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SUPPLY CHAIN MANAGEMENT PRACTICES:

(A CASE STUDY OF A FOOD PRODUCTION COMPANY)

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ABSTRACT

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The study sought to investigate the supply chain practices, adopted by the various supply chain partners, in a food supply chain which consists of small enterprises. This is because the inefficiencies in both unique sectors cause hikes in food prices that may lead to the collapse of small enterprises.

Supply chain practices such as internal and external integration, information sharing, lean production and traceability were examined.

A questionnaire was used as the research instrument for this descriptive case study approach because the context of the phenomenon being investigated in order to address the research question. The findings indicate that the focal firms collaborate more with their suppliers than with customers. This is primarily attributed to information asymmetry between the focal firm and the customers. The recommendations suggest that there must be effective collaboration between all the supply chain members in order to improve both internal and external integration which will reduce costs and improve transparency and traceability processes needed for a food supply chain.

Keywords food supply chain, small enterprises, supply chain practices

TABLE OF CONTENTS

ABBREVIATIONS 5
LIST OF FIGURES AND TABLES 6
1.1 Background of the study 7
1.2 Statement of the problem 8
1.3 Objectives of the study 8
1.4 Research questions 8
1.5 Scope of the study 9
1.6 Significance of the study 9
1.7 Limitations of the study 10
1.8 Organization of the study 10
1.9 Summary of Introductory Chapter 11
LITERATURE REVIEW 11
2.1 Overview of key concepts 11
2.2 Small and Medium-Sized Enterprises (SMEs) 11
2.3 Supply Chain 12
2.4 Supply Chain Management (SCM) 15
2.5 Supply Chain Risk Management (SCRM) 19
2.1.5 Supply Chain Integration (SCI) 22
2.6 Lean, Resilient, and Green Management Practices 25
2.7 Summary of Literature Review 27
RESEARCH METHODOLOGY 28
3.1 Research Design 28
3.2 Population and Sample Size of the Study 28
3.3 Data Collection 29
3.4 Questionnaire Design 29
3.5 Reliability and Validity 30
3.6 Summary of Methodology 31
EMPERICAL STUDY 31
4.0 Introduction of the case study findings 31
4.2 Brief description of the supply chain 32
4.3 Adoption of Traditional SCM practices 34

4.4 Adoption of Emerging SCM practices 40
4.5 The reliability and validity of this case study 44
4.6 Summary of Findings 44
SUMMARY, CONCLUSION AND RECOMMENDATIONS 46
5.0 Concluding Chapter 46
5.1 Summary 46
5.2 Conclusion 47
5.3 Recommendations 47
REFERENCES 49
APPENDIX 1: QUESTIONNAIRE 57

ABBREVIATIONS

IT	Information Technology
SC	Supply chain
SCI	Supply chain integration
SCM	Supply chain management
SCRM	Supply chain risk management
SME	Small and medium-sized enterprises

LIST OF FIGURES AND TABLES

Figure 1. Basic supply chain. p.13

Figure 2. A schematic diagram of a supply chain. p.14

Figure 3. Benefits of supply chain management prices. p.16

Figure 4. concept of supply chain. p.19

Figure 5. Internal and external supply chain p.22

Table 1. Likert scale and measures. p.29

Table 2. General information about firms in Food Supply Chain p.32

Figure 6. Does the firm have a Supply Chain Manager? p.33

Table 3. The extent of adaptation of traditional supply chain practices p.34 - 36

Figure 7. Does the firm have a supply chain manager? p.37

Table 4. Types of Suppliers p.40

Figure 8. Impact of supply chain practices and events on the firm performance p.41

1.1 Background of the study

Finland is a pro-entrepreneurial economy with 99.7% of its businesses characterized as small and medium-sized enterprises (SMEs). Small and medium-sized enterprises serve as the backbone of many economies and Finland is no exception to this fact. The value added by SMEs from 2012 through to 2016 is double that of those of large corporations in Finland, which had an increase of 7.2% (European Commission, 2018). Also, the share of employment of these small and medium-sized enterprises in Finland increased their contribution to the employment sector by 6% from 2010 to 2015. These statistics enabled the economy to maintain its competitiveness in the Small Business Act principle areas documented by the European Commission. Another business sector that is interesting to note is the food industry; which is a unique market, given recent consumer awareness on food quality, safety, impact on the environment and its effects on a healthy lifestyle.

The food industry is also characterized by "seasonality, supply spikes and perishability" (Behzadi, O'Sullivan, Olsen and Zhang, 2018). As at 2012, Staniskis states that, the demand for food had tripled, yet still unable to meet the amount needed for human consumption. Singh, Shukla and Mishra (2018) state that in order to attract customers, firms must offer high-quality food at a relatively lower price. Inefficiencies in the operations of supply chains is outlined as a contributory factor to the high food prices in EU member states (Bukeviciute, Dierx, & Ilzkovitz, 2009). These include supply chain partners that are involved with the production, processing and transportation of the food product.

Studies such as Wiengarten et al. (2011), Trienekens et al. (2012), Murphy and Adair (2013), Beske et al. (2014) and Govindan (2018) reiterate the importance of supply chain management practices to food industry stakeholders in other geographical regions. Both the SME and food sectors operate in an uncertain and competitive environment which affect their profitability.

1.2 Statement of the problem

The present literature on supply chain management practices is usually focused on large corporations to the neglect of small and medium-sized enterprises. SMEs are often noted to fail within the first 5 years of operation (OECD, 2000). In addition to the gap which shows the exclusion of SMEs, current studies are focused on the manufacturing firms in China.

Combining the importance of SMEs and the food industry warrants a study into the practices of enterprises that ensure food is moved from the farms to the table and how the collaborative effort of members of a supply chain sustain their competitive advantage and customer satisfaction.

In addition to the literature that show that supply chain management practices positively impact organizational performance, this study seeks to explore supply chain management practices in SMEs in the food industry in Finland using a single food supply chain.

1.3 Objectives of the study

The objective of the research is to explore the extent of adoption of supply chain management (SCM) practices employed in a food supply chain within an SME. The specific objectives of the study are:

1. To provide insight for the development of a supply chain design suited for SMEs.
2. To investigate the SCM practices adopted by the various supply chain partners in a food supply chain.

1.4 Research questions

The study will use a case study approach to address the following research questions:

1. What are the supply chain management practices adopted by a small enterprise in the food industry?
2. What are the supply chain integration issues faced by a small enterprise in the food industry?

1.5 Scope of the study

This research is a descriptive case study to be used to explore the supply chain management practices of a food supply chain in Finland. Thus, the respondents of the questionnaire will be limited to the employees of food enterprise (firm X) and its suppliers and customers. The food supply chain consists of agricultural producers, processors, logistic companies, distributors and final consumers.

1.6 Significance of the study

The contributions of supply chain practices to organizational performance and competitive advantage cannot be understated. This study contributes to academia, policy formulation and practice. The focus of this study is a supply chain that belongs to both the SME and food sector which is the main gap in literature and practice that this research seeks to fill. The government and policy makers for both the entrepreneurial and food sectors will be encouraged to train workers in those sectors on the benefits of supply collaboration in order to reduce food prices and increase profitability.

The study seeks to provide empirical evidence on the business practices in both the food industry and the SME sector in order to uncover practices overlooked by managers in a typical food supply chain. The findings of this paper provide useful information on the supply chain management (SCM) practices adopted by firms to increase their competitive advantage. These will serve as managerial guidelines because they are proven techniques found to improve supply chain performance.

1.7 Limitations of the study

Several challenges were encountered while conducting the study which could serve as avenues for further research. Firstly, the adoption of the case study approach limited the sample to a single supply chain in the food sector: a Finnish food production company, which is in this case is a small enterprise. This sample is limited by the respondents of the supply chain which involves a small number of employees given the employment capacity of SMEs. Also, the research design was intended to collect data from different levels of ranks of the supply chain. However, the data collection was constrained with time and low response rate from the targeted respondents. Further researchers could contact the farmers' associations, agro-processing firm, and retail and distribution centres. Another point to note is the exploratory nature of the case method which restricts statistical generalization. This study attempted to use triangulated data by administering the questionnaire to employees of firms in the same supply chain who do business with the focal company. No access to financial records of the firms used in the study meant that this study could not quantitatively examine the impact of supply chain on financial performance.

1.8 Organization of the study

The thesis is divided into five sections. The introductory section mainly provides the background of the study, the problem statement, research objectives and questions. The literature review explains the key concepts which relate to supply chain processes and their importance to organizational performance and competitive advantage. The methodology of the thesis comprising of the population, sample size, method of data collection and analysis are outlined. The findings of the study is presented and discussed in the chapter preceding the concluding section. The last section includes the summary of the entire work, conclusions arrived from the findings and the recommendations that can be adopted by practitioners in the food industry.

1.9 Summary of Introductory Chapter

This chapter acquaints us with the background, research problem, objectives, questions, scope and limitations of the thesis. The three main challenges that affect the food industry show that supply chain practices are important for the success of SMEs. The entire structure of the thesis is also stated. The next chapter discusses the relevant literature concerning supply chain and the various practices.

LITERATURE REVIEW

2.1 Overview of key concepts

An overview of the key concepts addressed in this research is discussed in this section. The definitions deemed appropriate to document the SCM practices adopted by supply chain partners of the food industry are presented. The concepts include small and medium-sized enterprises, supply chain, supply chain management, supply chain risk management, supply chain integration, lean, resilient and green management practices.

The importance of the adoption of supply chain processes into the operations of an enterprise is to achieve organizational performance and sustain its competitive advantage. Organizational performance may come in the form of growth in market share, return on investment, sales growth, and profitability. In general, the dimensions along which competitive advantage is achieved and sustained are price or cost, quality, delivery dependability, time to market and product innovation.

2.2 Small and Medium-Sized Enterprises (SMEs)

There are various definitions of SMEs (Kherbach & Mocan, 2016) which is based on several criteria such as the number of employees of the firm in question, annual turnover, total assets and ownership of the enterprise.

OECD (2000) characterized enterprises based on the turnover or and the employment capacity of the firm. Their report also states that the categorization of firms as SMEs

differ based on a country's criteria. For example, the European Commission (2011) refers to firms with employees' strength between 100 and 499 as medium-sized enterprises; small enterprises have an employee capacity between 10 and 99; and micro enterprises have less than 9 employees. According to WTO (2016), most countries label firms with 50 to 250 employees as medium-sized and those with 10 to 49 employees as small enterprises. Any firm with up to 10 employees is classified as a microenterprise. This study uses the criterion suggested by WTO (2016) and European Commission (2018).

SMEs make up a greater part of the private sector which drive both entrepreneurial and economic growth. These enterprises serve as a source of employment, good products and services and contribute to the gross domestic product of the country. SMEs cut across a variety of industries such as agriculture, food processing, trade and service. According to Chapman, Lawrence and Helms (2000), SMEs already play vital roles in supply chains and already adopt an integrated approach in operation.

The notion that large corporations' benefit from the adoption of SCM practices is prevalent in empirical literature. This is attributable to these practices which enable the corporations reduce costs and deliver better goods and services to consumers. Given this background, SMEs can also take advantage of the benefits of SCM to mitigate their risk of failure, reduce costs and sustain their competitive advantage. This informed the focus of this study - which is a small enterprise in the food industry.

2.3 Supply Chain

The typical supply chain involves timely flow of materials, relevant information and products across members of the supply chain. Older studies such as Lee and Billington (1995), describe a supply chain as a "network of production and distribution sites". Guide, Jayaraman and Linton's definition of supply chain extends from the sourcing of raw materials, to manufacturing, to distribution and to the disposal of the goods (2003). A simple supply chain is depicted in Figure 1 and Figure 2 sourced from Rebula de Oliveira, Marins, Rocha, and Salomon (2017) and Chen and Paulraj (2004)

respectively. Figure 1 shows flow of raw materials from the supplier to the central firm and the movement of the finished goods from the central firm to the customers.

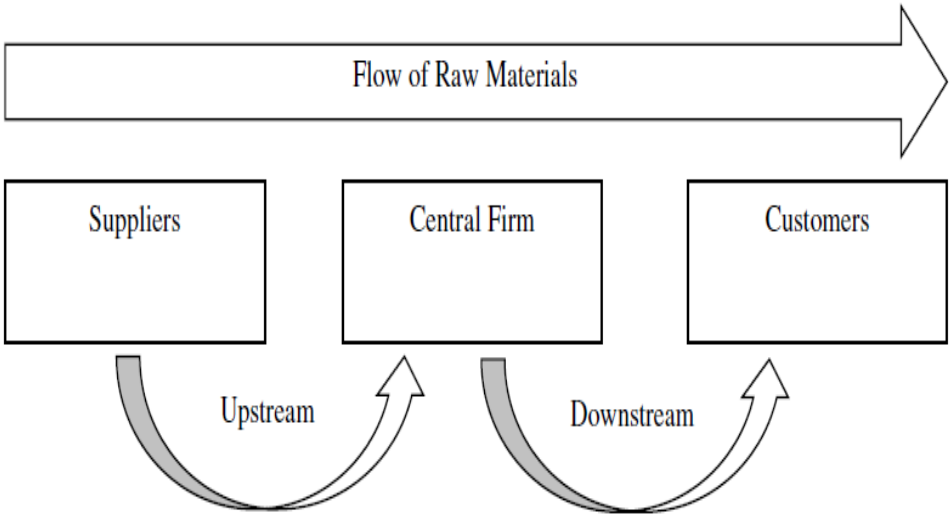

Figure 1.

Basic supply chain.

This study is focused on the small enterprises in the food industry. Folkerts and Koehorst (1998) define a food supply chain as "a set of interdependent companies that work closely together to manage the flow of goods and services along the value-added chain of agricultural and food products, in order to realize superior customer value at the lowest possible costs." This supply chain considers all the processes undertaken to get food on the table. The food industry is quite dynamic given that the preferences and tastes of consumers influence the demand of food products (Van Donk, Akkerman, & Van der Vaart, 2008; Baker & Smyth, 2012).

The food industry is plagued with risks that come with perishability, seasonality and supply spikes, adverse weather conditions, diseases and pests (Behzadi et al., 2018).

Figure 2 illustrates the variety of products in different markets - the agricultural, food processing and distribution sectors (Bukeviciute et al., 2009). The diagram is aptly

described by Simchi-Levi et al., (1999) as a network of interdependent suppliers, manufacturers, distribution centers, and retailers that collaborate.

Extant literature on supply chain argues that its adoption reduces the cost, increases the profitability and sustains the competitive advantage of enterprises profitable. An important characteristic of supply chain is the interconnectedness it provides the partners of the supply chain which enables them depend on each other to deliver superior service to consumers (Kamalahmadi & Parast, 2016). The entire food supply chain is responsible for the safety and high-quality of food thus the “supply chain is as strong as its weakest member”.

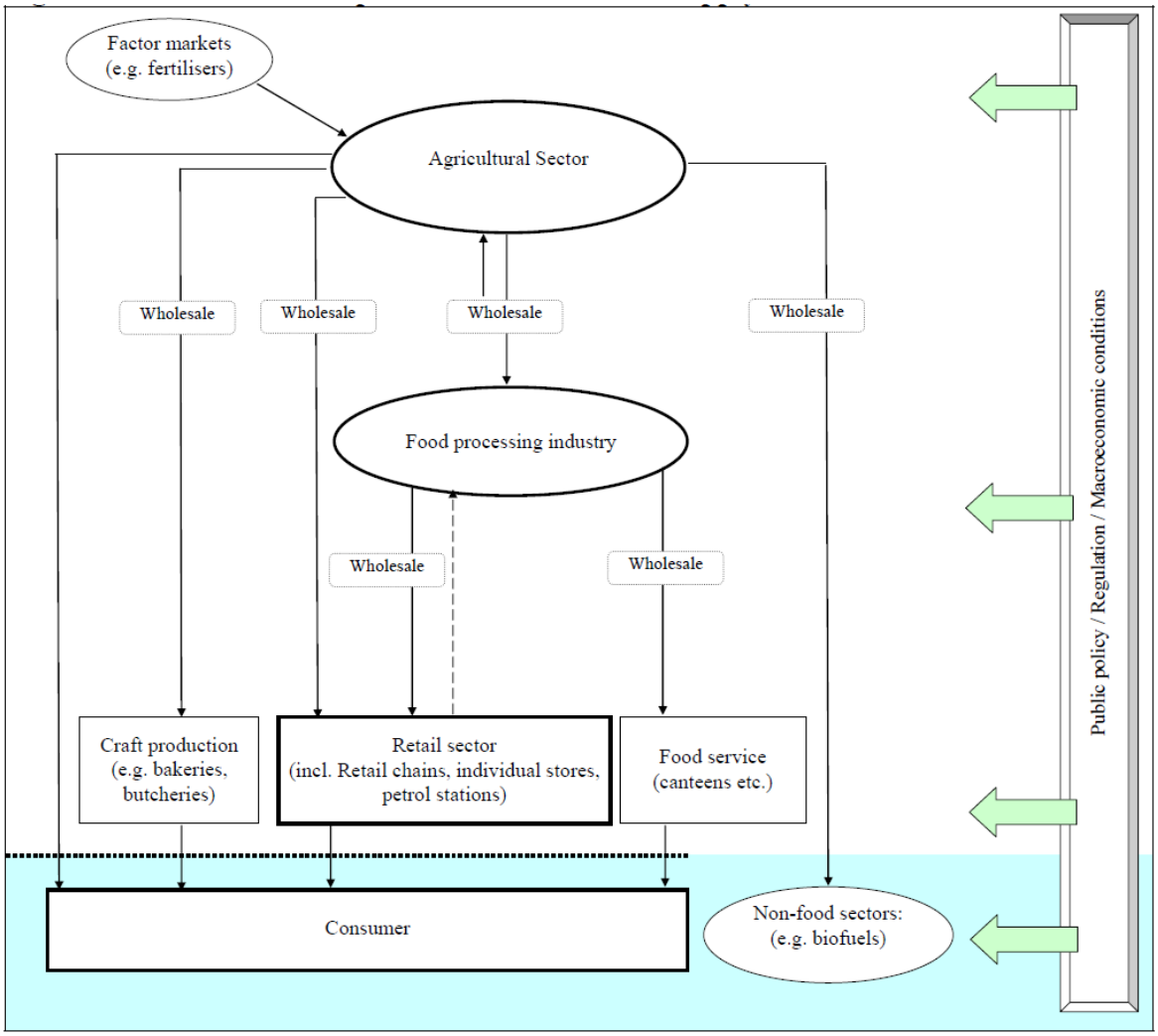

Figure 2.

A schematic diagram of a food supply chain.

2.4 Supply Chain Management (SCM)

Tang (2006) refers to SCM as "the management of material, information and financial flows through a network of organizations (i.e., suppliers, manufacturers, logistics providers, wholesalers/ distributors, retailers) that aims to produce and deliver products or services for the consumers. It includes the coordination and collaboration of processes and activities across different functions such as marketing, sales, production, product design, procurement, logistics, finance, and information technology within the

network of organizations.” SCM considers the upstream and downstream relations with the stakeholders in a supply chain (Li, Ragu-Nathan, Ragu-Nathan, & Rao, 2006).

The term “supply chain management” was introduced by Oliver and Webber (1982) to replace the concept of logistics which ensures that goods and services are provided at the right time. However, SCM is an extension of the logistics concept which incorporates integration into the business operations of enterprises (Cooper, Lambert, & Pagh, 1997). Therefore, SCM is not a replacement of logistics. It is imperative to distinguish between logistics management and supply chain management given that the two concepts are related. Christopher (2005) defines logistics management as “the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organization and its marketing channels in such a way that current and future profitability are maximized through the cost-effective fulfilment of orders.”

The benefits of SCM is captured in Figure 3 adapted from Li et al.(2006). The adoption of SCM practices is expected to improve on the competitive advantage and organizational performance of the individual firms and the supply chain as a whole. This diagram can also serve as the case propositon for this study.

Proposition: The adoption of supply chain practices positively impact on a firm's competitive advantage and organizational performance.

The focus of the study is to provide the foundation for the formulation of both theoretical and quantitative models to help improve the SCM practices of supply chains. This will in turn help to sustain competitive advantages; especially lower prices of food products in order to impact the survival of SMEs.

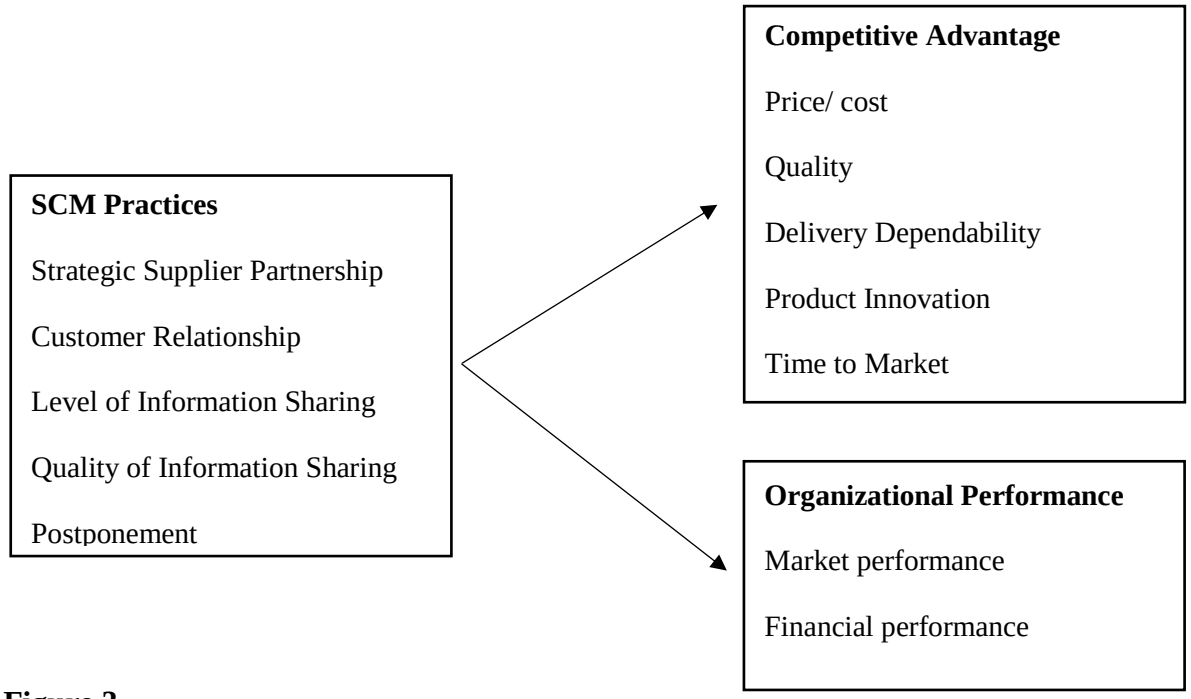

Figure 3.

Benefits of supply chain management practices.

The constructs of SCM practices are supplier and customer relationship, level and quality of information sharing and postponement. Both supplier and customer relationship involve collaboration between the focal firm and its suppliers and customers and the sharing of timely, relevant and credible information to smoothen the business processes.

Chapman et al., (2000) and Chin, Hamid, Rasli and Baharun, (2012) suggest that the strategic relationship between SMEs and their suppliers and customers have helped sustain the competitiveness of SMEs even in the face of supply chain risks. This enables the firms compete on value and improves upon the overall performance of the supply chain (Li, Fan, Lee, & Cheng, 2015). This collaboration ensures that the supply chain members can effectively meet the business requirements (Stevens,1989; Charka & Jaju, 2014).

Jaharuddin, Mansor and Yaakob (2016) ague that information is important for SMEs as inadequate credible information lowers the level of integration which increases their risk of failure. Information holds the supply chain together in fostering collaboration and joint decision-making.

Information sharing is vital to the supply chain because the dissemination of accurate, timely, adequate, credible and operational data is needed in order to improve both product and material flows in the supply chain (Van Donk, Akkerman, & Van der Vaart, 2008). Constraints to information sharing which include low level of information quality and incompatibility of information systems reduce the potential positive impact of information sharing on the effectiveness of supply chain integration (Ali, Babai, Boylan, & Syntetos, 2017). Information sharing is enabled by IT through facilitating the transmission of real time relevant operational information. Supplier relationships which are long-term positively affect performance directly and indirectly through information sharing (Prajogo & Olhager, 2012). The study by Nyaga, Whipple and Lynch (2010) using 370 buyers and 250 suppliers indicate that information sharing contribute to improved satisfaction and the performance of enterprises that engage in collaborative relationships.

Li et al. (2006) lists the competitive advantage that supply chain members enjoy as price or cost, quality, delivery dependability, product innovation and time to market. Cost is the first priority in a risk mitigation strategy developed by Kirilmaz and Erol (2017) to reduce the risks in supply manangement. Theft, fragility of goods, long transportation routes may affect the delivery of the products to the end-user. The

occurrence of such activities will reduce customer satisfaction which means that the reliability of the delivery is crucial to supply chains.

Nature contributes to a longer supply lead time in some situtaions (Behzadi et al., 2018). The other activities in the food supply chain such as harvesting and food processing may be affected during fluctuations in the supply of farm produce. This explains why the time to market dimension must be delicately handled to reduce delay which disrupts the business processes of members of the supply chain.

The firms experience organizational performance in the form of increased production, reduced inventory and cycle time, increased market share and profitability. Competitive advantage is achieved when a firm is perceived to deliver better goods and services of higher value than that of competitors. This implies that the customer would be satisfied and improve upon that strategic relationship (Qorri, Mujkic, & Kraslawski, 2018).

The resource-based view and agency theory are the theoretical paradigms of supply chain that this study considers. Barney (1991) proposes that the resources and capabilities of a firm are necessary for their contribution to the creation and sustenance of competitive advantages enjoyed by supply chain members. This is known as the the resource-based view. The agency theory describes a situation where a principal delegates work to an agent. This is important as most of the practices adopted by the SC are collaborative and involves the sharing of information, funds and goods to necessitatte action by the SC members (Zsidisin & Ellram, 2003).

2.5 Supply Chain Risk Management (SCRM)

Although SCM practices are to facilitate the effective management of a firm (Koh, Demirbag, Bayraktar, Tatoglu, & Zaim, 2007), the risks that affect supply chains are many. This informs the need for supply chain risk management. Supply chain risks come in the form of disruptions that affect supply chain activities. Christopher (2004) categorizes risks as “process and value stream related, assets and infrastructure related, organizational and interorganizational risks, environmental risks”. Which explains the

sources of the risks. The risks that affect supply chain include credit crunch, natural disasters, adverse weather conditions, fire, IT failure and uncertainty with demand, yield capacity and input cost. There are risks that affect supply and demand while another group of risks are disruptions caused by external factors (Kleindorfer & Saad, 2005). For food supply chains, quality risks are of utmost impotance as consumers are interested in quality and safety of the edible products they purchase (Van Rijswijk & Frewer, 2008; Ting, Tse, Ho, Chung, & Pang, 2014; Zondag, Muellerb, & Ferrin, 2017). The risks of food supply chain are increased because of their perishability (Behzadi et. al, 2018).

Supply chain risks lower profitability, operational efficiency and other competitive advantages (Hunt, Craighead, & Ketchen Jr., 2010; Mensah & Merkuryev, 2014). These risks affect the short-term performance of supply chains (Tang, 2006).

The mitigation approach involves the management of supply, demand, product and information. The mitigation strategy can be made efffective by combining SCM and SCRM (Li et al., 2015). SCRM allows firms to proactively prepare to reduce the impact of risks that occur as one collaborates with supply chain members (Wu & Blackhurst, 2009; Beske et al., 2014).

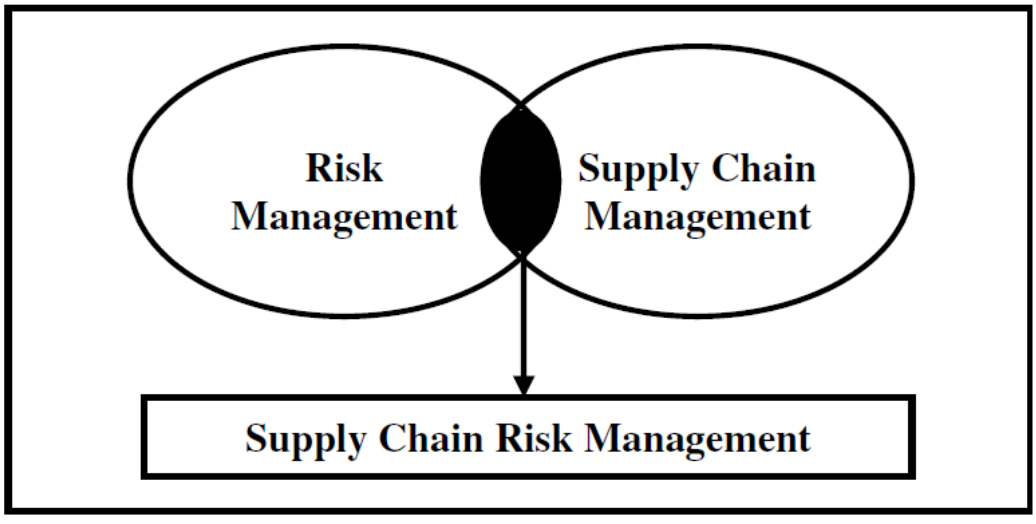

Figure 4

The concept of Supply chain Risk Management. Blos, Quaddus, Wee, & Watanabe (2009)

According to Chapman (2006), SCRM involves identifying, assessing, analyzing and treating risks. Supply chain risk management is defined as the "implementation of strategies to manage both every day and exceptional risks along the supply chain based on continuous risk assessment with the objective of reducing vulnerability and ensuring continuity" (Wieland & Wallenburg, 2012). Figure 4 which was sourced from Blos, Quaddus, Wee, and Watanabe (2009) shows a Venn Diagram which portrays the concept of supply chain risk management. The diagram shows SCRM as an intersection which combines risk management and supply chain management in its function. The risk management is to help take care of the risks that supply chain face even though supply chain management practices have beeen adopted.

Enterprises must identify the sources of the risks that disrupt the smooth performance of their supply chain. This is largely due to the negative impact that the risks pose to the firm's competitive advantage and organizational performance. Risk analysis involves identifying, measuring, evaluating, mitigating, monitoring and controlling risks (Kirilmaz & Erol, 2017). Risk analyis and control helps the stakeholders of the a supply chain make well-informed decisions which influence the response to uncertainties (Heckmann, Comes, & Nickel, 2015). The level of likelihood of occurrence and impact of identified risks is assessed to inform the mitigation approach. There are risks which could be avoided and others that could be controlled to reduce their probability of occurrence. Other risks are also shared by the members of the supply chain.

The risks emanating from the upstream level of the supply chain are very disruptive (Rajesh & Ravi, 2015). Global sourcing and lean production expose the supply chains to vulnerability (Christopher & Peck, 2004). In light of the impact of such risks,

choosing a resilient supplier will help the firm sustain its competitive advantage. Most firms reduce supplier risks by increased outsourcing (Giannakis & Papadopoulos, 2016). Recent SCM practices such as just in time and lean production, shorter product cycle and lead times make the SC prone to high risks. When one supply chain partner achieves his goal, it may expose other partners to higher risks thus there is a need for collaboration to mitigate the effect of such risks (Fan, Li, Sun, & Cheng, 2017). Diversifying the sources of supply is used in SCRM especially when cost is not the only consideration in the selection of suppliers. All risks in the supply chain are important because the supply chain is as strong as its weakest member.

Kirilmaz and Erol (2017) suggest the following for mitigating suppliers' risk:

1. "Creating the minimum cost procurement plan via linear programming.
2. Performing risk analysis and identifying the risk profiles of suppliers.
3. Determination of the product quantity to be transferred in proportion to the supplier risk profile.
4. Product transfer from a risky supplier to a relatively less risky (reliable) supplier via a network model.
5. Creating the new cost and risk-based procurement plan."

Using data from 350 Chinese manufacturing firms, Fan et al. (2017) find that Supply Chain Risk Management impact risk information sharing and risk analysis and assessment positively. Shared SCRM strategy improve on the financial performance of supply chain members as evidenced by a study using data collected from 350 manufacturing firms (Li et al., 2015). The findings of Lavastre, Gunasekaran and Spalanzani (2012) suggest that the exchange of timely and credible information and collaboration with SC partners leads to effective SCRM using data collected from 142 managers in 50 French companies.

2.1.5 Supply Chain Integration (SCI)

There is a need for strategic collaborative partnerships between supply chain members in order to synchronize business processes to fulfil customer demand (Lambert,

Cooper, & Pagh, 1998; Pearcy, Parker, & Guinipero, 2008). This is referred to as supply chain integration (SCI) or supply chain collaboration. In order for SCM to be effective, there is a need to integrate the activities of the supply chain partners (Tang & Musa, 2011).

SCI is "the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra- and inter-organizational processes, in order to achieve effective and efficient flow of products and services, information, money and decisions, to provide maximum value to the customer" (Flynn, Huo, & Zhao, 2010). The intra-organizational process is carried out within the functional departments of an organization and is referred to as internal integration. Externally, integration is carried out either upstream with suppliers or downstream with customers through inter-organizational collaboration. This implies that there are three constructs of SCI which are: customer integration, supplier integration, and internal integration.

Figure 4 which is sourced from Chen and Paulraj (2004) shows the integration that occurs within the internal supply chain and how the flow of information goods and funds is passed unto supply chain members.

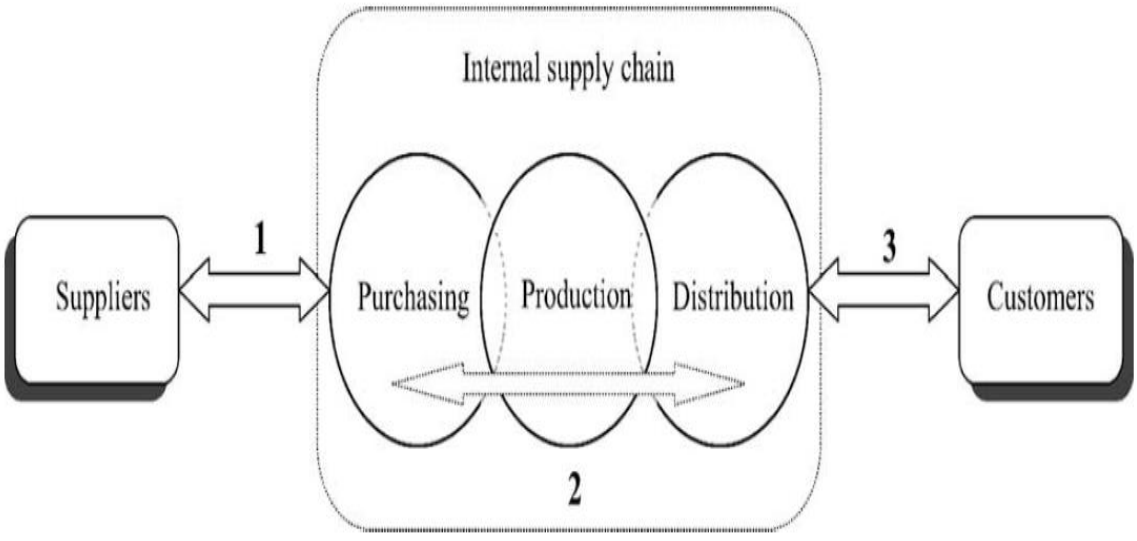

Figure 5.

Internal and external supply chain.

Internal and external integration affect the performance indicators of a firm differently. The impact of supplier or customer integration on a firm's operational and financial performance could vary significantly (Schoenherr & Swink, 2012). Through integration, firms get to leverage on the resources of their supply chain partners (Cao & Zhang, 2011). SCI also improves efficiency, flexibility, competitive advantage and performance (Flynn et al., 2010; Nyaga et al., 2010; Qi, Huo, Wang, & Yeung, 2017). Zhao, Feng and Wang (2015) investigate the impact of integration on financial performance on 195 Chinese firms. They find that there is an inverted - U shaped relationship between integration and financial performance. Flynn et al.(2010) also find that customer and internal integration affect the performance of an enterprise more than supplier integration. For the food industry, Kumar et al., (2017) find a positive correlation between SCI and supply chain performance.

Even though SCI leads to superior performance and increases the responsiveness of the partners to market needs (Cao & Zhang, 2011; Wiengarten, Humphreys, Gimenez, & McIvor, 2016), there are problems associated with SCI. The nature of SCI is time-consuming, may involve conflict of interest, opportunistic behaviour and be constrained by an inflexible firm culture. Silvestre, Monteiro, Viana, and de Sousa-Filho (2018) suggest that collaboration between stakeholders may also heighten the risk of corruption.

The collaborative nature of SCI enables the supply chain partners to access important information and resources available to the supply chain (Huo, 2012). Sharing of information translates into higher levels of supply chain integration when it is applied to both supplier and customer relationships. Information sharing influences competitive advantage through cost reduction, improved supply chain stakeholder relationships and improved sales. (Lee, So , & Tang , 2000; Zhou & Benton , 2007; Kocoglu, Imamoglu, Ince, & Keshin, 2011). Information integration implies that

sharing information must be better coordinated to swiftly respond to disruptions (Prajogo & Olhager, 2012).

Information technology facilitates the sharing of real time operational information to improve upon decisions made by the supply chain partners which reduces costs related to inventory and supply chain disruptions (Lee et al., 2000). The findings of Sheu, Yen and Chae (2006) suggest that supply chain partners effectively collaborate with improved IT platforms which promotes participation.

2.6 Lean, Resilient, and Green Management Practices

These three paradigms are the latest approaches used by firms to remain competitive and sustainable in dynamic markets (Govindan, Azevedo, Carvalho, & Cruz-Machado, 2014). Lean and green practices are important as they both encourage waste elimination internally and across the entire supply chain (Fliedner & Majeske, 2010; Azevedo, Carvalho, Duarte, & Cruz-Machado, 2012).

Firms that adopt lean practices emphasize reduction in waste and ensure fewer disruptions in the distribution of goods and information. The lean supply chain uses the just-in-time approach which involves the delivery of products when it is needed and typically in small batches. The just-in-time incorporates time constraints into the supply chain strategy Thus, this results in an overall cost reduction through lower storage costs, product quality, less delivery time, optimal use of resources (Marhamati, Azizi, & Marhamati, 2017). Qi et al.(2017) find that 604 manufacturers in China prioritize cost, quality and delivery strategies in their lean supply chains.

Ponomarov and Holcomb (2009) describe supply chain resilience as “the adaptive capability of the supply chain to prepare for unexpected events, respond to disruptions and recover from them by maintaining continuity of operations at the desired level of connectedness and control over structure and function”. There is a dichotomy in the way resilience is perceived. According to Kamalahmadi and Parast (2016), resilience is characterised by the enterprise’s capability to be both proactive and reactive in the resolution of supply chain disruptions.

Resilience should be developed at the firm level to overcome supply chain vulnerabilities. The strategies of resilient firms consider innovation, valuation and partnerships (Winston, 2014). Resilient supply chains are able to reduce the impact of supply chain risks on their "productivity, revenue, profitability and competitive advantage" (Mensah & Merkuryev, 2014). According to Fiksel, Polyviou, Croxton, and Pettit (2015) and Behzadi et al. (2018), supply chain resilience complements SCRM. Mensah and Merkuryev (2014) developed a strategy to make supply chain management resilient; which includes string corporate culture, lean production, the six sigma strategy and flexibility.

Green practices involve "integrating environmental thinking into supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life" (Srivastava, 2007). According to Ahi and Searcy (2013), the green approach is a component of sustainable supply chain practices which focuses on the environment. The amount of wastage in the food supply chain can be reduced by using re-usable containers for packaging. Dubey et al. (2017) concludes that in order to be recognized as a green firm, the technologies and product development must project as green brand. Carbon dioxide emissions are a problem for supply chains given the importance of transportation to the supply chain (Ji, Gunasekaran, & Yang, 2014).

Sustainability issues are an emerging area in supply chain literature (Beske et al.,2014; Fahimnia, Tang, Davarzani, & Sarkis, 2015). Sustainability relates to "economic practices which meet the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). Sustainable supply chains are concerned with economic, environment and social issues (Seuring & Müller, 2008). Govindan et al.(2014) examine the effect of lean, resilient and green supply chain practices on the sustainability of the Portuguese automotive industry. Their study finds that waste

elimination, SCRM and cleaner production influence the sustainability of supply chains.

Two concepts prevalent in the food industry are traceability and transparency. The adoption of both practices assures consumers of guaranteed food safety and quality. Traceability distinguishes the quality attributes of the food products. It involves tracking the food product from the farm to fork using unique identification for the supplier, buyer and the product (Dabbene, Gay, & Tortia, 2014; Pizzuti & Mirabelli, 2015). Consumers want safe, healthy and consistent good quality food products (Trienekens et al., 2012). Products that are non-complaint can easily be identified and traced to avert food contamination and crises.

2.7 Summary of Literature Review

The literature review of this thesis consists of the definitions, importance and findings of the extant literature on the concepts of small and medium sized enterprises, supply chains and their management, supply chain risk management, supply chain integration, lean, resilient, and green supply chain practices. The research methodology is discussed in the following chapter.

RESEARCH METHODOLOGY

3.1 Research Design

This project takes the form of both qualitative and quantitative research which addresses the questions of what, where, why and how in order to build or disprove theories by using a real-world case study. The quantitative part of this study is structured that, analyses were made on the number of respondents of the research questionnaire distributed to the company in question. Case studies help build theories (Zondag et al., 2017) by providing in-depth knowledge on the topic of interest (Ellram, 1996). Yin (2014) suggests the use of a descriptive case study design when the context of the phenomenon is relevant to address the research question. Studies such as that of Seuring and Müller (2008), also argue for the use of case studies to develop models in supply chains. Moreover, Patton (2002) proposes that if the findings of a study is not generated through statistical techniques, it qualifies as qualitative research.

3.2 Population and Sample Size of the Study

The purposeful random sampling procedure which is primarily purposive sampling will be used in the implementation of this case study. According to Neuman (2011), purposive sampling are effective for exploratory research because the researcher decides the approapriateness of the sample to address the research objectives. The use of a random sample involves the use of random respondents in order to control researcher bias which may exist during the data collection process.

The target population of interest for this study is the food industry in Finland. This research uses non-probability sampling in the selection of the firms' order achieve its objectives (Patton, 2002). For the purpose of this research, the focus of the study is the SMEs in the food industry. This is unique because of the dynamic nature of the food industry, the demands of consumers and the risks involved.

The target respondents will spread across the various levels of supply chain management categorized by upstream (suppliers), the focal enterprise and downstream

levels (distributors and consumers). According to Cooper and Ellram (1993), a focal company leads and takes charge of the collaboration among the members of the supply chain. Concentrating on only the focal company to analyze SCM practices can be considered as bias thus the inclusion of the other supply chain partners (Silvestre et al., 2018).

3.3 Data Collection

According to Pizzuti and Mirabelli (2015), the supply chain partners in a typical food supply chain are the agricultural producers, processors, logistic companies, distributors and final consumers. The employees of these categories of supply chain partners will serve as the target respondents of this research. The typical respondents for such a study are employees in the productions, operations, logistics and finance departments. The IT manager is included because business need to be electronically connected in order ensure effective supply chain integration.

The main instrument for data collection will be a questionnaire developed from a review of literature on supply chain management practices. The questionnaire will be distributed across the food supply chain. The data used in this case study is primary data as it is retrieved from the respondents by the same researcher.

3.4 Questionnaire Design

The questionnaire was informed by literature on supply chain management. The main questions were adopted from Li et al. (2005) to ensure content validity. The research instrument consists of empirically validated and reliable constructs that is used to investigate how firms adopt supply chain management practices. There are 62 questions categorized into 10 dimensions focusing on different practices that may improve the supply chain performance of small enterprises.

A semi-structured interview may be used as a follow up to delve into the critical issues that may arise after the administration of the questionnaire. A 6-point and 7-point Likert scale is used to indicate the extent to which the respondent perceives the level of

adoption of traditional and emerging supply chain management practices respectively. The Likert scale is an ordinal scale used to rate the extent to which respondents agree or disagree with a statement. The 6-point and 7-point Likert scale are depicted in Table 1.

Table 1.

Likert scale and measures.

6-point	1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 6 = not applicable
7-point	1 = no impact, 2 = negligible impact, 3 = minor impact, 4 = moderate impact, 5 = major impact, 6 = critical impact, 7= catastrophic impact

3.5 Reliability and Validity

According to Patton (2002), reliability and validity are crucial dimensions used to ascertain the quality of research. Reliability is concerned with the measurements whiles validity pertains to the methodology used; which translates into the quality of the findings of the study.

As mentioned in the data collection section of this chapter, the data collection involves the self-administered questionnaire adopted from Li et al. (2006) in order to answer the questions of this descriptive case study. Therefore, the paradigm assumed by this study can be considered as positivism which is context independent and objective in the exploration of research problem. Creswell and Miller (2000) state that the paradigm asssumed by a researcher influences the validity of a study. The validity of the study can be improve upon using triangulation via the different sources through which the data is collected. The use of respondents from different supply chain partners will serve

this purpose. The reliability of a study is also argued to be the consequence of its validity.

3.6 Summary of Methodology

This chapter explains the choice of research methodology, the design of the research process including the sample, questionnaire, reliability and validity issues. The descriptive case study approach best fits as the qualitative research methodology that can fulfil the research objectives. The purposeful random sampling is chosen as the procedure used to determine the sample size and the administration of questionnaires will be used for data collection.

EMPERICAL STUDY

4.0 Introduction of the case study findings

This chapter presents the findings gathered from the administration of questionnaires to the employees to the firms selected in a typical food supply chain which are also small enterprises. First, a description of the firms and respondents are provided to give an overview of the firms involved and how pertinent their responses are to understand the operations of a food supply chain in Finland. Secondly, the responses on the adoption of traditional supply chain practices are presented followed by that of emerging supply chain practices that are associated sustainability.

Drawing on literature on supply management practice, this study explored the supply management practices that are adopted by a food supply chain. Enterprises operate on some level of uncertainty which affects their level of survival. Combining this with the vulnerabilities of the food industry makes room for an interesting case study.

4.1 Implementation of the Research

The research was conducted using data from a food supply chain in Finland. The data was collected from employess of the focal company, supplier and a customer. In the

collection of the data, we requested the participation of the employees of the selected firm. Given the sensitive nature of the responses and its impact of the firm in question, we assured the anonymity of the respondents to reduce bias and increase the truthfulness and accuracy of the responses.

An important issue to address is the nature of the firms involved: The firms being small enterprises meant that the pool of respondents would be limited as compared to other studies which involved big corporations. As a reminder, small enterprises have less than 50 employees who may not be present at a particular point in time. 10 questionnaires were sent to each supply chain partner in this particular food supply chain under investigation. Upon the completion of the data collection process, there were 10 usable questionnaires which represent a response rate of 33%. As shown in Table 2, 6 of the respondents were from the focal firm, Company X and 2 each from the Supplier and Customer.

4.2 Brief description of the supply chain

A Finnish food small enterprise, Company X was strategically selected because it has been in operation for over two decades given the rate of failure of SMEs and the vulnerabilities of the food industry. Table 2 shows the information pertaining the type of respondents and how long they have worked with the firms under scrutiny.

Table 2: General information about the firms in the food supply chain

	Company X	**Customer**	**Supplier**
Frequency	6	2	2
Percent	60%	20%	20%
Department	Production		Operations & Logistics
Number of years the firm been in operation	More than 15 years		
Number of years employed by the firm	More than 3 years	1 to 3 years	More than 3 years
Number of regular suppliers	5 to 10	More than 10	Less than 5

The respondents for Company X and Supplier are employees who have worked for their enterprises for more than three years and belong to the production and operations department respectively. The employees of Customer have worked with production department from one to three years.

The input of the food supply chain includes onions, plantain, milk, flour, German and Finnish meat. The food products offered by Company X consists of meat balls, pan steak, chicken loaf, fish and Finnish pie. Both raw materials and food products of this supply chain are standardized and affordable as compared to competitors. The food products offered by the members of the supply chain are affordable which translates from the lower costs.

Figure 5 is a depiction of the which of the firms employs the services of an in-house supply chain manager given the importance of supply chain integration to both the

operational and financial performance of the firms involved. 2 out of the 3 (67%) firms have an in-house supply chain manager. Company X and their supplier employ the services of an in-house supply chain manager while the customer has outsourced this important function needed in the food supply chain.

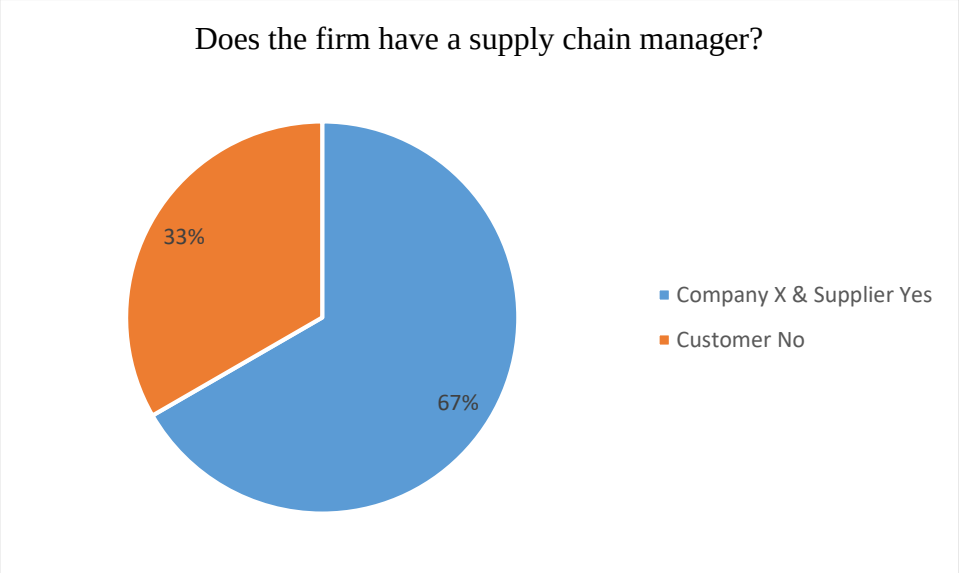

Figure 6

Does the firm have a supply chain manager?

4.3 Adoption of Traditional SCM practices

The adoption of traditional supply chain management practices is discussed by providing the findings with respect to each supply chain partner in the order of Company X, Supplier and Customer. Table 3 presents the average numerical reponses of the respondents with regards to particular questions on supply chain practices. This section discusses the implications of the reponses presented in Table 3.

The findings show that Company X considers the quality of supplies and delivery dependability in the choice of supplier over the cost and innovativeness of the product. The suppliers are not involved in the creation of new products even though there is some level of supplier integration.

Figure 7 shows that this supply chain sources some of its inputs from foreign counterparts. 67% of the firms involved, Company X and Customer use both domestic and foreign suppliers to procure food products while the Supplier only uses domestic suppliers as the source of their raw materials.

Table 3

The extent of adoption of traditional supply chain practices.

	Company X	**Supplier**	**Customer**
Supplier partnership			
Quality	4	6	6
Price/ cost	3	6	6
Innovative product	3	6	6
Delivery dependability	4	6	6
Problems with the supply chain are resolved with the suppliers	4	6	6
The quality of the products are improved upon with input from your firm	5	6	6
The key suppliers are involved in the planning activities of the firm	3	6	6
The key suppliers are involved in the development of new products	1	6	6
Customer (distributor) relationship			
The firm measures and evaluates customers' feedback	4	5	4
The firm measures and evaluates customers' satisfaction	4	5	4
The firm has measures in place to help customers' seek assistance	6	4	4

Information sharing			
The firm informs its customers of issues affecting the business	6	6	6
The firm informs its customers of its core business processes	6	6	6
The firm and its customers update each other about events that affect the business relationship	4	4	6
Information quality			
The information exchanged between the firm and its suppliers are timely	5	6	6
The information exchanged between the firm and its suppliers are complete	4	6	6
The information exchanged between the firm and its suppliers are reliable	4	6	6
The information exchanged between the firm and its customers are timely	4	4	3
The information exchanged between the firm and its customers are complete	4	4	3
The information exchanged between the firm and its customers are reliable	4	5	5
Postponement			
The final product of the firm is customized to meet the needs of the customers	5	6	6
The final product is delayed until the firm receives the specific orders from the customers	1	6	6
Price/cost			

We offer competitive prices	5	4	6
We are able to offer prices as low or lower than our competitors	4	3	6
Quality			
We are able to compete based on quality	5	5	5
We offer products that are highly reliable	5	5	5
We offer products that are very durable	3	6	6
We offer high quality products to our customer	5	5	5
Delivery dependability			
We deliver the kind of products needed	5	5	6
We deliver customer order on time	5	5	6
We provide dependable delivery	4	4	6
Product innovation			
We provide customized products	4	6	6
We alter our product offerings to meet client needs	4	6	6
We respond well to customer demand for “new” feature	4	6	6
Time to market			
We deliver product to market quickly	5	6	6
We are first in the market in introducing new products	3	6	6
We have time-to-market lower than industry average	3	6	6
We have fast product development	4	6	6

Note: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 6 = not applicable

With regards to customer integration, Company X does not share confidential information with their customers. The findings suggests that the firm has a stronger supplier relationship than customer relationship given that feedback from customers is limited. This may pose a problem considering that high food quality is demanded by consumers. The adoption of traceability is necessary to inform concerned consumers about the history of the food product from 'farm to fork' (Pizzuti & Mirabelli, 2015) and guarantee food safety (Beske et al., 2014 ; Dabbene et al., 2014). Animal welfare and the impact of agro-food processing on the environment also raises concerns by the government (Trienekens et al., 2012).

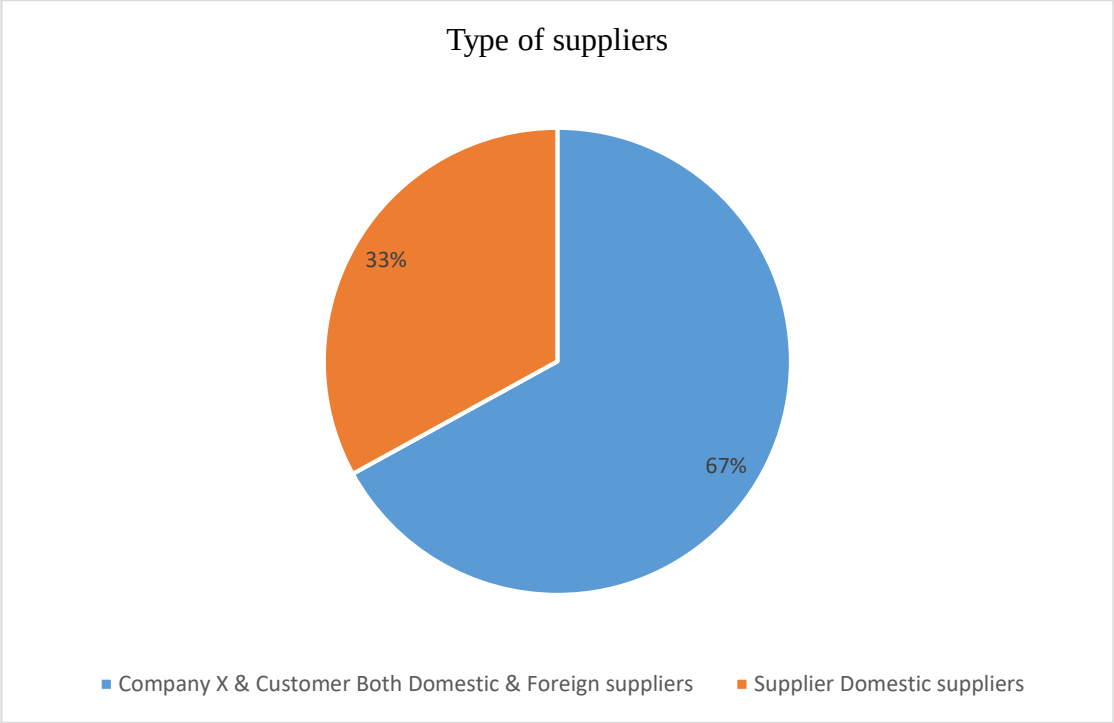

Figure 4

Types of suppliers

The Supplier procures its raw materials preferably from domestic suppliers and supplies Company X with milk, flour and oil. The respondents of the Supplier corroborate the responses of that of their customer, Company X. The Supplier limits the kind of information relayed to their customers in order not to lose the business transaction to another competitor. Zhao et al., (2015) find that too little supply chain integration affects the financial performance of the enterprises involved. There is also an improvement in supply chain risk management when firms in a supply chain engage in information sharing on risks (Li et al.,2015).

The standardization of both raw materials and food products implies that postponement in the production is reduced to minimal and greatly influenced by the perishability of food. The affordability of food products offered relates with their standardization which is necessary because of little or no differentiation in the sector except for branding. This feature of the food supply chain aligns with Beske et al., (2014) who state that the food industry is often characterized by mass production.

The downstream partner of this supply chain is the Customer who has outsourced the supply chain function of its business operations. This implies that this Customer does not directly deal with the focal company, Company X. Nonetheless, the quality of information provided to this second-tier customer is low but reliable. This Customer, in relating to the consumers of the food products of the supply chain, handles complaints and provide feedback.

There is a standard operating procedure which ensures that in the event of delay of the products, the supply chain partner notifies the other partners with three to five working days. Therefore, to a large extent, delivery dependability between the Supplier and Company X is assured. Given that the supply chain function of the Customer is outsourced and the low level of customer integration, the impact of delay cannot be perceived and included in the findings of this case study.

Studies such as Cao and Zhang (2011) and Lavastre et al., (2012) emphasize integation with both suppliers and customers so as to leverage on their expertise and resources to

reduce the impact of risks. Ali et al., (2017) also argue that information sharing among supply chain partners may be restricted due to low level of trust, information quality and incompatibility of information systems. It is also important to note that the prices of food products can be lowered by improving the collaboration in the supply chain (Singh et al., 2018).

4.4 Adoption of Emerging SCM practices

Lean, resilient, and green management practices are the emerging fields in the supply chain literature. The responses from the data collection suggests that the listed practices would have moderate to catastrophic impact on their respective enterprise's performance.

Food quality issues would have the greatest adverse effect on the performance of the food supply chain. Bad smell, bad flavor, discoloration and packaging issues affect the quality of the food product. Transparency in the food supply chain informs the consumer of history of food product. Identifying food as "genetically modified, non-genetically modified, ethical, organic, low carbon, free of religious constraints" is necessary to promote transparency in the food supply chain. The need for transparency emphasizes the significance of information quality and sharing which appears to be low in the focal company and customer relationship. According to the responses, natural disasters, dangerous work environment and product boycott would have the same catastrophic impact on the food supply chain as quality issues. There is a need for high quality food which is safe and affordably priced.

Table 4.

The impact of supply chain practices on the firm performance**.**

SCM practices	**Company X**	**Customer**	**Supplier**
Dangerous work environment	7	7	7
Natural disasters	7	7	7
Food quality issues	7	7	7
Unethical treatment of animals	6	6	6
Unfair wages	6	6	6
Establishment of emergency scenarios	6	6	6
Adoption of agro-food traceability	6	6	6
Sanctions and penalties for misconducts	6	6	6
Safety stocks – internal or external	5	6	6
Equipment malfunctions	5	6	6
Innovation	5	6	6
Corruption / Price-fixing accusations	5	6	5
Unexpected risks	5	5	5
Use of standard recyclable containers	4	5	6
Delivery delays	5	5	5
Product boycotts	4	5	5
Expected risks	3	5	5
Pollution/ Product waste	3	5	5
Demand volatility	4	4	4

Note: 1 = no impact, 2 = negligible impact, 3 = minor impact, 4 = moderate impact, 5 = major impact, 6 = critical impact, 7= catastrophic impact

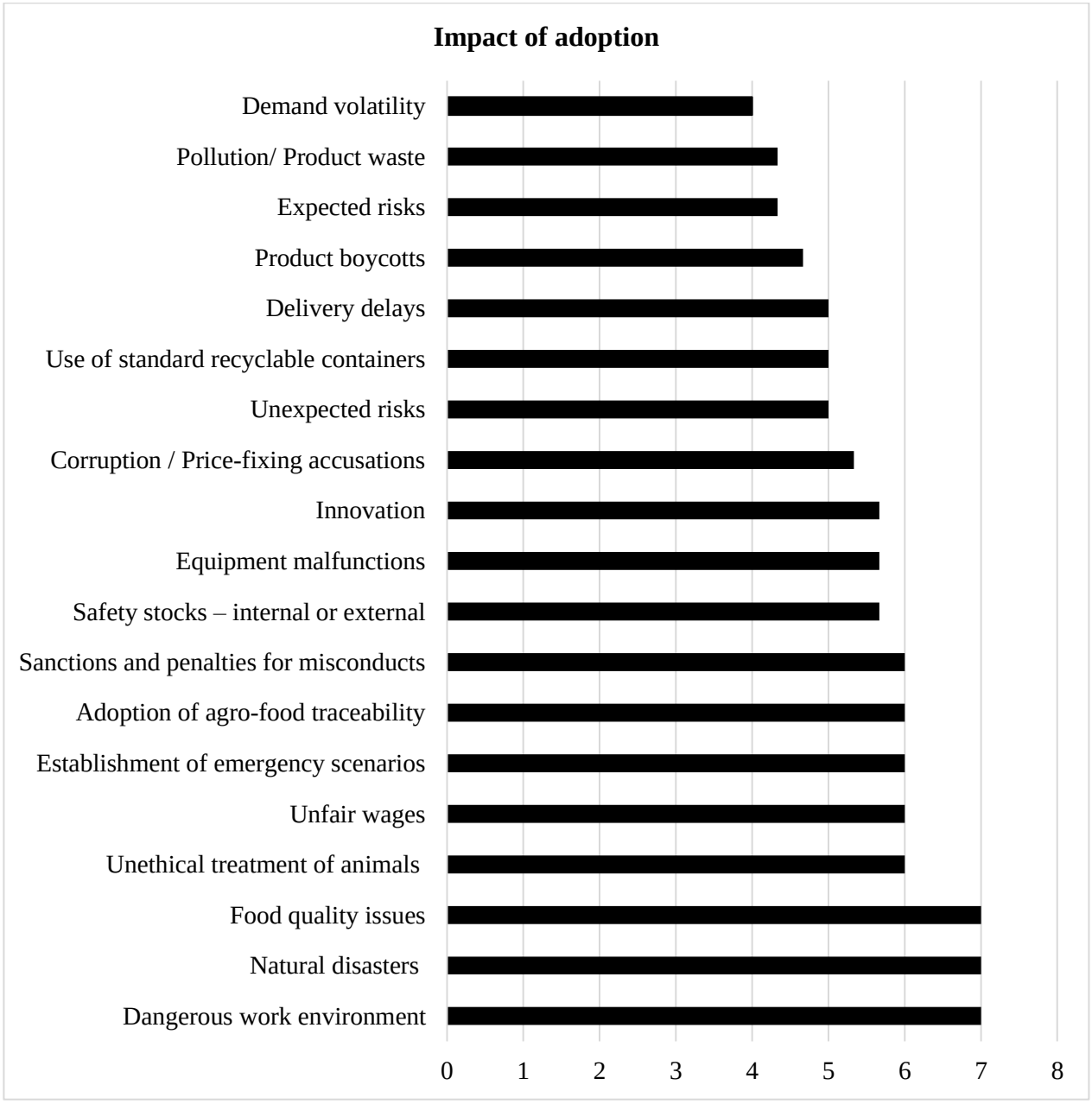

Figure 8.

The impact of supply chain practices on the firm performance.

Note: 1 = no impact, 2 = negligible impact, 3 = minor impact, 4 = moderate impact, 5 = major impact, 6 = critical impact, 7= catastrophic impact

A resilient supply chain establishes emergency scenarios to reduce potential disruptions in the supply chain which may come in the form of expected or unexpected risks, equipment malfunctions, demand volatility, and delivery delays. Kamalahmadi and Parast (2016) propose that "the adaptive capability of a supply chain to reduce the probability of facing sudden disturbances, resist the spread of disturbances by maintaining control over structures and functions, and recover and respond by immediate and effective reactive plans to transcend the disturbance and restore the supply chain to a robust state of operations".

The impact that food quality issues, dangerous work environment, natural disasters and would be disastrous to a food supply chain. Food quality issues would have the greatest adverse effect on the performance of the food supply chain. Bad smell, bad flavor, discoloration and packaging issues affect the quality of the food product. Transparency in the food supply chain informs the consumer of history of food product. Identifying food as "genetically modified, non-genetically modified, ethical, organic, low carbon, free of religious constraints" is necessary to promote transparency in the food supply chain. The need for transparency emphasizes the significance of information quality and sharing which appears to be low in the focal company and customer relationship. There is a need for high quality food which is safe and affordably priced. Supply chain partners do not have control over natural disasters and the devastating impact it has on the food industry. However, measures can be put in place in a joint risk management strategy to limit the effect on the quality and delivery of the food products. Dangerous work environment can be prevented through the adherence of industry safety standards.

In the event where sustainable, ethical and green SCM practices are not adopted, the consequences for the supply chain partners is adverse especially if brought to light to consumers. Unethical treatment of animals, improper disposal of waste which lead to

pollution and price fixing accusations and corruption may lead to product boycott if not managed properly and stopped (Silvestre et al., 2018).

4.5 The reliability and validity of this case study

According to Johnson and Christensen (2008), case studies provide an in-depth and rich description of a phenomena in a particular context. This research was carried out focusing on a food supply chain which consists of small enterprises in Finland to offer practitioners, academic scholars and policy makers with information on this unique supply chain.

Stenbacka (2001) states that "the concept of reliability is even misleading in qualitative research. If a qualitative study is discussed with reliability as a criterion, the consequence is rather that the study is no good". However, studies such as Creswell and Miller (2000) argue that the paradigm choice of the researcher validates the study.

Triangulation is another means of improving the reliability and validity of qualitative studies (Golafshani, 2003). Therefore, data was collected from different respondents in three different supply chain partners in order to control bias and improve upon the objectiveness of the answers which is needed to address the research problem. The positivist paradigm stance of the researcher is thus reflected.

4.6 Summary of Findings

The details of the data collection process, brief description of the firms and respondents that provide the data to enrichen this case study of a Finnish food supply chain. Several tables and figures that present the extent of adoption of both traditional and emerging SCM practices are presented. The summary, conclusions and recommendations made as a result of the findings gathered are provided in the next chapter.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Concluding Chapter

The previous chapters discussed the background and justification of the study, relevant concepts and theories that explain supply chain practices, the case study methodology and the findings gathered from the data collection.

In this section, the summary, conclusions and recommendations for managers and researchers of this research are outlined.

5.1 Summary

To recapitulate, this thesis extends supply chain to SMEs which fills a gap in literature and practice (Markides, 2007). The findings of this study contribute to the extant literature on food supply chains which consists of SMEs.

The findings of the study agree with Ziggers and Trienekens (1999) that collaboration and coordination in the food industry is needed because food supply chain involves a series of value-adding activities from farm to fork. Therefore, the case proposition that the adoption of supply chain management practices positively impact on a firm's competitive advantage and organizational performance is supported by the data collected in this study.

Company X is more concerned about the relationship with its suppliers because of the impact of cost and delays from the supplier could have on its productivity in the short-term and profitability in the long-term.

Product innovation is minimized in this food supply chain probably due to the low level of collaboration and integration with customers.

Supply chain resilience is different from risk management as the focus is on the capability of the firm to respond to uncertainties (Christopher & Peck, 2004). Suppliers

can easily introduce resilience into supply chain and improve their risk management culture improves resilience.

5.2 Conclusion

This research paper is a case study of a food supply chain in Finland made up of SMEs. In order to address the research question which inquired the level of adoption of SCM practices, a questionnaire was administered.

This study concludes that the level of trust in the supplier-customer relationship is low thus the low level of information sharing, and limited amount of information relayed to supply chain partners. In addition to the low information sharing, the level of product innovation in the food supply chain is minimal because of the standardization involved in mass production. Mass production also means that there is limited postponement in the supply chain process.

5.3 Recommendations

The findings of this case study suggests the following strategies which are appropriate for dealing with the inefficiencies discovered in the data collected from employees of the food suppy chain.

The managerial implications of the case study which is to help reduce food prices and ensure food security as stated in the research problem is as follows:

1. There is the need to design a supply chain to include all partners of the food supply chain.
2. Effective collaboration with both upstream and downstream supply chain partners is a necessary and effective approach of reducing the impact of disruptions and helps to leverage on their resources.

3. There is a need for a joint supply chain risk management to reduce the adverse effect of disruptions on the productivity and profitability of the independent enterprises in the supply chain. Firms must adapt and prepare response to changes to the dynamic business environment of the food industry.
4. In order to stay relevant and be in operations for a long time, high quality of food products must be prioritized and complemented with transparency and traceability to cater for concerned consumers of food products.
5. Firms should adopt resilient practices in order to mitigate the effect of the disruptions in the food sector which could lead to the loss in productivity and ultimately, business faiilure if not managed properly.

With regards to scholarly work, the limitations of the case study create avenues for future research. The study could be replicated across several sectors while focusing on the small and medium-sized enterprises. Also, assessing and quantifying the risks and their impact in a detailed case study would prove to be beneficial to the food supply chain. Another could be an in-depth study into the adoption of lean, resilient and sustainable practices and their impact on the organizational performance.

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APPENDIX 1: QUESTIONNAIRE

This questionnaire is for the sole purpose of collecting data on the supply chain management practices of a food enterprise. Supply chain management practices include activities that enable a firm to manage its supply chain effectively. These practices are categorised into supplier partnership, customer relationship, information sharing, information quality, and postponement.

Unless stated, indicate the extent to which the firm you are associated with carries out the SCM practices (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 6 = not applicable).

General information

1. Number of years firm has been in operation?

[ ] Less than 5 years [ ] 5 to 10 years [ ] 11 to 15 years [ ] more than 15 years

2. Department you belong.

[ ] Production [ ] Operations [ ] Logistics [ ] Finance [ ] IT [ ] Other

3. Number of years as an employee?

[ ] Less than 1 year [ ] 1 to 3 years [ ] more than 3 years

4. Role and Position in supply chain.

[ ] supplier [ ] focal firm [ ] customer

5. Does the firm have a supply chain manager [ ] Yes [ ] No

If no, who is in charge? …

Supplier partnership

1. Rate the criteria used in the selection of a supplier.

Quality … Innovative product …

Price… Delivery dependability…

2. Supplier Types

[ ] Domestic suppliers [ ] Foreign suppliers [ ] both

3. Products supplied to your firm.
4. Number of regular suppliers?

[ ] Less than 5 [ ] 5 to 10 [ ] More than 10

5. Problems with the supply chain are solved with the suppliers…
6. The quality of product is improved with inputs from your firm…
7. Suppliers involved in the planning activities of the firm…
8. Major suppliers are involved in product development…

Customer (distributor) relationship

1. What products do you provide customers?
2. The firm measures and evaluates customers' feedback regularly…
3. The firm evaluates and measures customers' satisfaction intermittently…
4. The firm has a structure in place to help customers seek assistance…

Information sharing

1. The firm discusses with customers issues affecting their business…
2. The firm advises customers on its core business processes…
3. The firm and its customers discuss events that affect the business relationship…

Information quality

1. Information communicated between the firm and its suppliers are timely…
2. The information exchanged between the suppliers and the firm are complete…
3. Information shared between supplier and firm is reliable…
4. The information communicated between the firm and its customers are timely…
5. Information shared between the firm and its customers are complete…
6. The information shared between the firm and its customers are reliable…

Postponement

1. Final product of the firm is customized to meet customer's needs…
2. The final products are delayed until the firm receives the specific instructions from the customers…

Price/cost

1. We offer competitive prices…
2. We offer prices as low or lower than our competitors…

Quality

1. We are able to compete because of quality…
2. We offer reliable products…
3. We provide durable products…
4. We offer quality products to customers…

Delivery dependability

1. Delivering needed products…
2. Promise of delivering to customers on time…
3. Promise of safe and secure delivery…

Product innovation

We provide customized products…

1. Product Altering to meet client needs…
2. Great response to customers demands for "new" features…

Time to market

1. We deliver product to market quickly…
2. We are first in the market in introducing new products…
3. We have time-to-market lower than industry average…
4. We have fast product development…

Rate the impact of the following has on the firm performance

(1 = no impact, 2 = negligible impact, 3 = minor impact, 4 = moderate impact, 5 = major impact, 6 = critical impact, 7= catastrophic impact)

1. Expected risks …
2. Unexpected risks …
3. Unethical treatment of animals …
4. Unfair wages …
5. Dangerous work environment …
6. Natural disasters …
7. Corruption / Price-fixing accusations …
8. Pollution/ Product waste …
9. Product boycotts …
10. Use of standard recyclable containers …

11. Safety stocks – internal or external …
12. Establishment of emergency scenarios…
13. Adoption of agro-food traceability…
14. Sanctions and penalties for misconducts…
15. Food quality issues …
16. Delivery delays …
17. Demand volatility…
18. Equipment malfunctions …
19. Innovation …