

# Strategic SCM's Mediating Effect on the Sustainable Operations: Multinational Perspective

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**Background and Purpose:** The comparative cross-sectional study examines the strategic supply chain management's mediating effect on the sustainable operations through environmental and social sustainability within the businesses operating in Canada, Iran and Turkey to attain global perspective.

**Methodology:** Over 200 small businesses in each country are included through combining purposive sampling, referrals, networking, and connections. For quantitative data analysis, the Smart partial least square structural equation modeling (SmartPLS-SEM) is employed.

**Results:** Results showed that there is statistically significant positive mediating role of strategic supply chain on the sustainable operations (environmental and social sustainable) performances in all three selected economies. Findings further confirmed that within the multinational perspective, the SCM factors have higher significant positive impact within Canada in contrast to Iran and Turkey.

**Conclusion:** This study offers a new theoretical contribution by examining the mediating role of strategic supply chain from multinational perspective to enhance existing body of knowledge. Furthermore, it offers a practical contribution by providing the strategic research framework to facilitate managers in improving the small businesses' performance in sustaining operations.

**Keywords:** *Environmental sustainability, multinational perspective, social sustainability, sustainable operations, strategic supply chain management*

## 1 Introduction

At national and international level, the economic growth improves to a larger extent through the operations of Small businesses (OECD, 2009). For the survival and thriving within the complex business environment, it is essential

for the SMEs operating in different economies to develop and execute appropriate strategies (Kljucnikov, Belas, Kozubikova and Pasekova, 2016; Kozubikova, Homolka and Kristalas, 2017). Therefore, the conceptual application of the supply chain management within the SMEs related to functioning strategies forms as most important aspect

because of the operations of supply chain closely associated with the set of activities, starting from extraction of raw material by means of transformation and flow of products till reaching the end-consumers (Kovács and Kot, 2016). Within the procedure of supply chain activities, the flow of information is also very important. Liberko, Bednarová, Hajduová and Chovancová (2015) stated that the supply chain perspective is more vital focus in the present era because of intense competition. To larger extent in modern era, there has been growth in the technological advance-

ment for accessing information, on time deliver and providing good quality products at affordable prices to meet expectations of the consumers (Kovács and Kot, 2016; Liberko et al. 2015). Conversely, it is vital that businesses take proper measures and actions to ensure there is preferably no or limited negative impact on the environment and societies because these firms do not operate in vacuum. Thus, it is pivotal for the small businesses to ensure that the functionality of supply chain management is carried out in rightly strategic manner.

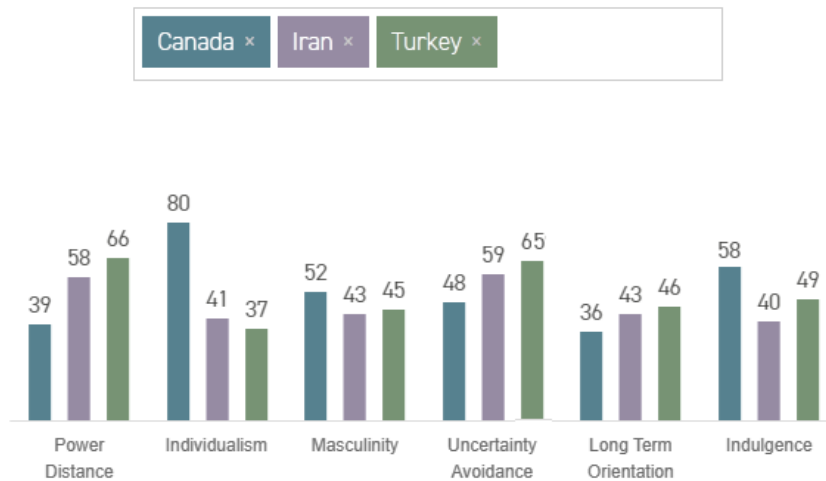


Figure 1: Hofstede's Cultural Dimension Comparison (Source: Hofstede-insight.com)

Kovács and Kot (2016) found that the operations and process of supply chain management remain similar to larger extent in all types of economies. In order to have multinational perspective, three distinctive economies are considered that shares similar features and trends within the SMEs sector. Moreover, Hofstede's cultural dimensions are considered as another criteria for selection of the distinctive countries. Considering Hofstede's cultural dimension, the criteria was set to ensure 50% of the dimensions to be similar in properties. In this regard, masculinity is one dimension that are closed to similar as of now Canada (52), Iran (43) and Turkey (45) masculinity. Hence, all three have almost over 40 scores in masculinity, which means there is higher masculine culture. Another dimension is "long-term orientation" having fractional variation among Canada (36), Iran (43) and Turkey (46). Additionally, "uncertainty avoidance" are also similar to large extent Canada (48), Iran (59) and Turkey (65) while indulgence is Canada (58), Iran (40) and Turkey (49). Thus, to some extent, four dimensions have almost similar types of set of properties and therefore, these are considered cases for this study.

Another criterion for the selection of these cases is based on the Human Development Index (HDI) for considering these countries as cases. The Human Development Report (2017) revealed that although, Canada has higher HDI (0.926) but there is not much difference between Turkey (0.792) and Iran (0.798) while employment vulnerability, work, gender, human security, communication and mobility in all three considered economies are same, thus, these three countries are considered for the purpose of study.

Ducker (1998) argued that there is a visible shift in the paradigm of managerial literature with the passage of time. Habib (2011) stated, "one of the most significant changes in paradigm of modern business management is that individual businesses no longer compete as solely autonomous entities, but rather as supply chains. Business management has entered the era of inter-network competition and the ultimate success of a single business will depend on management's ability to integrate the company's intricate network of business relationships". Hence, it is important in explaining the concepts of intricaded network theory. Relational view theory of firm's dyads and network

in the supply chain management has been used often to understand strategic supply chain management. Within the complex competitive environment, due to flexible intricately approach there is often a usage of the relational view theory in the SCM (Dyer and Singh, 1998). Nevertheless, firm's dyads and network are significant in understanding the business dynamics and firm's overall performance (Lavie, 2006).

Resource-based theory is also used for understanding the supply chain management's functionality, but it is limited in explaining the higher overall performance within the business in order to attain competitive advantage (Blanchard, 2010). Nonetheless, "from the unit of analysis, this is evident that RBV fails to confirm the competitive advantage while the dyads and network theory as part of relational view reveals that the organisations having higher level of networking have more strong grip on the market as they remain competitive in reducing the inventory time and improve the quality of the work through shared expertise" (Ramsay, 2001). Barney (2012) argued that many aspects of the strategic supply chain management are implemented and understood by using the relational view perspective (Barney, 2012). Yet, through adoption of relational view theory of firm's dyads and network for investigating the supply chain management in the manufacturing and services industry operating in the cross-cultural context is under research. The comparative mode to attain multinational perspective is effective in delimiting the region specificity by offering superior knowledge in broader context. Hence, the gap in the literature is filled by offering evidence from cross-cultural comparative perspective. In addition to that, the resource-based view (RBV) has a biggest drawback of using "unit of analysis" by primarily focusing on internal resource whereas there is need to find a right-fit between internal and external attributes associated with strategic supply chain management. This limitation of RBV to be overcome through this study.

The study aim is, "to examine the mediating effect of strategic supply chain management within the small businesses on the sustainable operations (environmental and social sustainability) from multinational perspective".

## 2 Literature Review

Higher variations and inconsistent findings are traced in the considered wide range of supply chain management related empirical studies. For instance, Truong et al. (2017) found that the small businesses operations are significantly affected by the strategic SCM. Nevertheless, same study did not find the small businesses operations in relation to social and environmental sustainability.

The strategic SCM components including practices, determinants, and supporting factors are found to add competitive advantage to operations through cost reduction and effective adoption of sophisticated technology

(Arend and Wisner, 2005) while still less is researched from the sustainability perspective.

SCM practices are not always right fit for SMEs because of the challenges related to proper execution and implementation as the operations are frequently carried on small scale whereas the rate of investment remains lower that further weakens the strategic SCM execution (Arend and Wisner, 2005). Nevertheless, plethora of research found that SMEs' sustainable operations as well as overall performance improved due to strategic SCM because it helps the businesses in keeping a steady focus on the activities to ensure they remain competitive, transparent, and sustainable (Thakkar, Kanda and Deshmukh, 2011; Tvaronavičienė, Razminienė and Piccinetti, 2015). Strategic supply chain has a positive linkage with the factors supporting supply chain management (Awheda et al. 2016; Malik et al. 2014). On the other hand, Kherbach and Mocan (2015) found statistically no significant impact of supporting factors of SCM on the strategic supply chain management within the SMEs. Having said that, there is no conclusive evidence confirming the nature of relationship from multinational context.

**Hypothesis 1** - *Strategic supply chain management of small businesses is significant positively affected by factors supporting SCM in Iran, Turkey, and Canada.*

However, although, often SMEs perceive that strategic SCM is linked with the process of ensuring higher satisfaction of the consumers through large investment in advanced information technology (Kumar, Singh and Shankar, 2015), instead of taking into consideration the strategic SCM's impact on the environmental and social sustainability (separate dimensions of sustainable operations). Interestingly, plethora of empirical studies have frequently used the terminologies such as "small and medium-sized enterprises", "strategic management" and "supply chain" in their titles but failed to explain in-depth the impact of strategic SCM in relation to sustainability (Kot et al. 2018).

Zowada (2011) argued that SMEs via its SCM channelized activities and performances is the way to tackle the challenges related to environmental and social sustainability. In this regard, practices of supply chain management are highly invaluable for the SMEs. Adaptability, flexibility, and low-cost strategies so that environmental challenges along with fulfilment of requirements of the consumers are vital features that to some extent facilitate business to sustain stable positioning in the environment" (Zowada, 2011). SMEs support functioning is vital in linking activities chain in sustainable and desired manner (Kisperska-Moroń, Kłosa, Świerczek and Liniecki, 2010). Interestingly, key performance indicators (KPIs) are also important in determining the impact of SCM activities within the SMEs (Dumitrascu and Hila, 2017). Nevertheless, considering the challenges of environmental and

social sustainability, the KPIs are less significant and effective because every organisation is different from one another.

“Literature provide the insight regarding services, quality, speed and value formation for the end-consumers are some of the dimensions to measure the strategic outlook and performance of SCM” (Ghicajanu, 2014). These aforementioned dimensions are most appropriate way to explain the business model and solutions for meeting unique external environmental challenges (Ghicajanu, 2014). Thus, it is found that open and flexible approach for redesigning and restructuring activities of supply chain are part of strategic SCM so that various external challenges could be dealt. Procter & Gamble (P&G) is one of the examples that has modified supply chain activities so that SCM operates in effective and efficient way to cope up with environmental challenges (Sundarakani, 2006).

Vasiliu and Dobra (2013) carried out a research on issues and challenges related to SCM in different organisations, yet their findings are inconclusive because it fails to explain the causes for lower sustainable impact in the presence of integrated and incorporated activities. Additionally, Dumitrascu and Hila (2017) highlighted the drawback of Vasiliu and Dobra’s research that sample size is relatively small for drawing comprehensive conclusion. Nonetheless, Diaconu and Alpopi (2014) argued that SCM has both; strengths and weaknesses when opts for being more strategic and rational in its approach to deal with the environmental uncertainties. Same study argued that coordination, measurements, IT support, processing pattern and strategic orientation have its pros and cons. Nevertheless, at times the strategic SCM is highly effective in enhancing services level yet end short in reducing the negative impact on the operational environment (Diaconu and Alpopi, 2014). Hence, communication needs as well as SCM supporting factors are required to be improved so that sustainable desired operations develop and reduction in the adverse impact on external stakeholders (Diaconu and Alpopi, 2014).

Different organisations use a peripheral tool “Enterprise Resource Planning” (ERP) in order to have financial and other resources being used highly effectively, although, the operations and process of SCM does not improve significantly because of ERP (Țarțavulea and Petrariu, 2013). Conversely, Kherbach and Mocan (2015) argued that large enterprises have advantage over the SMEs because of the tendency to use human, technological, and financial resources for reducing negative effect on the external environment. The organisational flexibility has a tendency of improving the effectiveness in meeting and fulfilling the requirements of the market and ensure the reduction in the negative impact on the operational environment (Kherbach and Mocan, 2015).

Although, however the Oracle survey on IDG connect was executed in four different regions, namely, (a) Asia Pacific, (b) Europe, Middle East and Africa (EMA), (c)

Central and South America and (d) North America for examining the cloud-based SCM solutions having an impact of the societies and environment (Oracle, 2016). Findings showed that this strategic move leads to increase operational efficiency and productivity, reduction on operational cost while enabling businesses to deal with different types of environmental challenges (Oracle, 2016). However, the work of Lorentz, Touli, Solakivi and Ojala (2013) found that IT components of several types as part of strategic SCM are not always effective in the reduction on negative impact on social and environmental sustainability. In fact, they become a barrier for smooth flow of operations. Despite mix evidences, there are no conclusive evidence about the practices affecting strategic supply chain management in different economies. Therefore, hypothesis 2 is developed:

**Hypothesis 2** - *Strategic supply chain management of small businesses is significant positively affected by practices of SCM in Iran, Turkey, and Canada.*

Fung, Morton and Chong (2010) argued that the environmental sustainability improves due to channelizing and executing the environmental-friendly policies and practices within the supply chain management process. However, Harms (2011) found the obligatory incorporation of environmental and social dimensions within the SCM operations is effective in the expansion of diverse socio-economic aspects. Having said that, yet the research area is under studied because there is no conclusive evidence about the environmental and social sustainability (separate dimensions of sustainability) linkage with the strategic supply chain management in SMEs within different types of economies.

The strategic SCM of SMEs are significant affected by the determinants whereas practices are non-significant in doing so (Harasi, 2015). There is inconclusive evidence regarding the varying impact of strategic SCM on social and environmental sustainability in emerging-middle ranged-developed economies. In the absence of appropriate strategic SCM, there is negative impact on the social sustainability of the organisation (Awheda, Rahman, Ramli and Arshad, 2016; Malik, Musa, Ahmad and Mohamad, 2014; Mani, Agrawal and Sharma, 2015). “The operational efficiency tends to reduce to negative affect of inadequate strategic SCM on social sustainability” (Mani et al. 2015).

The previous empirical studies showed that determinants of supply chain management have a significant positive impact on the strategic supply chain management among different SMEs (Arend and Wisner, 2005; Koh et al. 2007). Furthermore, work of Harsi (2015) revealed that different organisational components (determinants) develop a strong positive impact on the strategic supply chain management for the SMEs because of the nature of these organisational component are un-observe variable. Still, there is no clear evidence from the previous studies

confirming the nature of impact of determinants of SCM on the strategic supply chain management. In addition to that, there are no studies to assess the relationship from the multinational context. Hence, in the light of identified literature, third hypothesis is drawn:

**Hypothesis 3** - *Strategic supply chain management of small businesses is significant positively affected by determinants of SCM in Iran, Turkey, and Canada.*

The study of Koh et al (2007) found no statistically significant impact of strategic SCM on the operational efficiency of SMEs as well as found non-significant impact on the environmental and social sustainability. This indicates that two distinctive studies found different results, yet both found non-significant impact in terms of environmental and social sustainability. Having said that, those studies were single cases offering limited generalizability whereas comprehensive cross-sectional research is still under research because the earlier studies have smaller sample size and largely focused on region-specificity. To larger extent, available literature concentrated on the direct relationship between strategic SCM and SMEs' performance, while still under research is the strategic SCM's mediating effect on the environmental and social sustainability, especially in the context of comparison between advanced, middle-range, and emerging economy.

Kherbach and Mocan (2015) study found that practices, supporting factors and determinants of SCM are very effective in meeting the needs of consumers, enhancing

organisational efficiency and dealing with various environmental challenges. Thus, the strategic SCM is pivotal in dealing with the challenges of environment. Nonetheless, the study falls short in explaining the mediating effect on environmental and social sustainability resulting from strategic SCM. Hence, the area is under research when the mediating role of strategic SCM on sustainability is to be considered, especially in multinational context because studies largely focused on direct linkage of strategic SCM instead of considering it as a mediator. The identified gap in the existing literature drives this research to fill it by offering multinational perspective within one construct. Following hypotheses are developed.

**Hypothesis 4** - *Strategic supply chain management mediates environmental sustainability in Iran, Turkey, and Canada.*

**Hypothesis 5** - *Strategic supply chain management mediates social sustainability in Iran, Turkey, and Canada.*

### 3 Research Framework

The research framework of this study includes independent variables, namely. Factors supporting SCM, practices of SCM and determinants of SCM while environmental and social sustainability are the dependent variables. Strategic supply chain management is the mediating variable. The variables of interest are illustrated below:

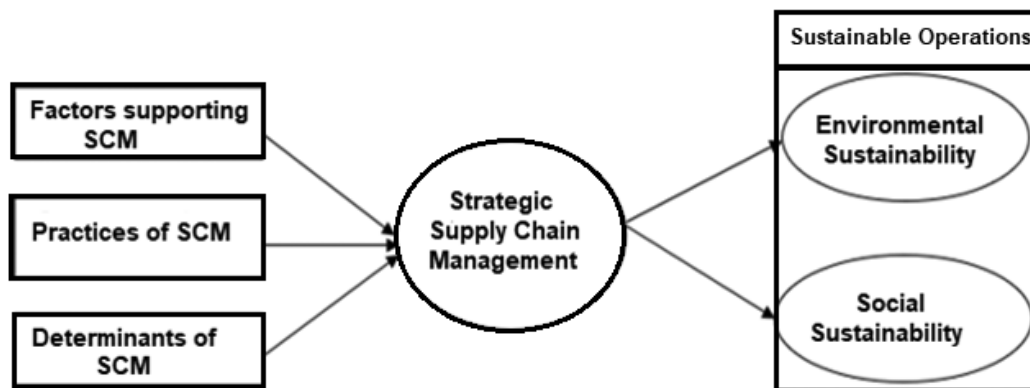


Figure 2: Own-illustrated research framework

## 4 Research Methodology

This comparative cross-sectional research comes under scientific paradigm thus, have critical realism ontology and objective epistemology to numerically express the social reality. Mackenzie and Knipe (2006) explained that positivism philosophy is considered for the research that focuses on attaining the factual truth by means of numerically expressing the relationship between variables of interest. Independent variable “factors of SCM” is formed of five factors on the scale of 1-to-5 (1=doesn't matter, 2=unimportant, 3=neutral, 4=important and 5=very important). Concentration on end consumers, organisational structure, importance of IT, knowledge sharing, and trust and openness are the factors supporting SCM (for detail see Appendix). Second variable on same scale is “determinants of SCM” that contains seven questions. Global competitiveness, customer needs, cooperation, integration process, and cost reduction were the factors constituting determinants of supply chain management (for details see Appendix). Third variable “practices of SCM” contains eight questions on 1-to-5 (1=no implementation, 2=low level of implementation, 3=partial implementation, 4=implementation, and 5=full implementation) scale. In line internal strategy with Supply chain strategy, sustainability, coordination and communication, and standardized guidelines are factors determining the practices of supply chain management (for details, see Appendix).

The factors, determinants, and practices of SCM along with the social and environmental sustainability scale is adopted from the survey of Kot et al (2018) as it has been used previously in different countries. Both dependent variables of the study, “environmental” and “social sustainability” contained six questions each on the scale of 1-to-5 (1=doesn't matter, 2=unimportant, 3=neutral, 4=important and 5=very important). Environmental sustainability contained factors related to environmental-friendly, waste reduction, reduction of negative impact, and creating environmental awareness whereas ethical standards, community related operations, safety standards, and poverty reduction are factors for social sustainability that combined together forms sustainable operations (See Appendix for construct of variables).

Strategic SCM contains five questions on the scale of 1-to-5 (1=Strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree). Harasi's (2015) scale is used to measure the strategic supply chain management, containing intern-organisational communication, cross-organisational team, strategic planning and long-term orientation (for details see Appendix).

Hyman, Lamb and Bulmer (2006) stated that the adoption of pre-existing questionnaire helps researchers in ensuring higher construct and content validity. Inter-rater and test-re-test reliability is availed by using pre-existing questionnaire (Haque and Aston, 2016; Healy and Perry, 2006).

Hofstede's cultural dimensions were one of the criteria for the selection of three distinctive countries. Moreover, the HDI was another criterion for this selection. Higher similarity in employment vulnerability, work, gender, human security, and communication and mobility in all three considered economies are same, thus, these three countries are considered for the purpose of study. According to the official report of Senate Canada (2013), foreign affairs and international trade has strengthened the relationship between Canada, Turkey, and Iran. There has been collaboration and cooperation to improve the relations and trade. Since, there has been trade, production and services promoting the mutual supply chain activities therefore, these three countries have been considered cases.

Total 610 SMEs participated through one respondent per organisation. For fair representation, the strategy of Haque, Aston and Kozlovski (2018) was adopted, therefore, purposive sampling technique was employed to have fair representations in all three countries because in present scenario other sampling techniques were impractical and costly. Minimum 200 each is a target selection in distinctive geographic regions. Total 202 from Turkey whereas 204 each from Iran and Canada participated. Haque, Faizan and Cockrill's (2017) strategy was considered to ensure over 200 respondents participate in the comparative study. The response rate is 56.38% as total 1050 survey questionnaires were circulated (350 in each economy).

The strategy of Haque et al. (2018) was adopted by combining purposive, referrals, networking, and connection were sampling techniques used in this study to avoid over reliance on one specific technique. The list of registered SMEs was attained from the official ministry portal while questionnaire was formed on GoogleDoc and circulated through networking and connections. Smart partial least square structural equation (PLS-SEM) modeling is used for the data analysis.

All ethical considerations were maintained during and after research commencement and as part of it, there was no disclosure of respondent's personal detail to general public and participants were informed about the purpose of research.

## 5 Results Analysis

### 5.1 Descriptive Statistics

It is found that majority of the small businesses have a workforce ranging between 50-250 (52.5%), operating for 'more than 15 years' (42%), followed by '8 to 15 years' (38%). This reflects that small businesses in considered economies have been active for a longer time duration. Majority of SMEs are involved in logistics and transportation (30.4%), followed by clothing and textile (28%) and

cars and automotive (13.7%) whereas majority of respondents are “Director of Logistics” (29%), followed by “Marketing Director” (22%) and “Owner” (18%).

## 5.2 Measurement model

Henseler et al.’s (2009) suggestion regarding the usage of prominent statistical method for primary data analysis has been considered. Imran, Hameed and Haque (2018) explained that two major sections of statistical analysis include; measurement model assessment and structural model assessment. “The measurement model assessment is the first step to assess the model’s validity before performing structural model assessment. As part of measurement model, the reliability is assessed through Cronbach’s alpha and composite reliability while Average Variance Extracted (AVE) through factor loadings are considered for external consistency to form convergent validity” (Imran et al. 2018). “Convergent validity, a parameter frequently utilized in social sciences research, refers to the degree to which two measures of constructs that theoretically should be related are in fact related” (Imran et al. 2018). A value less than 0.40 on factors loadings are excluded

from the scale while only above 0.40 is included as it indicates the acceptable validity (Hair et al. 2016). Therefore, four factors are considered on all the variables of interest because they scored over 0.4. Acceptability is determined through Cronbach’s alpha ( $\alpha < 0.70$ ), composite reliability (C.R.  $< 0.70$ ) and Average Variance Extracted (AVE  $< 0.50$ ). Item loading values and AVE are presented visible in figure 3, 4 and 5 for considered economies while Table 1 contains Cronbach’s alpha ( $\alpha$ ), composite reliability (C.R), and Average Variance Extracted (AVE), which are all found satisfactory. Table 2 contains discriminant (external) validity by following Fornell and Larcker’s (1981) criteria.

Internal consistency is acceptable because Cronbach’s alpha ( $\alpha$ ) and composite reliability (C.R) for all items in Iran, Turkey and Canada is above 0.7 (Table 1). The model is acceptable because Average Variance Extracted (AVE) is found to be greater than 0.5. External validity is measured through cross loadings by using Fornell and Larcker’s (1981) criteria. “The AVE of the exogenous (latent) variables higher than the extracted square root average variance reflects results validity” (Fornell and Larcker, 1981). All three countries are found to be greater than 0.50, thus, all the constructs are acceptable (Table 2).

Table 1: Measurement model (results)

Constructs	Iran			Turkey			Canada		
	( $\alpha$ )	CR	AVE	( $\alpha$ )	CR	AVE	( $\alpha$ )	CR	AVE
Factors supporting SCM	0.817	0.732	0.521	0.721	0.826	0.601	0.988	0.861	0.682
Practices of SCM	0.710	0.731	0.613	0.760	0.765	0.602	0.771	0.785	0.656
Determinants of SCM	0.723	0.727	0.513	0.749	0.754	0.623	0.756	0.766	0.629
Strategic supply chain management	0.766	0.717	0.545	0.759	0.728	0.687	0.796	0.798	0.743
Environmental sustainability	0.711	0.776	0.607	0.715	0.767	0.601	0.746	0.863	0.644
Social sustainability	0.832	0.736	0.561	0.718	0.737	0.588	0.751	0.762	0.615

Table 3: Discriminant Validity (Fornell-Larcker criterion)

Constructs	Determinants of SCM	Factors supporting SCM	Practices of SCM	Strategic supply chain management	Social sustainability	Environmental sustainability
<b>Iran</b>						
Factors supporting SCM	0.541					
Practices of SCM	0.703	0.624				
Determinants of SCM	0.627	0.563	0.671			
Strategic supply chain management	0.659	0.571	0.572	0.595		
Environmental sustainability	0.595	0.651	0.609	0.633	0.515	
Social sustainability	0.528	0.613	0.65	0.641	0.561	0.663
<b>Turkey</b>						
Factors supporting SCM	0.632					
Practices of SCM	0.611	0.721				
Determinants of SCM	0.517	0.569	0.626			
Strategic supply chain management	0.518	0.565	0.541	0.526		
Environmental sustainability	0.658	0.525	0.651	0.518	0.522	
Social sustainability	0.672	0.521	0.502	0.511	0.517	0.519
<b>Canada</b>						
Factors supporting SCM	0.711					
Practices of SCM	0.712	0.814				
Determinants of SCM	0.732	0.698	0.755			
Strategic supply chain management	0.765	0.754	0.571	0.697		
Environmental sustainability	0.799	0.793	0.656	0.699	0.763	
Social sustainability	0.622	0.727	0.737	0.789	0.792	0.724

In second part, the research hypotheses developed from the available literature are tested through the structural model. Using structural model assessment, the research findings are attained.

### 5.3 Structural model assessment

Structural model assessment is used to examine the relationship between research variables. For testing hypotheses, we used mainly t-value to reject or retain hypotheses.

The threshold t-value=1.96 at the 0.05 level of significance, hence, t-value above it is significant while below it will be non-significant. In the same vein, the p-value of less than 0.05 reflects statistically significant relationship. Moreover, R<sup>2</sup> indicates the predictors (determinants of SCM, factors supporting SCM, practices of SCM, causing variability in dependent variable “sustainable operations” (environmental sustainability and social sustainability) while (f<sup>2</sup>) determines the size effect of the relationship.



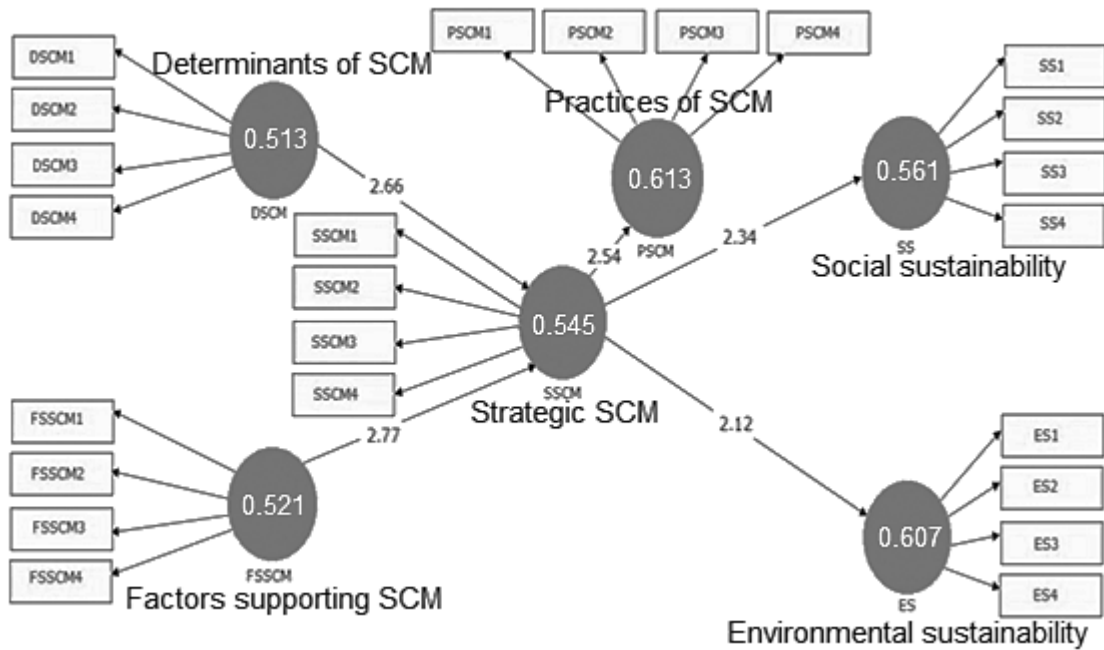


Figure 3: Factor loading reflecting AVE and t-values attained through structural model - Iran

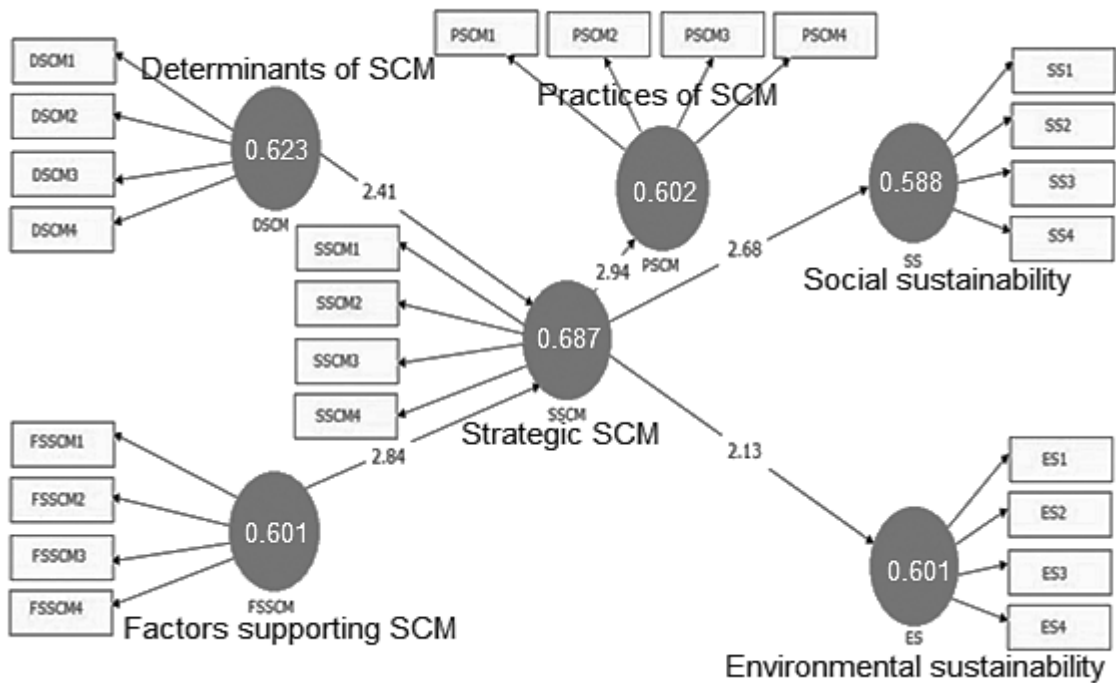


Figure 4: Factor loading reflecting AVE and t-values attained through structural model -Turkey

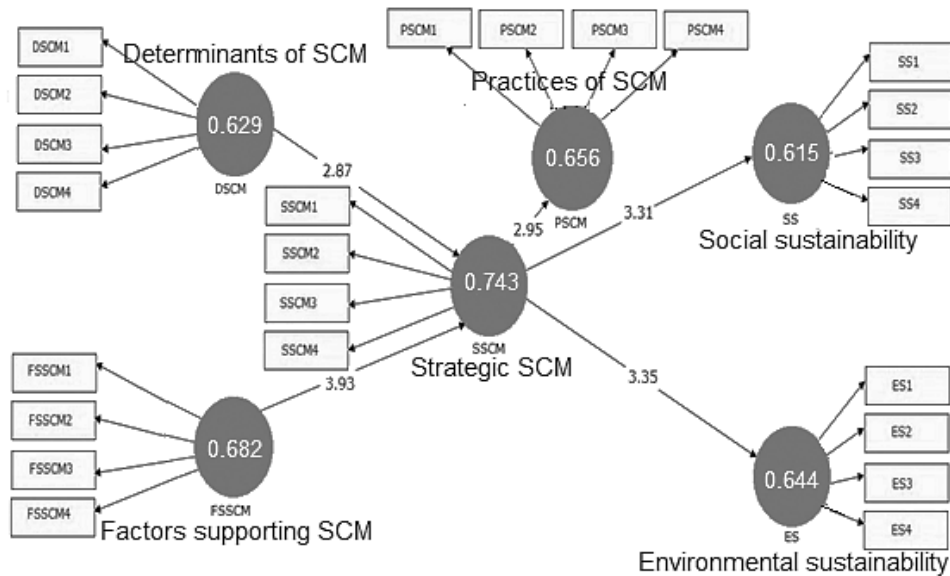


Figure 5: Factor loading reflecting AVE and t-values attained through structural model -Canada

Table 4: Findings of Structural Model

Hypotheses	(β)	SD	t-Value	P-value	f <sup>2</sup>	R <sup>2</sup>
<b>Iran</b>						
H1: Factors supporting SCM-> Strategic SCM	0.61	0.22	2.77	0.000	0.15	0.62
H2: Practices of SCM -> Strategic SCM	0.79	0.31	2.54	0.000	0.22	0.66
H3: Determinants of SCM -> Strategic SCM	0.88	0.33	2.66	0.000	0.16	
H4: Strategic SCM -> Environmental sustainability	0.66	0.31	2.12	0.000	0.36	
H5: Strategic SCM -> Social sustainability	0.54	0.23	2.34	0.000	0.35	
<b>Turkey</b>						
H1: Factors supporting SCM-> Strategic SCM	0.71	0.25	2.84	0.000	0.16	0.59
H2: Practices of SCM -> Strategic SCM	0.64	0.31	2.94	0.000	0.24	0.68
H3: Determinants of SCM -> Strategic SCM	0.82	0.34	2.41	0.000	0.17	
H4: Strategic SCM -> Environmental sustainability	0.49	0.23	2.13	0.000	0.37	
H5: Strategic SCM -> Social sustainability	0.51	0.19	2.68	0.000	0.35	
<b>Canada</b>						
H1: Factors supporting SCM-> Strategic SCM	0.59	0.15	3.93	0.000	0.18	0.67
H2: Practices of SCM -> Strategic SCM	0.68	0.23	2.95	0.000	0.26	0.69
H3: Determinants of SCM -> Strategic SCM	0.89	0.31	2.87	0.000	0.19	
H4: Strategic SCM -> Environmental sustainability	0.57	0.17	3.35	0.000	0.39	
H5: Strategic SCM -> Social sustainability	0.96	0.29	3.31	0.000	0.36	

Note: \*\*\*p<0.1, \*\*p<0.05, ns= nonsignificant (p>.05) (Two Tail)

## 6 Discussion

Strategic supply chain management is statistically significantly affected by the factors supporting SCM in all three countries (See Table 4, H1). We fail to reject hypothesis 1. It confirms that factors supporting SCM in all three considered countries affect positively the strategic SCM of small businesses. Our findings are aligned with the works of Awgheda et al. (2016) and Malik et al. (2014) because mentioned studies found positive linkage between considered variables while our findings partially differs with Kherbach and Mocan's (2015) findings as their study found non-significant impact of supporting factors on the Strategic SCM within SMEs. Present findings offer a new insight by confirming the positive linkage between considered variables from the multinational perspective. Deviation from standard by 1-unit led to create a positive impact by supporting SCM factors in strategic SCM in Small businesses (Iran-->  $\beta=0.61$ , Turkey-->  $\beta=0.71$ , Canada-->  $\beta=0.59$ ; Table 4).

Strategic SCM of Small businesses is significant positively affected by the practices of SCM in all three countries (See Table 4, H2). Based on obtained findings, we fail to reject hypothesis 2. The work of Koh et al. (2007) is confirmed that practices of SCM is positively affecting the strategic SCM that further increases SME's operational efficiency. Since we found no variations within the strategic SCM in different countries despite deferring practice standards, thus, the work of Dumitrascu and Hila (2017) and Ghicajanu (2014) is contradicted. Interestingly, adaptive approach within the practices of SCM is higher effective in enhancing the strategic planning as well as operational efficiency is the argument posed by Faizan and Haque (2015), which to some extent is supported. Using funnel approach, it is found that adaptive approach used by business in all three countries have much improved strategic SCM. Furthermore, practices of SCM causes positive variation in all three countries (Iran-->  $\beta=0.79$ , Turkey-->  $\beta=0.64$ , Canada-->  $\beta=0.68$ ; Table 4).

Strategic SCM of Small businesses is significant positively affected by the determinants of supply chain management in all three countries (See Table 4, H3). Hence, we fail to reject hypothesis 3. Our work supports the earlier work of Arend and Wisner (2005) and Koh et al. (2007) as we found positive linkage between strategic SCM and determinants of SCM within Small businesses. Additionally, it is confirmed that strategic SCM is explored through interlinked other organisational components because of being by nature un-observed variable, thus, we support the argument of Harsi (2015). The organisational component within this study is the determinants of SCM that creates positive impact on strategic SCM in Small businesses in all three considered countries. Furthermore, determinants of SCM's beta value ( $\beta$ ) are positive, reflecting that strategic SCM is positively affected by determinants of SCM with change in 1-unit of standard deviation (Iran-->

$\beta=0.88$ , Turkey-->  $\beta=0.82$ , Canada-->  $\beta=0.89$ ; Table 4). Nevertheless, there is not much difference, but from the comparative lens Iran and Turkey scored less than Canada.

After determining the different organisational components linkage with the Strategic SCM, next step is to measure the mediating effect of Strategic supply chain management on the environmental sustainability. It is found to have statistically significant positive mediating effect in all three countries (See Table 4, H4). Similarly, strategic SCM has a significant positive mediating effect on social sustainability in all three countries (See Table 4, H5). Therefore, we do not reject hypotheses 4 and 5.

Considering the environmental sustainability, we support the findings of Fung et al. (2002), Kherbach and Mocan (2015), and Zowada (2011) as we found strategic SCM mediates positively the environmental sustainability where we contradict the work of Awgheda et al. (2016), Malik et al. (2014) and Mani et al. (2015) in this regard. We confirm the argument of Kot et al. (2018) that strategic supply chain management is effective in dealing with various types of environmental challenges. We further extend Kot et al.'s argument by confirming it from multinational perspective. Strategic SCM causes a positive variation in the environmental sustainability (Iran-->  $\beta=0.66$ , Turkey-->  $\beta=0.49$ , Canada-->  $\beta=0.57$ ; Table 4).

Moreover, our findings support the work of Harms (2011), Kherbach and Mocan (2015), Koh et al. (2007), and Zowada (2011) whereas oppose the Awgheda et al. (2016), Ghicajanu (2014), Malik et al. (2014) and Mani et al. (2015) work by confirming positive linkage between strategic SCM and social sustainability. Strategic SCM causes positive variation in the social sustainability when there is an increase in 1-unit standard deviation (Iran-->  $\beta=0.54$ , Turkey-->  $\beta=0.51$ , Canada-->  $\beta=0.96$ ; Table 4).

"The value of variance ( $R^2$ ) is a value that indicates that the variability in the independent variable causing the variation in dependent variable" (Chin, 1998). In Iran's Small businesses, 62% variations are caused by variable in environmental sustainability while 66% variation caused in social sustainability. In Turkey's small businesses, 59% in environmental sustainability is caused by variables while 68% variation in social sustainability. Lastly, in Canada 67% variation caused by variables in environmental sustainability whereas 69% in social sustainability. "The values of effect size ( $f^2$ ) are considered as small (0.02), medium (0.15) and large (0.35) respectively" (Cohen, Cohen, West and Aiken, 2013). In present study, the size effects ( $f^2$ ) are moderate for determinants of SCM in Iran, Turkey and Canada (0.16, 0.17 and 0.19); factors supporting SCM (0.15, 0.16 and 0.18); and practices of SCM (0.22, 0.24 and 0.26). Furthermore, strategic SCM has a large size effect ( $f^2$ ) on social sustainability and environmental sustainability in Iran, Turkey and Canada (Social Sustainability ( $f^2$ ) =0.35, 0.35 and 0.36; Environmental Sustainability ( $f^2$ ) =0.36, 0.37 and 0.39. See Table 4).

## 7 Conclusion

### 7.1 Findings

The gathered data from the small businesses operating in Iran, Turkey, and Canada was to gain a multinational perspective about the strategic functioning of supply chain activities. In the light of statistical analysis, the conclusion is drawn that strategic supply chain management statistically significant positively mediates the sustainable operations (environmental and social sustainability). Hence, it is confirmed that irrespective of the type of economy, the strategic SCM positively mediate the environmental and social sustainability. Furthermore, the strategic supply chain management is significant positively affected by the factors supporting SCM, practices of SCM, and determinants of SCM. From the multinational perspective, the strategic SCM is highly effective in creating positive mediations while it has been affected positively by the practices, supporting factors and determinants (all organisational components) of supply chain management. The statistical test results also confirmed that the size effect ( $f^2$ ) is moderate for the impact of factors supporting SCM, practices of SCM, and determinants of SCM on the strategic SCM within the Small businesses. Moreover, strategic SCM is both; a significant mediator as well as found to have a large size effect ( $f^2$ ) on the environmental sustainability and social sustainability in multinational perspective. Interestingly, the nature and strength of the relationship between variables of interest are more visible as well as stronger in Canada (advanced economy) in contrast to Iran (emerging economy) and Turkey (middle ranged economy).

### 7.2 Recommendations

It is recommended that the Small businesses should opt for using advanced technology within the strategic supply chain management process. For commencing the operations, the use of enterprise resource planning (ERP) could be useful in attaining cost-effective operations because it will save time, money, and energy while effective usage of invaluable resources would be possible. This practical approach would help in improving organisational efficiency through strategic SCM process. The use of advanced technology in the evaluation of supporting factors and on-going practices and procedures shall be considered so that operational working efficiency improve further. Through funnel approach it was found that within the SCM operations, cross-team communication is an issue reducing the accuracy within the real time production. Considering the agenda, Faizan and Haque's (2015) strategy of using polar adaptive approach for linking all the departments and sub-units are recommended so that communication is improved, which would bring accuracy through exchange of

information that would lead to bring higher precision the real time production.

Small businesses are part of the societies therefore it shall take appropriate steps to reduce its negative operational impact on the environment and societies. In this regard, a recommendation for strengthening the ties between Small businesses and their stakeholder is through network, collaboration, and communication so that shared resources and knowledge lead to ensure sustainable operations for the environment and societal. For managers, the Small businesses shall make it mandatory to exercise the environmental and social responsibility practices so that the business achieve strategic perspective of environmental and social sustainability. "Through sharing stakeholder network, the good spill-over effects for wider societies could be attained through promotion of socially responsible and environmentally responsible behaviour" (Bressan, 2014; Chwistecka-Dudek, 2016; Szczepańska-Woszczyzna and Kurowska-Pysz, 2016).

### 7.3 Contributions

From theoretical perspective, our study enhances the existing knowledge by theorizing that strategic SCM has a positive mediating effect on the sustainable operations (environmental and social sustainability). It provides the international as well as cross-cultural perspective by offering the findings from three distinctive economies, thus, offers the wider generalizability by delimiting the region-specificity. Since, the use of strategic SCM (as a common mediator), this study is pioneer in offering the theoretical framework to investigate the social and environmental sustainability as separate attributes while considering the range of differing economies whereas previously these dimensions were under research. Thus, now there is a theoretical framework to further expand the scope of studies in this direction. From practical lens, the implication of present study is that now managers have scientific evidence for ensuring strategic SCM has a positive linkage with the supporting factors, practices, and determinants of SCM while strategic supply chain management further creates positive mediation in the sustainable operations (environmental and social sustainability). Furthermore, managers are given practical recommendations to adapt sustainable approach for maintaining higher level of operational efficiency. The study is also invaluable for the governments and policymakers to ensure that Small businesses are encouraged towards use of sustainable operations, so that sustainable Small businesses' ongoing operations have a positive social impact on the communities and societies.

## 7.4 Research limitations and future directions

Despite our best possible efforts for carrying out comprehensive research, there is always something to improve in the future studies. We used cross-sectional design that limits the respondents' participation to only one time while future researchers shall consider the use of longitudinal panel study to have twice participation so that the variation within differing time lags could be determined. This would offer more concrete evidence with differing time lags by having more comprehensive research design. Moreover, the study is quantitative in nature while focusing on the factual truth whereas future researchers shall consider the use of qualitative methods so that there is useful truth. In other words, now the relationship is expressed in numeric so factual truth has been attained, it shall be further expanded by having useful truth to explore the in-depth phenomenon.

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## Posredni učinek strateškega upravljanja dobavne verige na trajnostno poslovanje: večnacionalna perspektiva

**Ozadje in namen:** Namen te primerjalne presečne študije je proučiti posredni vpliv strateškega upravljanja dobavne verige (SCM) na trajnostno poslovanje z okoljsko in družbeno vzdržnostjo v podjetjih, ki delujejo v Kanadi, Iranu in Turčiji, da bi dosegli globalno perspektivo.

**Zasnova / metodologija / pristop:** Več kot 200 malih podjetij v vsaki navedenih držav je vključenih s kombiniranjem namenskega vzorčenja, mreženja in povezovanja. Za kvantitativno analizo podatkov je uporabljeno pametno modeliranje delnih najmanjših kvadratnih enačb (SmartPLS-SEM).

**Rezultati:** Študija je pokazala, da ima v vseh treh izbranih gospodarstvih strateška dobavna veriga na področju trajnostnih operacij (okoljskih in družbenih trajnostnih) pozitivno posredniško vlogo. Ugotovitve so nadalje potrdile, da imajo v večnacionalni perspektivi dejavniki SCM v Kanadi večji pozitiven vpliv v primerjavi z Iranom in Turčijo.

**Zaključki:** Raziskava ponuja nov teoretični prispevek z raziskovanjem posredniške vloge strateške dobavne verige z večnacionalne perspektive za izboljšanje obstoječega znanja. Poleg tega ponuja praktičen prispevek z zagotavljanjem strateškega okvira za raziskave, ki bo pomagal managerjem pri izboljšanju uspešnosti poslovanja malih in srednjih podjetij.

**Ključne besede:** okoljska trajnost, večnacionalna perspektiva, družbena vzdržnost, trajnostno poslovanje, strateško upravljanje dobavne verige

## Appendix: List of Measurement Items

### Factors supporting SCM

#### *Concentration on end consumers*

FSSCM1: »Concentration on end consumers«

#### *Organisational structure*

FSSCM2: »Organisational structure and designed to the purpose of the promotion of cooperation and coordination of activities«

#### *Importance of IT*

FSSCM3: »Information technology«

#### *Knowledge sharing*

FSSCM 4: »Readiness to share the knowledge«

#### *Trust and openness*

FSCM5: »Trust and openness amongst members of the supply chain«

### Determinants of SCM

#### *Global competitiveness*

DSCM1: "Global competitiveness against our supply chain"

#### *Customer needs*

DSCM2: "End customer needs"

DSCM6: "Understanding the on-going trends in market"

#### *Integration process*

DSCM3: "Integration of processes within supply chain"

DSCM7: "Improving processes and productivity"

#### *Cooperation*

DSCM4: "Members of supply chain cooperation"

DSCM5: "Internal cross-functional cooperation"

#### *Cost reduction*

DSCM8: "reduction of cost"

### Practices of SCM:

#### *In line internal strategy with Supply chain strategy:*

PSCM1: »Members of our supply chain have aligned their product strategies to supply chain strategy«

PSCM5: »Members of our supply chain have aligned their supply strategies to supply chain strategy«

PSCM7: »Members of our supply chain have aligned their distribution strategies to supply chain strategy«

#### *Sustainability*



PSCM2: »Members of our supply chain use sustainability concepts in the supply chain strategy«

PSCM6: »Members of our supply chain promote sustainable operations«

***Coordination and communication***

PSCM3: »Members of our supply chain jointly manage inventory and logistics«

PSCM8: »Members of our supply chain use information technologies to increase the efficiency of communication«

PSCM9: »Members of our supply chain formally exchange production information on a regular basis, eg. through sales and operations planning meetings«

***Standardized guidelines***

PSCM4: »Members of our supply chain have a standardized quality policy for both products and processes with established guidelines«

PSCM10: »Members of our supply chain have the clear policy related to Supply Chain Management«

**Strategic supply chain management**

***Inter-organisational communication***

SSCM1: »Our organisation has continuous inter-organisational communication for quality improvement program«

***Cross-organisational team***

SSCM2: »Organisation's production process modules can be rearranged so that customization can be carried out latter at distribution centers through cross-organisational team«

***High-quality suppliers***

SSCM3: »Our organisation strategic planning relies on few high-quality suppliers«

***Long-term orientation***

SSCM4: »Organisation shares a sense of fair play with its customers to have long-term orientation«

SSCM5: »Our organisation's trading partners keep us fully informed about issues that affect its business as part of long-term orientation«

**Environmental Sustainability:**

***Environmental-friendly***

ES1: "Environmentally friendly production processes"

***Waste reduction***

ES2: "Acting towards reduction the amount of waste"

***Reduction of negative impact***

ES3: "Engaging in production processes free from harmful substances emissions"

ES5: "Use of renewable sources in production"

***Creating environmental awareness***

ES4: "Involving workers in environment protection schemes"

ES6: "Choosing partners in the supply chain on the basis of environmental guidelines"

**Social Sustainability:**

***Ethical Standards***

SS1: "Applying ethical business and trade standards"

SS6: "Applying the code of ethical conduct to employees and contractors"

***Community related operations***

SS2: "Applying fair employment practices to the local community"

SS5: "Contribution in local community charitable donations"

***Safety standards***

SS3: "Providing health and safety equipment"

***Poverty reduction***

SS4: "Investments in poverty reduction programs"