0.0%
q) Financial services	12	4.4%	4	3.6%
r) Accommodation services, hospitality	7	2.6%	2	1.8%
s) Freight, warehousing, post, telecommunications	8	2.9%	2	1.8%
t) Textile industry	22	8.0%	9	8.2%
u) Chemical industry	7	2.6%	1	0.9%
v) Electrical energy, gas-, steam-, water supply	13	4.7%	3	2.7%
w) Others	28	10.2%	11	10.0%
TOTAL ENTERPRISES	**274**	**100%**	**110**	**100%**

Table C.2. Number of Enterprises based on Industry Sector for Driver and Barrier Factors Research

INDUSTRY SECTOR	HUN		IDN	
	Total	**%**	**Total**	**%**
a) Mining	0	0.0%	1	0.8%
b) Leather, fur, and shoemaking industries	0	0.0%	0	0.0%
c) Tobacco industry	0	0.0%	0	0.0%
d) Health and social care	7	6.7%	3	2.4%
e) Food and beverage production	7	6.7%	47	37.9%
f) Construction industry	6	5.7%	10	8.1%
g) Wood, paper and cellulose industries	1	1.0%	0	0.0%
h) Machine Engineering	7	6.7%	2	1.6%
i) Property and business services	4	3.8%	4	3.2%
j) Trade	27	25.7%	20	16.1%
k) Crafts and home-made products	1	1.0%	6	4.8%
l) Metallurgy	0	0.0%	0	0.0%
m) Public administration, property protection	0	0.0%	0	0.0%
n) Agriculture, forestry, fisheries	2	1.9%	3	2.4%
o) Printing services	1	1.0%	2	1.6%
p) Education	2	1.9%	1	0.8%
q) Financial services	4	3.8%	0	0.0%
r) Accommodation services, hospitality	0	0.0%	2	1.6%
s) Freight, warehousing, post, telecommunications	2	1.9%	4	3.2%
t) Textile industry	2	1.9%	6	4.8%
u) Chemical industry	2	1.9%	0	0.0%
v) Electrical energy, gas-, steam-, water supply	3	2.9%	1	0.8%
w) Others	27	26%	12	9.7%
TOTAL ENTERPRISES	**105**	**100%**	**124**	**100%**