



**THE BENEFITS OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT
PRACTICES TO SUPPLY CHAIN RISK MANAGEMENT**

Lappeenranta–Lahti University of Technology LUT

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ABSTRACT

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The benefits of sustainable supply chain management practices to supply chain risk management

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Sustainability can no longer be its own separate division and topic in companies. It needs to be properly implemented to gain most of its benefits and to actually increase the companies’ sustainability. Sustainability has multiple benefits which are yet to be fully discovered and utilized. The next step in companies operational work regarding sustainability is its proper implementation and identifying its benefits to different core operations, such as risk management.

The aim of this thesis is to find how can sustainable supply chain management practices help to benefit supply chain risk management. In addition, positive connection between sustainability practices and risk management is already found, but the aim of this thesis is to better understand the meaning of this connection.

This study was conducted as qualitative research using multiple case study method. The data for the thesis was collected from selected target companies’ public reports, sustainability reports and risk management policies.

The findings of this study emphasize collaboration internally and externally in order for companies to implement sustainability better and to gain its full potential. In addition, the findings imply that internal supply chain risks can be mitigated with sustainable supply chain management practices, but external risks cannot. However, external risks’ probability of occurrence can still be potentially impacted with the practices. The topic is new and there are a lot of uncovered potential benefits to be gained for companies when further looked into these two themes together.

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Vastuullisuus ei voi enää olla oma erillinen osastonsa ja aiheensa yrityksissä. Sen mukaiset käytänteet on otettava asianmukaisesti käyttöön yrityksissä, jotta sen tuomat edut saadaan hyödynnettyä ja yritysten vastuullisuutta voidaan todella lisätä. Vastuullisuudella on useita etuja, joita ei ole vielä täysin löydetty ja hyödynnetty. Seuraava askel yritysten operatiivisessa vastuullisuuteen liittyvässä työssä on sen asianmukainen toteuttaminen ja sen hyötyjen tunnistaminen osaksi yritysten eri ydintoimintoja, kuten riskienhallintaan.

Tämän työn tavoitteena on selvittää, miten toimitusketjun vastuullisuuskäytänteet voivat hyödyttää toimitusketjun riskienhallintaa. Positiivinen yhteys on jo löydetty toimitusketjun vastuullisuuskäytänteiden ja toimitusketjun riskienhallinnan välillä, mutta tämän työn tavoitteena on ymmärtää paremmin tämän yhteyden merkitystä.

Tämä tutkimus tehtiin kvalitatiivisena tutkimuksena usean tapaustutkimuksen menetelmällä. Työn aineisto kerättiin valittujen kohdeyritysten julkisista raporteista, vastuullisuusraporteista ja riskienhallinta raporteista.

Tämän tutkimuksen tulokset korostavat sisäistä ja ulkoista yhteistyötä, jotta yritykset voisivat toteuttaa vastuullisuutta paremmin ja hyödyntää sen täyden potentiaalin. Lisäksi havainnot viittaavat siihen, että sisäisiä toimitusketjun riskejä voidaan hallita toimitusketjun vastuullisuuskäytänteillä, mutta ulkoisia riskejä ei. Käytännöllä voidaan kuitenkin vielä mahdollisesti vaikuttaa ulkoisten riskien toteutumisen todennäköisyyteen. Aihe on uusi ja yrityksille on olemassa paljon mahdollisia etuja, kun näitä kahta teemaa aletaan tarkastelemaan yhdessä.

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1. Introduction

Companies need to adapt to the sustainable development agenda directly or indirectly so that they can ensure future profits and business continuity. Already over a decade ago John Elkington (Elkington, 1998) indicated that companies that would not begin to implement environmental communications to their operations would predispose their company to a great risk of losing current and future value as their customers would be switching to buy from those that indicate their business being cautious over the environment. Consumers are now more aware of sustainability than ever which adds to the pressure of implementing sustainability to companies' processes along with increasing governmental regulation such as European Union's new 'Corporate Sustainability Reporting Directive' (European Commission, n.d.). However, implementing sustainability practices is easier said than done. 'Sustainability' might end up being superficial greenwashing (Marcatajo, 2023) or a separate namely department in the company where sustainability is not being implemented as part of the operations at all. Hence, implementing sustainability as part of companies' core operations is necessary.

Research and interest towards sustainability's positive influence on company's operations has been growing. There are number of publications emphasizing that implementing sustainability practices will increase company performance (Melnik et al. 2003; Green et al. 2012; Katiyar, et al., 2018; Govindan et al. 2020; Zhu and Wu, 2022) and competitive advantage (Rao and Holt, 2005; Schulz and Flanigan, 2016). However, even given this, the barriers towards utilizing sustainability practices are various and they too should be the subject of research in order to eliminate and/or minimize their effect.

The dominant topic of discussion in business has been growingly about sustainability. However, the recent events with Covid-19 pandemic and the related supply disruptions and overall shift in long global supply chains and their non-transparency have gained space in the discussion as companies are looking for ways to become more resilient and better at mitigating risks along their supply chain. Supply chain risk management (SCRM) is one of the core operations in today's companies and it has a significant connection to sustainability as many of the risks that companies are now facing have to do with neglecting the sustainable development agenda (Miemczyk and Luzzini, 2019).

Sustainability practices are used to achieve the company's own or governmentally regulated goals and/or strategies derived from the sustainable development goals (SDGs). It is valuable to understand and find ways that these practices can be incorporated into companies' more traditional operations, such as risk management, as effortlessly as possible and so that they would not remain as a separate set of operations to gain their full potential. Internal integration through transparent data sharing between different departments has a significant role in improving company's sustainability (Tarigan et al., 2021).

There are lots of studies about sustainability practices (Wu et al., 2012; Painter et al., 2019; Muhmad and Muhmad, 2021; Ahmadi-Gh and Bello-Pintado, 2022) and supply chain risk management (Sodhi et al., 2012; Grötsch et al., 2013; Nooraie and Mellat Parast, 2015; El Baz and Ruel, 2021). The research gap found for this thesis has not yet been studied widely. There are only a few studies found that combine sustainability practices and supply chain risk management such as DiBella et al. (2023) who studied sustainability practices impact on supply chain resilience, Hallikas et al. (2020) who studied the effects of sustainability practices on the performance of risk management and purchasing and Nobanee et al. (2021) who did bibliometric analysis on sustainability and risk management together.

The publications presented above have found the positive connection between sustainability practices and supply chain risk management through quantitative studies. The research gap is found from qualitative study perspective and focusing on sustainable supply chain management (SSCM) practices. As the connection is already found from quantitative studies, it is then meaningful to gain understanding of this connection from qualitative research's point of view, which explores the meaning behind the connection. The aim for this thesis is to understand the connection to gain full potential from SSCM practices and how they can be utilized to improve companies' overall level of sustainability and improve companies' supply chain risk management.

1.1 Research questions and objectives of the thesis

The main objective of this thesis is to better understand SSCM practices' positive impact on companies' SCRM. The aim of this thesis is to identify how could companies positively influence their supply chain risk management with SSCM practices and more specifically, identify with which practices could be used to manage the company's identified risks. This

is connected to better implementing sustainability through SSCM practices into company's existing core operations, such as risk management.

To approach these set objectives, the following research question is formulated,

R1: How can companies use sustainable supply chain management practices for improving their supply chain risk management?

To be able to answer to this question, more detailed information is required. Sustainability practices are difficult to implement as part of companies' operations. If the implementation is not executed properly, companies cannot gain full potential and benefits from these practices. It is important to try to gather information on current levels of SSCM practices implementation and SCRM in chosen companies. This is due to identifying possible shortcomings and barriers that the companies might have towards SSCM practices and their implementation. Therefore, understanding the drivers and barriers for SSCM practices implementation is found important and the following sub-research question formulated,

R2: What are the drivers and barriers for sustainable supply chain management practices implementation?

It is also meaningful to potentially understand what types of supply chain risks could be managed with SSCM practices. This is due to the possibility of investing more resources to them and finding synergies and focusing the resources where synergy benefits are found between SSCM practices and SCRM practices. By doing so, companies can save not only financial resources but time as well, when there is a focus in selected practices and risks rather than just implementing a SSCM practice and not following it through and understanding where it potentially impacts, but just hoping for the best. In addition, as there is already an identified positive connection between the two topics, it would be interesting if any specific practices could be identified that impact the most or risks that could be helped to manage the best with SSCM practices. Therefore, another sub-research question is formulated,

R3: How can sustainable supply chain management practices help mitigate internal and/or external supply chain risks?

1.2 Definition of key concepts

Supply Chain Management is defined by Mentzer et al. (2001) as follows “the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.” This is complemented by Habib (2022, p. ix) “The objective of supply chain management (SCM) is to incorporate activities across and within organizations for providing the customer/stakeholders value”.

Sustainability's most common definition is from the Brundtland Commission's report in 1987: “Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future.” (United Nations, 1987). Sustainability can be defined in many ways, and it is a broad topic, which usually include main categories of environmental, social, and economic sustainability.

Sustainable Supply Chain Management is defined by Seuring and Müller (2008) as “the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements.”.

Sustainable Supply Chain Management Practices are sustainability practices incorporated to supply chain management activities. Narayanan et al. (2019) describes their benefits as follows: “The implementation of sustainable supply chain management (SSCM) practices enables an organization to meet the environmental standards and social commitments. These practices will eventually lead to better economic performance, improved brand image and increased efficiency of the firm.”.

Supply Chain Risk Management is defined by Helmold et al. (2022, p. v) as “the implementation of strategies to manage both everyday and exceptional risks along the supply chain based on continuous risk assessment with the objective of reducing vulnerability and ensuring continuity.”.

1.3 Conceptual framework

Based on the literature review, a conceptual framework is established for the thesis. The conceptual framework is presented in Figure 1. The framework combines all discussed concepts of the thesis and summarizes them into one figure. The aim of the framework is to provide an easier approach to the topic and to the aim of the thesis.

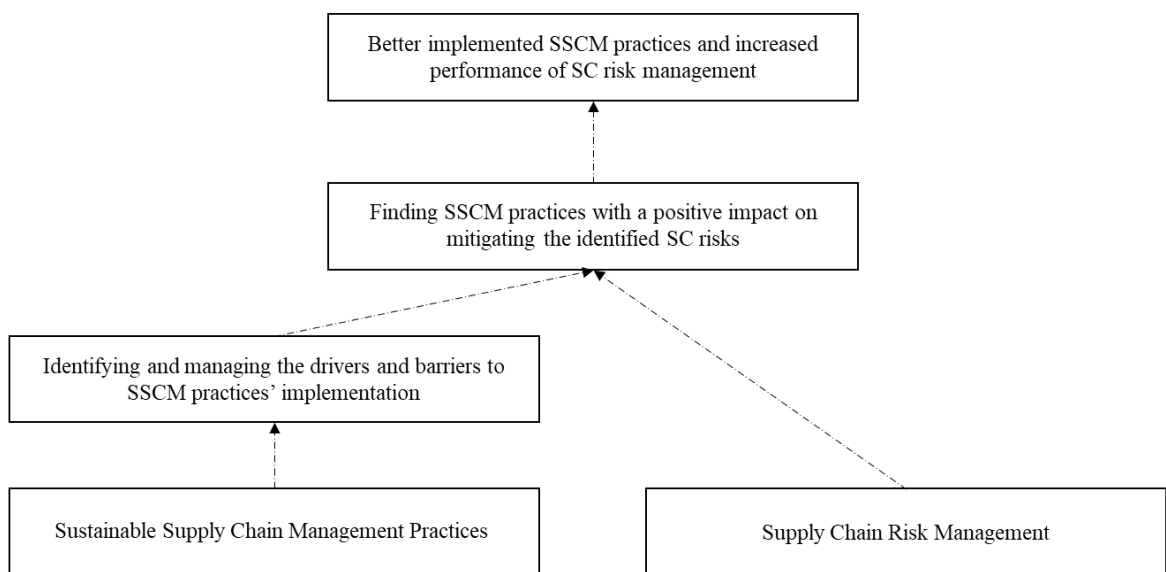


Figure 1 - Conceptual framework for the thesis

1.4 Structure of the thesis

The thesis begins with theoretical background of sustainable supply chain management and its practices. The practices are divided to environmental, social and economic practices and discussed separately in each of their subchapters. Following this, most common drivers and barriers of SSCM practices' implementation are presented. After this, the other theme of the thesis is discussed, supply chain risk management. The last theory chapter combines these two topics.

Following the theory chapter is a brief explanation of chosen research method and data collection. This leads to the thesis' empirical part, where the sustainability reports and risk management policies of target companies are discussed. In the last chapter, discussion and

conclusions, findings from the theory and empirical section of the thesis are combined and the research questions are answered. In addition, suggestions for future research are presented as well as managerial implications.

2. Theoretical background

The theoretical background and literature review is presented first to form the foundation for the thesis. This chapter begins with a sub-chapter studying recent publications about sustainable supply chain management practices and by exploring various practices from different sustainability perspectives. In addition, the barriers and drivers for practices' implementation is reviewed. This is followed by a sub-chapter that focuses on supply chain risk management – the potential risks and their management process. Finally, in the third sub-chapter, current literature that combines these two themes together, sustainable supply chain management practices and supply chain risk management, are discussed and their synergies are defined based on literature.

2.1 Sustainable supply chain management practices

Companies have economic responsibilities to their stakeholders, but according to Elkington (1998), companies are also socially responsible to society and environmentally responsible to nature. This is the baseline for sustainability, where economic profits cannot be pursued by exploiting people and nature. Companies cannot achieve sustainable development if any of the three dimensions goes overlooked (Portney 2015; de Brito et al., 2008). Supply chain management is valuable in implementation of sustainability to business as it is a way to implement TBL to the decision-making process (Meixell and Luoma, 2014). Supply chain management is a gatekeeper because the company's purchasing and supply chain management are in charge of for example supplier and raw material selections in addition to services that are procured to the company. These choices include selection of recycled materials and suppliers who are committed to sustainable practices in their own operations.

As presented in the 'definition of key concepts'-section of the thesis, Seuring and Müller (2008) define sustainable supply chain management as follows,

“The management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements.”

Sustainable supply chain management practices are tools to implement sustainability as part of company's operations (Kähkönen et al., 2018). Sustainability practices in general include a variety of methods, both operational and strategic, in different levels of the company and its supply chain. The adoption of SSCM practices, both internally and in collaboration with suppliers, improves companies' sustainability outcomes (Ahmadi-Gh, Z & Bello-Pintado, A., 2022).

SSCM practices are discussed with different definitions in the literature, and in this thesis for example green purchasing practices (Khan et al., 2022) and green logistics (Vienažindienė et al., 2021) are included to it. They are discussed widely in the literature but not including all the themes of SSCM. In addition, green supply chain management practices (Zhu et al. 2008) and green practices (Ghadge et al., 2017) are often used in literature. According to Kähkönen et al., (2018) sustainable supply management practices can be divided to four categories: guidelines, reporting, SCM upstream and SCM downstream. In addition, Paulraj et al., (2015) categorize SSCM practices to sustainable product design, process design, supply side collaboration and demand side collaboration. One of the most often used division is to divide the practices to assessment-based and collaboration-based practices (Klassen and Vachon, 2003; Wilhelm, et al., 2016; Sancha, et al., 2019).

It is difficult to draw lines between the practices as many practices are combinations of other, smaller scale practices (Pagell and Wu, 2009). In addition, many of the SSCM practices are overlapping on social and environmental sustainability dimensions regarding their impact and benefits. A sustainable supply chain is one that performs well on both conventional profit and loss metrics as well as on a broader conceptualization of performance that takes into account social and environmental factors (Pagell and Wu, 2009). Hence, in this thesis SSCM practices are divided to economic, social and environmental practices following the triple bottom line (Elkington, 1998).

2.1.1 Economic sustainable supply chain management practices

To gain economic profit and feasible solutions for a sustainable supply chain, the elements of sustainability cannot be discussed and managed separately (Hall et al. 2012). Implementing sustainability can save costs (Miller and Engemann, 2019, p. 255) by for

example reducing energy consumption during production hence saving on energy costs (Zhu et al. 2008) and practicing investment recovery (Wu et al. 2012).

Investment recovery is selling the surplus inventories and materials, used and scrap materials, so they do not end up in landfills, in addition to selling the excess capital equipment (Zhu et al., 2008). Currently, different industries are focusing on investment recovery to reduce waste and increase profit (Thipparat, 2011). In addition, Hami et al. (2015) found in their study, that sustainable manufacturing practices significantly impact on economic performance, hence, they suggest finding economic value through practicing social and environmental sustainability.

Not only are economic SSCM practices reducing costs along the supply chain but investing to technology and projects to increase sustainability in the supply chain. In order to adapt efficient 'green' supply chain practices as smoothly as possible, companies need to upgrade to green technology solutions (Mangla et al., 2015). Green technology solutions for the supply chain can be for example utilizing green energy technology such as solar systems (Stucki, 2019) and blockchain technology (Xu et al. 2021).

For example, investing to cleantech, especially to technology solutions, is expensive and might not be seen valuable if there is a technical solution already in place. The level of sustainability engagement that the company has is the determinant whether the company invests in green technology or not, not the company size (Saunila et al., 2019). However, green manufacturing investments have a u-shaped relationship with company's economic performance, but this can be positively influenced by also selling non-green commodities (D'Angelo et al., 2023).

Competitive pressure increases the economic benefits gained from implementing green supply chain management practices due to competitive pressure forcing companies to implement environmental practices as cost-effectively as possible and companies should be encouraged to share their learnings with each other to gain even more economic benefits (Zhu & Sarkis, 2007). However, companies cannot simply copy SSCM practices from their competitors given the complexity of supply chains and therefore having to be able to mimic competitors' management capabilities and know-how of their entire supply chain (Wu et al. 2012).

There is a risk of damaging brand image, loss of sales, access to markets and losing a financial investment due to poor sustainability outcomes (Cruz, 2013). Hence, properly implementing SSCM practices can save the company costs and create financial value. During the Covid-19 pandemic, companies that had strong sustainability performance are turning out to be more resilient and their financial performance has not dropped as much as with companies that had weaker sustainability performance or none when going into the pandemic (Lu et al. 2022).

2.1.2 Social sustainable supply chain management practices

Social sustainability aims to identify and manage companies' positive and negative impacts on people (United Nations, n.d.). Social sustainability practices are aimed to address social issues which are the risks and harm formed by environmental hazards, climate change (Eizenberg & Jabareen, 2017) and 'manmade' actions (Mani et al. 2018).

Companies struggle to find the best social SSCM practices for their company compared to environmental practices (Marshall et al. 2015b). This might be due to a lack of research and interest in social sustainability which has only lately caught up to environmental and economic sustainability (Tate and Bals, 2016) and it might only now be understood better. When focal companies use local suppliers and customer base is local, there is a lot less need to implement a variety of social SSCM practices (Awaysheh and Klassen, 2010). However, in today's global business scene, having global supply chain and customers is highly likely.

Many social SSCM practices are directly or indirectly following legislations and global NGOs' guidelines, such as the International Labour Organization's standards and declarations (International Labour Organization, 2023). These are such as working closely with suppliers to prevent any use of child labour and engaging with different stakeholders to monitor fair wages along the supply chain (Giannakis and Papadopoulos, 2016). Social SSCM practices can also be such as cooperation with customers for eco-design, cleaner production, and green packaging (Zhu et al. 2008).

Mani et al. (2018) divide social sustainable supply practices to two categories, the ones regarding internal stakeholders which are for example including diversity, unethical practices and employees' safety and health, and the ones regarding companies' operations

towards society “societal responsibility”, such as employment creation and hygiene practices.

On the other hand, Marshall et al., (2015a) divide social SSCM practices into basic practices and advanced practices. Basic practices, such as safety and wellbeing of workers in the supply chain and applying code of conduct ensuring fair working conditions and human rights, are viewed as arms-length practices done by monitoring: controlling and evaluating suppliers sustainability performance (Marshall et al. 2015a). By monitoring the suppliers, the focal company is able to mitigate reputational risks arising from suppliers misconducting the SSCM practices given by the focal firm (Foerstl et al. 2010). Advanced practices will impact the supply chain operations fundamentally where new commodities and processes are designed based on their social sustainability in addition to getting involved in projects to better communities and their locals with e.g., educational and health programs (Marshall et al. 2015a).

The base level of basic social SSCM practices is ensuring the quality of life of the employees along the supply chain (Pullman et al. 2009). Awaysheh and Klassen (2010) studied supplier sustainability practices and divided them into four categories: supplier labour practices, supplier code of conduct, supplier human rights and supplier social audits. These practices were used significantly more in companies where product transparency to end-users was higher, and the more tiers the company’s supply chain had (Awaysheh and Klassen, 2010).

Supplier assessments and collaboration both impact positively to environmental performance in addition to CSR. Supplier assessments are usually audits or reports that are in place to follow that the supplier base follows the given guidelines in addition to laws and regulations. (Gimenez & Tachizawa, 2012) Conducting audits of supplier plants or using third party-provided certifications are ways of monitoring the supplier base as well (Awaysheh and Klassen, 2010).

With collaboration, both suppliers and the focal company can have an input beginning from the early stages of product development depending on the deepness of the collaboration. If collaboration is done beginning from the given example of product development, it can be easier to implement environmental practices to the manufacturing process as there is an existing open line of communication rather than informing suppliers with set of regulations that might not be easy to understand and follow. Assessment alone might not be sufficient

enough hence both activities can be recommended in order to gain the best results. (Gimenez & Tachizawa, 2012)

Social concerns do not only limit to the suppliers and their employees, but to each community and the area that the focal company has an impact in, for example each area where focal company's own manufacturing sites are located. One social SSCM practice is promoting cohesion with the community and locals in the areas where company has operations (Pullman et al. 2009). This includes for example making sure that the locals are not harmed by focal company's operations, such as chemical leaks to drinking water, but also impacting positively to for example community building projects.

Company's sustainability orientation significantly predicts company's implementation of advanced practices, and these again predict positive operational performance (Croom et al., 2018). Operational performance includes for example improved product quality and reduction in lead times (Kotabe, et al. 2003). Advanced practices are such as social supply chain redefinition and social new product and process development (Croom et al., 2018).

Social sustainability discussion often lacks cultural sustainability aspect (Alexander et al., 2020) which refers to considering the supply chain's impact on culture both in positive and negative. Many of the practices aiming to improve social sustainability are intangible, hence they are difficult to measure and assess (Alexander et al., 2020).

2.1.3 Environmental sustainable supply chain management practices

Environmental sustainability practices are tools to improve companies' environmental management by either collaborative problem-solving practices or inspecting and mitigating risks by monitoring (Vachon and Klassen, 2006). Environmental practices should be viewed holistically from life cycle analysis perspective, meaning that practices are applied from material choice to manufacturing to sales, consume and at the end, to reuse or recycling the commodity. This is due to environmental sustainability issues impacting the entire life cycle of the product, not only manufacturing or recycling materials at the end of product's life cycle.

Many environmental SSCM practices are followers to governmental regulation and legislations. The European Union and its member countries are part of UNFCCC, its Kyoto Protocol and the Paris Agreement, which makes them accountable to report yearly greenhouse gas emissions and their progress towards meeting the set goals of these agreements (European Commission, n.d.). These are ones such as monitoring and reporting emissions across entire supply chain (Giannakis and Papadopoulos, 2016). However, ‘The Corporate Sustainability Reporting Directive’, which will take action in 2023, will force all companies which are based in EU or have significant operations in one of the member countries, excluding micro companies, to report their environmental and social sustainability actions, their operations impact on the surrounding environment including people and potential risks that they face in these areas (European Commission, n.d.). To reduce their emissions, increasing number of companies are engaging to ‘science-based mission reduction targets’, which are objectives to reduce greenhouse gas emissions so that the targets of the Paris Agreement would be accomplished. These emission targets are much more ambitious than those set by the companies themselves, as they are based on scientific calculations rather than targets limited by the companies’ business targets. (Bendig et al., 2023)

There are multiple sources of emissions along supply chains. Increasing environmental supply chain management practices will significantly reduce the greenhouse gas emission levels along the focal company’s supply chain (Eggert and Hartmann, 2021). For example, switching to smaller warehouses decreases emission produced by warehousing (McKinnon et al., 2015, p. 194-195). Along with warehousing, there are other sources of emissions as well, which can be managed with green logistics practices. Vienažindienė et al. (2021) divide green logistics into five following fields: sustainable waste management, green administration and logistics data management, green packaging, green warehousing and green transportation. Under these there are variety of practices such as optimizing routes and maximizing cargo loads, using Inter-Modal transport, collaboration with partners and customers in environmental management and application of innovative packaging technologies (Vienažindienė et al., 2021). Companies should design their supply chain with optimization-based models, which take into account the total distance that the product and its raw materials travel including subcontractors and lower tier suppliers’ facilities’ locations. With shorter distances, selecting transport modes with lower emissions and using

effective production technology, the supply chain's emissions can be reduced. (Nouira et al., 2016)

There are various other environmental SSCM practices. For example, companies can increase their energy efficiency and invest to green energy services (Fahimnia et al., 2015; Sendawula et al., 2021). By decreasing energy consumption, companies can also decrease their greenhouse gas emissions (Elhedhli and Merrick, 2012). These are singular practices, but they can also be a part of an environmental SSCM practice that is strategic.

Designing overall more environmentally friendly commodities and processes can be viewed strategic. Products should be designed so that they use materials efficiently and when possible, utilize eco-materials or recycled materials, they are packed to eco-friendly packaging (Sendawula et al., 2021) and that the packaging and product itself can be recycled or in the best-case scenario, reused before recycling (Zhu et al., 2008). With better design, it is possible to reduce material usage (Vachon and Klassen, 2006) which can save energy, nature's resources and excess waste being produced from manufacturing. The process of designing products that utilize as less energy, materials, chemicals etc., in addition to being reusable and recyclable, is eco-design which is a sustainability practice itself (Wu et al., 2012), that sort of combines multiple practices together that have previously been impacting much more narrow area.

In addition to eco-design, there are SSCM practices that are used in the later part of product's life cycle. In manufacturing, there are SSCM practices such as clean production (Govindan et al., 2014) and green manufacturing practices (D'Angelo et al., 2023). Clean production can often be achieved by implementing new technology to manufacturing processes (Hofmann et al., 2012) which usually stands for eliminating unnecessary processes and excess materials and chemicals in addition to other factors. In addition to eliminating waste before it is produced, handling already formed waste by waste management practices is part of environmental SSCM practices (Sendawula et al., 2021). These can all be under a larger environmental SSCM practice that is more a strategic one, such as long-term sustainability goals by practices such as collaboration on greener product design or processes (Vachon and Klassen, 2006).

The latest large change on environmental practices is circular economy and its different dimensions. Circular economy is a economic system which is intended to minimize the used

resources in production, such as energy and raw materials, and for them to be kept in the loop and hence reused over and over whilst not compromising on economic growth (Geissdoerfer et al., 2018).

Circular business models and circular supply chain helps in realizing sustainability ambitions (Geissdoerfer et al., 2018). There are various practices, such as reverse logistics and material reuse, to improve companies towards circular economy. However, truly adopting circular economy practices to the fullest will be slow and not doable to many companies yet. Hence, implementing them together with other SSCM practices will be good. Consumers' view products made from recycled materials to have lower quality than regular products, even when they have high quality requirements (Geissdoerfer et al., 2018).

Given the recent major disruption towards the global supply chain, to name a few: covid-19, incident with cargo vessel Evergreen, Russian-Ukraine war and the energy crisis resulted partly from it and the earthquakes impacting Turkey and Syria, the discussion regarding localizing supply chains has grown interest. DiBella et al. (2023) emphasize having short supply chains and close supplier relations as one SSCM practice. Having shorter supply chains would not only shorten the products manufacturing and distribution journey – therefore decreasing emissions and potentially costs, but it would also make closer supplier relations easier whether for example conducting audits more frequently or increasing hands on product development meetings.

In their study, Lopes de Sousa Jabbour et al. (2017), found that consumers and suppliers are significant to companies' sustainability improvement in form of external SSCM practices: cooperation with customers and green purchasing. Consumers request certain products and actions from the company and help to execute the processes in practice. When collaborating with the consumers and answering to these requests, companies could mitigate consumer pressure. Internal SSCM practices do not include direct connection to supplier or consumers and are such as eco-design, investment recovery and environmental management (Lopes de Sousa Jabbour et al., 2017).

According to Hofmann et al. (2012), having a dedicated environmental manager and having environmental procurement policies in the company are among the least implemented SSCM practices in manufacturing SMEs. However, environmental training, environmental plan and

inventory control of toxins have been the most well implemented practices in these companies (Hofmann et al., 2012).

Purchasing management (e.g., supplier's selection process and monitoring), supplier's performance assessment (e.g., KPI's environmental perspective: energy, water and waste, certificates and LCA) and collaboration (e.g., technologies to reduce emissions and green supplier development) are the key functions to implement environmental SSCM practices across the whole supply chain (Pimenta and Ball, 2015).

Purchasing management includes green purchasing practices. Green purchasing is buying environmentally friendly products and materials in addition to cooperating with the suppliers to develop these together (Green et al., 2012). Khan et al. (2022) found in their study that green purchasing practices have a significant positive impact on company's economic and environmental performance, not including social performance. Green supply chain management practices focus on eliminating environmental waste and through waste elimination costs should be decreasing hence improving economic performance (Green et al., 2012). Green purchasing includes additional practices such as environmental audits for suppliers and suppliers' ISO14000 certification too (Zhu et al., 2008).

Many of the SSCM practices are implemented at suppliers and distributors and the focus is on internal operations such as selecting suppliers, eco-design, managing waste generated in manufacturing and systems for managing packaging (Ghadge et al., 2017). Internal operations might be easier for companies to manage and implement in comparison to managing the implementation of practices throughout the entire supplier base.

2.2 Drivers and barriers towards SSCM practices implementation

Understanding the drivers and barriers for SSCM practices implementation is important so that the drivers can be supported and potentially increased as well as finding ways to manage and decrease the potential barriers. The drivers for SSCM practices' implementation vary between industries (Walker et al., 2008; Mathiyazhagan et al., 2014), hence, companies must analyze the biggest drivers for them so that they can best answer to potential pressure rising from the driver source in addition to finding best practices to match the driver points. In addition to drivers, barriers and possible practices vary also (Walker et al., 2008).

Collaborating with companies that already have good reputation regarding their sustainability actions benefits partnering companies' implementation of SSCM practices (Wu et al., 2012). As both, or in best case entire network, will implement SSCM practices, it is beneficial for all participants. This helps with collaboration as participants work with similar guidelines, sustainability is increased in addition to gaining economic benefits and competitive advantage against companies outside the network.

2.2.1 Drivers

There are more drivers than barriers towards implementing 'environmental supply chain management practices' identified (Walker et al., 2008). There are internal and external drivers for sustainability implementation for companies (Lozano, 2015). Companies are more impacted by external drivers, such as governmental regulation, customers, competition, society, and suppliers, than internal drivers, which are arising from within the company (Walker et al., 2008). Lozano (2015) found that most significant internal drivers are leadership and sustainability's business case – what commercial value it can offer, and most significant external drivers are customer demands and expectations, reputation, and legislation.

Governmental regulation is one of the top drivers for implementing sustainability practices (Walker et al., 2008; Giunipero et al., 2012; Lozano, 2015; Ghadge et al., 2017). Many of the sustainability practices are following governmental regulations and are aligned to match the set objectives. Central governmental environmental regulation and regional environmental regulations are perceived equally significant drivers (Mathiyazhagan and Haq, 2013). Governmental regulations are an important driver of adopting supplier sustainability practices whether the company already has sustainability practices in place or not, but they are not a significant driver after implementation phase when companies are improving supplier sustainability practices (Danese et al., 2019). This can be interpreted so that companies must have internal drivers for improving the sustainability practices once they are initially implemented.

When company's managers are committed to increase environmental sustainability, they are more open to implementing environmental sustainability practices (Sendawula et al., 2021).

If the company management is not committed to increase sustainability of the company, the sustainability performance can end up being weak and merely following the legislative guidelines, hence, the company is not likely to be benefited from its sustainability actions as much as it potentially could.

Companies are open to implement proactive SSCM strategies if it answers to stakeholders' expectations and brings competitive advantage (Ahmadi-Gh and Bello-Pintado, 2022). Global competitiveness was ranked as the highest priority driver for green supply chain management practices (Mathiyazhagan et al., 2014) which support the previously presented discussion, that companies not adopting sustainability practices will fall behind.

Customer demands for protecting the environment is also a significant driver for implementation of green supply chain management practices (Mathiyazhagan et al., 2014). For example, companies investing in green technology do not prioritize environmental sustainability as a driver, instead, it is a means of generating social and economic benefit, such as through improved social recognition, cost savings, and the emergence of new businesses (Saunila et al., 2019). This is supported by Mathiyazhagan et al., (2014) who found in their study that ethical responsibility was the lowest prioritized driver for implementing green supply chain management practices.

For textile industry, Diabat et al., (2014) found that health and safety issues, employment stability, community economic welfare, adoption of safety standards and adoption of green practices are the most significant enablers for companies to implement SSCM practices as employe involvement is viewed critical for the company to achieve its goals.

2.2.2 Barriers

There is no significant difference between internal and external barriers on which would impact the company the most (Walker et al., 2008). External barriers are regulation, poor supplier commitment and industry specific barriers. (Walker et al., 2008) and internal barriers are such as lack of awareness of sustainability issues, lack of resources and slow company policies towards moving towards sustainability (Jaramillo et al., 2018).

Giunipero et al. (2012) identified four barriers that affect companies' ability to implement sustainability practices which are economic condition and the cost of sustainability, lack of consensus at top management level, "lack of sustainability standards and appropriate regulations" and misaligning the long term and short-term strategic goals. This is supported by Fenwick (2007) who found in his study that main barriers in front of implementing sustainability practices include low stakeholder understanding and support, lack of proper cost-benefit analysis and lack of focus and strategy from top management (Fenwick, 2007).

Giunipero et al. (2012) found that a main barrier for implementing sustainability practices are their high initial investments and operational costs to both the company and consumers, in addition to uncertain economy markets. This is supported by Ghadge et al. (2017), who also found in their study that high initial implementation costs and supplier resistance are the main barriers for green supply chain management practices implementation. In addition, Walker et al., (2008) found costs to be main barriers towards implementation of sustainability practices. Financial performance is valued highly compared to improving company's environmental or social sustainability (Giunipero et al., 2012), however investments are necessary to implement practices that mitigate risks so it is a challenge for companies to find balance.

According to Mathiyazhagan et al. (2013) the main barrier for implementing GSCM practices is maintaining the environmental awareness of suppliers. Companies should insist on eco-friendly materials from suppliers and organize trainings to pressure the importance of sustainability practices (Mathiyazhagan et al., 2013). Although with SMEs, from suppliers' perspective, buyer pressure to engage in CSR activities is seen as an incentive to implement sustainability practices, especially environmental ones – therefore, supply chain pressure towards suppliers in implementing sustainability practices can be viewed as a functioning strategy (Baden et al. 2009).

According to Mathiyazhagan et al. (2013) the easiest barriers to conquer are the lack of consumer awareness and pressure over sustainability practices, lack of exposing green systems to professionals. disbelief about environmental benefits, and suppliers' poor commitment and unwillingness to share information about their share of operations.

2.3 Supply chain risk management

Companies cannot manage entire markets and predict future events. They can however protect their business and supply continuum, financials, and reputation to at least some point from the potential risks occurring by doing risk management. Supply chain risk management is identifying, evaluating and mitigating internal and external risks to the supply chain (Viswanath Shenoi et al., 2021, p. 108). Supply chain risk management is collaboration with internal and external stakeholders to identify, evaluate, mitigate, and monitor risks to the supply chain that might severely impact one or more parts of the chain (Ho et al., 2015). The actual process of supply chain risk management usually proceeds as follows 1. risk identification; 2. risk assessment; 3 decision and implementation of risk management and 4. risk monitoring (Giannakis and Louis, 2011).

2.3.1 Risk identification

Understanding the supply chain risk sources can help with designing appropriate risk mitigation strategy (Punniyamoorthy et al., 2013). The results of improving company's supply chain resilience through same resources and capabilities vary strongly between companies depending on the supply chain risks they are facing (Brusset and Teller, 2017). Therefore, proper risk identification can help with better aligning the company's resources and capabilities.

Many kinds of disruptions can cause standstills to different parts of the supply chain. Supply chains' increasing complexity, such as globalization, outsourcing and reducing suppliers, is a driver for supply chain risks and makes them vulnerable (Thun and Hoenig, 2011). The number of risks and their probability of occurrence depends on the supply chain structure. With global supply chains there are risks such as supply risk, demand risk, environmental and sustainability risks and process and control risks (Christopher et al., 2011). In addition, different trends increase risk occurrence in supply chains such as globalization of supply chain, reduced buffers, increasing demand for on-time deliveries and shorter product life cycles (Norrman and Jansson, 2004).

Blos et al. (2009) developed a framework which is a supply chain vulnerability map helping companies to identify external and internal risks related to four vulnerability sources: strategy, operations, hazards, and financials that. In addition, Kayis and Dana Karningsih (2012) have developed SCRIS: 'Supply Chain Risk Identification System', which not only identifies the potential risks, but also their interrelationships so that accurate risk management strategy can be chosen.

Spekman and Davis (2004) divide risks into five categories: inability to meet market demand, disruptions in information flow, monetary associated risks, internal information systems and information sharing risks, and risks of opportunistic and self-centered behavior. An example of a monetary associated risk and internal information system risk can be for example poorly executed investments into information systems that are neither efficient nor fully capable in the long run, which leads to financial losses (Cavinato, 2004). Inability to meet market demand can be for example not offering fully standardized commodities which causes risks with delivery uncertainties regarding both time and quality aspects (Sreedevi and Saranga, 2017).

Sharing information with participants in the supply chain and network is a significant way to mitigate risks as there might be new risks brought to the network with new suppliers that can impact the entire network negatively if every participant is not familiar with their potential risks or how they should be mitigated. Same goes for existing participants in the network, sharing information enables establishing joint strategy to risk mitigation throughout the network. (Nishat Faisal et al., 2006) In addition, there is a risk of not sharing information among supply chain participants hence it will not be accurate, visible not secure. With continuous changes in the markets, information change must be continuous as well, so that each participant can rely that they have the latest knowledge on hand. (Lin and Zhou, 2010) If there are existing uncertainty regarding information, it impacts the accuracy of production planning in addition to re-planning disrupted production (Christopher and Lee, 2004).

Often used categorization of supply chain risks is dividing the risks into external risks – out of focal company's control, and internal risks, within focal company's control (Helmold et al., 2022, p. 5; Trkman and McCormack, 2009; Ho et al., 2015). Christopher and Peck (2004) divide internal risk again as internal risks for the focal company and internal risks for the supply chain network. Internal risks for the focal firm are process and control risks and

internal risks for the supply chain network are demand and supply risks, external risks are environmental (Christopher and Peck, 2004). Environmental risks are divided into natural disasters and human-centered issues (Trkman and McCormack, 2009). Natural disasters include for example earthquakes and floods, and human-centered issues include for example political changes.

According to a study by Gilaninia et al. (2013) There is no significant difference in the occurrence probability between external and internal risks in the supply chain, but external supply chain risks have a greater impact if they are to be realized. Ho et al. (2015) support this by arguing that external risks are more rare but significantly more harmful and that risks arising from internal operations are recurring risks with smaller negative impact on the supply chain and focal company. However, according to Thun and Hoenig (2011) internal supply chain risks are more likely to occur than external risks and they are more likely to have significant impact on the supply chain compared to external risks. It can be interpreted that the probability of occurrence between external and internal risks depends on different variables but that neither of them cannot be overlooked by the other.

External risks can be divided into five categories given their type: demand risks, supply risks, environmental risks, business risks and physical plant risks (Helmold et al. 2022, p. 5-6). Supply and demand risks are exactly as named. Demand risks are sudden and significant changes in consumer demand where the company has been unable to predict and produce correct amount of product matching the demand, in both too much or too little. Supply risks are risks of disruption in the product flow such as not receiving materials in time to production phase hence the production will be delayed and potentially causing a domino effect and ending to the end consumer receiving their product well late and hence damaging the focal company's reputation. In addition, when supply side risks are estimated, the environment where the supplier is located must be analyzed in line with the focal company's strategy, because even if the supplier was a strategic fit, its location may be too turbulent for the focal company exposing it to great risks (Trkman and McCormack, 2009). Companies can significantly increase their own risk levels by creating dependence on risk-exposed suppliers (Thomas and Chermack, 2019, p. 37).

Environmental risks are outside the supply chain's limits, such natural disasters (Zhao et al., 2013). In addition, they are all risks coming from unstable environment, like the threat terrorism or protests. Business risks arise from potential disruptions in business continuum

such as supplier going into bankruptcy. Lastly, physical plant risks can occur at suppliers' factories or plants where there are risks for non-compliance of working conditions, plant is not safe and fire hazards are present and the plant presents a risk to the surrounding environment.

Giannakis and Papadopoulos (2016) found that regarding sustainability risks in the supply chain, majority of significant risks occurring are internal risks from companies' own operations. However, internal risks can be better managed compared to external risks because external risks have so many variables that are outside of the company's control (Helmold et al., 2022, p. 5).

Internal risks can be divided into manufacturing, business, planning and control, mitigation, and contingency and cultural risks (Helmold et al. 2022, p. 5-6). Comparing to above presented external risk categorization by Halmold et al. (2022), Ho et al. (2015) also divide internal risks to demand and supply risk, in addition to manufacturing and infrastructural risk.

According to Mangla et al. (2015) the category of operational risks are the most important risks for companies to identify as they have the most significant impact on successful implementation of sustainability practices in the supply chain. These operational risks are machine, equipment or facility failure, design risks regarding green process/operations/methods designs, lack of skilled labor regarding skills towards sustainability practices as part of operations and low green technology level (Mangla et al., 2015).

2.3.2 Risk assessment

Risk assessment phase is where the impact of potential risk realization is estimated. Companies determine the acceptable risk levels from the company's point of view, but this is also influenced by societal risk levels such as governmental regulations (European Environment Agency, 2020). In risk evaluation phase, the risks priorities are also determined based on the evaluation (Kayis and Dana Karningsih, 2012). Risk prioritizing is important as it helps with focusing on the most significant risks (Aqlan and Lam, 2015).

When managing risks, companies must assess the probability of risk occurrence, the social cost in case the risk was to be realized, and what share of the burden the company would incur (Lemke and Petersen, 2013). Majority of supply chain risks rise within the supply chain; hence, management can react to them directly (Thun and Hoenig, 2011).

Thomas and Chermack (2019) also point out scenario planning, which differs from probabilistic choice and risk analysis by finding different future scenarios, what impacts they would have and how could each scenario be recognized early enough to react to it. Zsidisin et al., (2004) also state that risk evaluation is only one step of risk management, and it can take SCRM from recognizing potential risks to providing useful early warning systems of potential problems. For effective assessment of supply chain risks, quantitative and qualitative measures should be used (Aqlan and Lam, 2015).

2.3.3 Risk mitigation

Every company is influenced by risks somehow and depending on the environment and nature of the company, there are alternative ways to mitigate risks (Olson and Dash Wu, 2010). What affects the chosen management strategy and practices are for example the industry in which the company operates, resources at use, number of suppliers and where they are located, and what types of risks the company is potentially facing. Companies need to be more proactive when managing the growing number of internal and external supply chain risks, especially when the focus has been on internal risks for long (Salamai et al., 2019).

In their study, Blos et al. (2019) found three significant practices to properly implement supply chain risk management to companies: better communication in the supply chain, training programs on SCRM and business continuity management, and naming an employee as chief risk officer. Companies can better detect and recover from risks if risk management is properly integrated in the company and the employees are trained for the practices (Riley et al., 2016).

Supply chain risk management strategies and their practices are usually divided into proactive and reactive strategies. In addition, Grötsch et al. (2013) identify three categories of supply chain risk management which are passive, reactive and proactive. By being

passive, the company does not have any strategy on risk management and when a disruption occurs, it is chaotically aimed to overcome (Grötsch et al., 2013). Proactive practices are used when a company wants to try to decrease the probability of disruption in the supply chain, and reactive practices are used to try to mitigate the negative impacts of the occurring risk (Thun et al., 2011). Proactive risk management requires more time and effort compared to reactive management strategy (Saglam, et al., 2021).

Due to supply chains current complexity, both proactive and reactive SCRM strategies must be implemented (Wieland and Wallenburg, 2012). Wieland and Wallenburg (2012) define proactive SCRM strategies as robustness and reactive strategies as agility. Proactive SCRM is more required in upstream supply chain, and it indicates that supplier related risks are more predictable (Wieland and Wallenburg, 2012).

Both proactive and reactive strategies should be implemented but towards the risk they are best suited for. In addition, it requires careful planning on how to implement these strategies and on what level due to their impact on all supply chain operation internally and externally. (Wieland and Wallenburg, 2012)

Agility has strong positive impact to supply chain's customer value, but robustness has strong positive impact on both, supply chain's customer value and business performance (Wieland and Wallenberg, 2012).

SCRM performance has a direct significant impact on the company's performance (Saglam, et al., 2021). There are significant differences between different levels of supply chain risk management and company's performance level - the higher the level of risk management in the company, the higher the performance level (Gilaninia et al., 2013).

Traditional supply chain risk management practices can be utilized when potential risk causes can be identified, however, with the current complexity of global trade, these events are even harder to predict and therefore proactive risk management strategies enhancing companies' resilience must become the focus instead of only preparing for potential disasters (Pettit et al. 2013). By having proactive risk identification methods, companies can save themselves from serious repercussions if the risks are identified as soon as they surface (Viswanath Shenoj et al., 2021).

Companies closest to the markets must deal with significant risks towards the company's reputation as they are usually the ones facing stakeholders for any sustainability violation

within their supply chain (Caniato et al., 2011) which has led to more careful supplier selection where meeting focal company's sustainability criteria is necessary (Da Giau et al., 2016).

Saglam et al. (2021) identified that proactive SCRM strategies include supply chain contracts, product and process management, supplier development and management and the supplier relationship. In addition, they identified three aspects to proactive supply chain risk management, supply chain resilience, supply chain responsiveness and supply chain flexibility (Saglam, et al., 2021). According to ur Rehman et al. (2022) preventive risk management practices are only effective towards performance when they become sources to enhance reactive risk management.

Proactive SCRM practices are more expensive than reactive ones and the variety of them is big. Companies that have had disruptions earlier can better find the best solutions for them based on experience. In practice, reactive measures are more favorable due to proactive measures high cost and time consuming. (Grötsch et al., 2013) Reactive risk management focuses more on responding to and recovering from supply chain disruptions (ur Rehman et al., 2022) and the effects rather than cause and hence it is only focusing on the impact of the risk, not its probability of occurrence (Grötsch et al., 2013). Reactive SCRM strategies include disaster management, demand management and contingency planning (Saglam, et al., 2021).

2.3.4 Risk monitoring

Risk monitoring has been less studied compared to previous steps of SCRM (Ho et al., 2015). Risk monitoring is measuring the results of risk management strategies/practices, controlling the identified risks, and continuously improving the SCRM process (Schlüter, 2019, p. 138). Risk monitoring can be done with different big data tools such as 'smart contracts', which automatically inform the following tiers of supply chain when one party is lagging behind set schedule (Hrušovský, 2022, p. 113). risk monitoring tools: in-stock inventory, production throughput and delivery lead times

Adding visibility to supply chains leads to significant cost savings in case a supply chain disruption occurs. (Nooraie and Parast, 2015) Having visibility over the supply chain helps

with better understanding its risks and their mitigation methods. Assessing and evaluating the supply chain and its risks more thoroughly, it should be possible to minimize its cost and risk. Artificial Intelligence can be used for mitigation in for example monitoring the supply chain and suppliers, procurement market monitoring, adding end-to-end visibility over the supply chain and help in better resource planning (Claus and Szupories, 2022, p. 105-106).

Companies should not invest resources to supplier development programs if the supplier does not fit the current supply chain strategy or it does not cope in case of disruptions. (Trkman and McCormack, 2009)

By improving company's flexibility in reorganizing the supply chain, for example whether to change manufacturing location and answer to quickly changing demand, companies can increase their resilience (Brusset and Teller, 2017) and thus better respond to disruptions and reducing manufacturing risks (Sreedevi and Saranga, 2017). Companies can mitigate their supply chain risks by adjusting their level of flexibility to in accordance with the vulnerability of the environment that they operate in (Sreedevi and Saranga, 2017).

2.4 The benefits of sustainable supply chain management practices to supply chain risk management

Sustainability should not be viewed as a cost that is difficult to justify financially, but as an enabler to reduce supply chain risks and improve risk management (Miller and Engemann, 2019, p. 262). Gouda and Saranga (2018) found that implementing SSCM practices has a positive impact on company's SCRM, and it has an even higher impact if done simultaneously with proactive SCRM efforts. This is supported by Hallikas et al. (2020), who found that sustainable purchasing practices improve companies reputational and operational risk management performance.

To create sustainable supply chains and to improve their performance, risk prevention, adapting risk culture to supply network and improving supply chain resilience is necessary. Many companies have a perception that increasing supply chain resilience is too expensive compared to disruption probabilities, however, through sustainability, the resilience of supply chain increases performance. (Zhu and Wu, 2022) SSCM practices improve supply

chain resilience against disruptions, as in case of supply chain disruption, the higher the level of sustainability in the supply chain, the smaller the negative impact on financial performance (Jabbarzadeh, et al., 2018). According to Schmidt et al. (2017) companies located further downstream in the supply chain invest more in SSCM practices compared to upstream companies with generally fewer SSCM practice implemented. More visible companies in the downstream of supply chain implement more practices to void and manage potential risks (Hajmohammad and Vachon, 2016). Investing into sustainability practices, companies can mitigate future risks such as lawsuits, negative media publication, unreliable partnerships, disruptions and financial mismanagement (Cruz, 2013).

Sustainability-oriented companies utilizing sustainability practices have unique ways of managing their tangible and intangible resources, which are critical factors for creating resilient economy, that is not only environmentally sustainable but also one, that can sustain itself in case of external shocks occurring (DiBella et al., 2023). Sustainability practices reduce the probability of risks occurring and reactive risk management practices reduce the impact of the risk, they are effective together, but reactive risk management is not found to have a significant impact on supply chain risk management when done in isolation (Gouda and Saranga 2018). According to Lu et al. (2022), companies that had mature state of sustainability in their operations had an insurance-like protection to protect their economic performance during Covid-19, unlike companies that are at an early stage of implementing sustainability. On their study on ASEAN and EU based companies approaches to building resilient supply chains, Pennisi di Floristella and Chen (2022) found that companies on both markets agreed that sustainability and digital transformation are crucial factors to reach supply chain resilience – which again was viewed as a way to increase economic cooperation and strategic partnerships.

Mitigating risks, such as public criticism and being faced with concerns from NGOs, together with seeking new opportunities from the markets are the two main drivers for adopting social sustainability practices (Awaysheh and Klassen, 2010). Risk of information asymmetry, especially with new suppliers, can be coordinated with different certificates (Ciliberti et al., 2009) such as the SA8000 certification program that ensures fair working conditions to workers (Social Accountability International, SAI 2022). Focal companies can demand these from their suppliers in order to begin cooperation.

Miller and Engemann (2019, p. 259) presented applying quality management practices when viewing supply chain sustainability and risk management together. In addition, they presented a view to compare the costs between resources needed to implement sustainability practices and following them through to costs that arise from disruption in the supply chain without these measures when a disruption occurs (Miller and Engemann 2019, p. 259-260). By comparing the costs, companies can find financial justification for investing to sustainability practices.

Having sustainability core values implemented in the company has a significant impact on the company's sustainability risk management, which increases along with extensivity. In addition, the level of top management involvement towards sustainability positively affects this relationship. (Wijethilake and Lama, 2019) Involvement and training of workers is also significant due to risk of implementing new sustainability practice which workers do not fully understand and support and therefore, its execution may only be partial or nonexistent (Sarkis et al. 2010). For more effective implementation of sustainability practices, educating workers needs to be executed in a way that they understand and relating in their communities affecting their interests (Fenwick, 2007). Company management is required to organize trainings and support to employees for them to build competence in utilizing sustainability practices accordingly (Muduli et al., 2013) or they are facing a risk of not implementing the most efficient practices as effectively as they should to gain the benefits (Mangla et al., 2015). Environmental sustainability is necessary to be implemented on a strategic level to the company and with the help of top management, environmentally friendly processes and commodities must be developed and communicated on all levels of the company (Green et al., 2012).

Companies will not feel confident implementing the necessary SSCM practices to limit the environmental impacts of their activities not only within the lines of their own organization but throughout the entire supply chain until they can understand and manage the risks of these practices (Cousins et al., 2004). Sustainability practices can either improve risk management or be neutral, but as a third option, they can also increase or create risks in addition to making risk mitigation more complex. For example, Ivanov (2018) found that sustainable single sourcing enhances the impact of disruption in the supply chain. Implementing sustainability causes its own risks because it is not possible to predict the final outcome of sustainability initiatives due to external factors such as customer acceptance,

workers commitment and potential geopolitical issues. The complexity of the risk usually increases with the complexity of the supply network, especially with global suppliers. (Da Giau et al., 2016)

Companies that belong to partnering networks face a potential risk when implementing sustainability practices, as this can generate tension among the network participants and stakeholders. Internally, these tensions are typically financial related or internal resistance by employees and vary depending on the nature of the sustainability practice, where technology-intensive practices cause higher risks and costs. Between company implementing the new practice and its suppliers, the tensions arise most likely when suppliers are not able to meet new criteria set with new sustainability practice. Between implementer and consumers, the tensions were most likely regarding concerns of rising prices, greenwashing concerns and decrease in company's performance. Tensions between company implementing new practice and other participants of the network are often regarding added complexity to the network. All of the tensions can be somewhat mitigated with communication, education and close involvement of stakeholders when practices are implemented. (Tura et al. 2019)

Facing reputational risk is a significant driver for companies to implement sustainability practices into their supply chain management (Roehrich et al., 2013). With small and mid-sized companies, owners and/or top management is the main driver in implementing CSR and company's positive reputation following CSR implementation is the most valued outcome of it (Baden et al., 2009). Top management/companies are balancing with the extent of sustainability practices and cost of their implementation against the probability of a reputational risk occurring (Roehrich et al., 2013).

Stakeholders applying pressure to increase the company's sustainability should be recognized as important members of the value chain rather than solely pressure points, by doing so, sustainability practices can be better implemented to the supply chain (Schmidt et al., 2017). Hu and Hsu (2010) found four categories for the most significant factors in ensuring SSCM practices implementation which are product recycling, supplier management, organization involvement and life cycle management. These categories include factors such as supplier environmental questionnaire, asking for product testing report, effective communication platform within companies and with suppliers, and applying LCA to carry out eco-report (Hu and Hsu 2010). However, environmental and social SSCM

practices on their own might not add competitive value but combining them with risk assessment practices impacts positively on company's performance, when viewed in long-term perspective (Miemczyk and Luzzini, 2018).

Miller and Engemann (2019) identified three ways that supply chain sustainability benefits SCRM. Sustainable supply chains avert various shocks which could create disruptions and predispose the supply chain to risks. In case of disruption, having sustainability practices in place can help the supply chain to re-organize itself back to normal thus these practices imply having robust business continuity plan. In case of disruption, sustainability can improve consumers and other stakeholders view of the company which improves brand value and long-term loyalty. (Miller and Engemann, 2019, p. 256-257)

3. Research methodology

This chapter presents the chosen research method. For this thesis, qualitative research method is used to analyze the data presented in the empirical chapter. Qualitative research method is selected due to the aims of the thesis, formatting style of the research questions and due to the data's format, that is used. From multiple qualitative research methods, a descriptive take on a multiple case study method is chosen. In addition, this chapter includes presenting the data collection and analysis processes. Lastly, the reliability and validity of the thesis is discussed.

3.1 Qualitative research

When conducting research, the researcher must pick which method to use, quantitative or qualitative, or a mixed method where both methods are used. Qualitative research focuses on a comprehensive description of a phenomena under research, and it usually focuses on one subject for a longer time period. Quantitative research is statistical, based on numbers, and it aims to find generalizable results from a big sample. (Newman and Benz, 1998, p. 9-10)

Qualitative research studies complex phenomena which cannot be easily defined. In qualitative research, the idea is to find features that are similar to all examples but not found in same context in other types of research. (Hammersley, 2013, p. 2) In all simplicity, qualitative research aims to understand the quality, features, and meanings of subjects comprehensively. As the aim of this thesis is to understand and explain the already proven connection between SSCM practices and SCRM, a descriptive research approach is taken.

Descriptive research can be used when research question can be answered and practices improved by analysis and description (Eunsook & Owen, 2000, p. 219). Descriptive research method aims to find connections between phenomena. When conducting a qualitative research, descriptive methods aim to find the meanings of the connection between two phenomena/concept. Here, the concepts have a connection, but it is described with other means than causal relationship. (University of Jyväskylä, 2009) In qualitative research, the

data is usually in a text form and with descriptive method, the data is analyzed descriptively to find similarities or differences in the data and themes. This results to the themes being described and explained creating a description of the phenomena. (Magilvy and Thomas, 2009) The sample size is usually smaller and purposely selected in descriptive qualitative studies. In addition, the data is gone over multiple times to deeply understand it and find potential patterns and themes from it. By going over the data multiple times, the research can find these similarities which can then be turned into ‘codes’, repeated words and their combinations from each individual data source. (Magilvy and Thomas, 2009)

Qualitative descriptive research method has received critique by its lack of transparency (Doyle et al., 2019), which can be overcome with open data sources and carefully justifying the implications that are made from the data. Qualitative descriptive research is suitable for the thesis as it helps to better understand the connections between two themes, as is the aim of the thesis.

3.2 Multiple case study

When using case study as a method, the research question(s) is formatted as a case and the aim is to understand and solve the case(s) (Eriksson and Kovalainen, 2008). With case study method, one can investigate a phenomenon in depth and in a real-life context gaining particular understanding of the chosen topic (Farquhar, 2012). This justifies selecting the case study method for this thesis as well. However, as there are more than one company that is being studied, the correct term for the method is called a multiple case study.

Case study method can be used when the research questions are formatted as ‘who’, ‘why’ or ‘how’ (Farquhar, 2012) which has been done when the research questions for the thesis have been formulated. Case studies are also a justified method when the subject under research is new (Blome and Schoenherr, 2011). As combining the topics of SSCRM practices together with SCRM is not yet widely investigated from chosen perspective, the method is justified for this thesis.

To combine descriptive qualitative research methods to case study, selecting a small sample to gain the most understanding of the subject is justified rather than selecting a random sample and hoping to find results. Therefore, when selecting the target companies, multiple

different companies were compared. The ones selected were found to offer the most information separately but in addition to that, they offer information together, so that their findings complement each other. This is due to their similar operating industries, they are all Finnish companies mainly operating in Finland, they are stock listed hence their reporting is comprehensive, they communicate comprehensively about a variety of sustainability practices they have or are planning to implement, and lastly, they are also interesting companies to further discuss.

3.3 Data collection and analysis

The data for the thesis is collected from public documents. Data is collected mainly from target companies' sustainability reports and risk management policies, which are annually published and updated public reports. In this case, sustainability report can mean a sustainability section in target company's annual report or a separate sustainability report. Risk management policies are publications on the target companies' websites. All the sustainability reports are from financial year 2022. The risk management policies are last updated in 2022 by Musti Group, and 2023 by Kesko and Tokmanni. In addition to the main reports, the data is complemented by other reports and publications on the companies' websites that support the main reports.

The risk management policies were also read through at first. After this, they were scanned through from supply chain perspective. This led to identifying the most significant risks from supply chain's perspective and those were then further discussed. The risks were first gone through individually company by company, but after this, a concluding table was conducted from all the companies' risks that were mostly emphasized.

The data was first analyzed by reading it through. After this, the data was read through again utilizing sub chapters in the reports that include most valuable information from the thesis perspective. In addition, key word search was utilized. The key words that were used in the search were words or word combinations that are either found from the literature review of the thesis or identified to be mentioned multiple times in all of the companies' reports. A few examples of the key words or key word combinations that were used are: 'sustainability practices', 'supply chain' and 'proactively'. The finishing analysis was conducted when the

findings were compared to literature and findings from each company were compared with each other.

3.4 Reliability and validity

When conducting research, the researcher aims for high reliability and validity of the results and chosen research method. There is a connection between reliability and validity. The lower the research's reliability, the lower the validity, but this does not apply the other way around (Hiltunen, 2009).

Reliability measures how reliably and repeatably the chosen research method measures the subject of the research. If the reliability is good, it proves, that the research findings are not a coincidence but can be found again, if the research would be conducted again for other samples and by others. The justification for the selected research method was already presented above in chapter '3.2 Multiple case study'.

Validity of the research measures whether the selected data is correct in comparison to the research questions and is the researcher actually studying what is meant to be studied in the research. Validity can be increased by using public data sources, referential materials and finding structural relationships from the reports (Newman & Benz, 1998). These are utilized in this thesis, as similar public documents from each target companies are investigated. What also supports the validity of the thesis is that the subject has already been researched with quantitative methods previously and a positive connection between SSCMP and SCRM has been identified (Hallikas, et al., 2020; Gouda and Saranga, 2018).

4. Empirical findings

In this chapter, the target companies are introduced, and the data found from their reports is presented. This chapter focuses on introducing the chosen target companies. In addition to companies' basic information and main financial figures, this chapter also includes three other subchapters. Second subchapter discusses the sustainability strategies and practices that the companies have discussed in their sustainability reports from 2022. Third subchapter discusses the risk management and most significant risks that the companies have discussed in their risk management policies. Last subchapter discusses how these two themes are currently discussed together in companies' public reports.

4.1 Target company introduction – Tokmanni, Kesko and Musti Group

The target companies are chosen based on their sustainability work that is comprehensively reported in public reports. In addition to comprehensive sustainability work, these companies were selected due to their comprehensive public risk management policy reports. All three companies are listed to Helsinki Stock Exchange. The three target companies are all selected from similar industry, so that their practices and operations would be as comparable with each other as possible.

Tokmanni

Tokmanni Group Oyj (from now on, Tokmanni) is a Finnish retail chain. Tokmanni is a discount store chain (Tokmanni 2023e) and the company has 198 Tokmanni stores and about 30 shoe stores which are their own brand under Tokmanni (Tokmanni, 2023b). In 2011, Tokmanni also opened their own online store (Tokmanni, 2023e). Tokmanni's revenue in 2022 was 1168 million euros and their profit 396,8 million euros (Tokmanni, 2023d). Tokmanni had 4241 employees at the end of year 2022 (Tokmanni, 2023e). Tokmanni was

listed to Nasdaq Helsinki in 2016 (Tokmanni, 2023f). Tokmanni has published sustainability reports beginning from 2015 (Tokmanni 2023c).

Tokmanni's history begins in 1974 when the first smaller discount store was brought by the company. The company then grew throughout the years buying other smaller discount store chains and 'Tokmanni Group' was established in 2006, ten years before the company was listed to stock exchange. (Tokmanni, 2023f) Today, Tokmanni Group's main purposes are to offer products: "With low prices" & "With a pleasant and effortless shopping experience" (Tokmanni, 2023e).

Tokmanni has over one hundred suppliers. Biggest sourcing country is Finland, with 69,8 percent share, which is followed by China, with 16,1 percent share. 10,1 percent of products are sourced from other countries of Europe excluding Finland, and 4,1 percent of products are sourced from Asia, excluding China's share. The following largest sourcing countries for Tokmanni are the Netherlands, Bangladesh, Sweden, Denmark, Estonia, Poland and Germany, all having less than 2 percent share. From these countries, Bangladesh is also listed on Tokmanni's risk country list, a list which identifies the countries where sourcing and supply chain operations over all include more risks than in other countries. With Bangladesh, there are India, Turkey, Pakistan and Taiwan on the list as well. Combined, these countries make only less than two percent of Tokmanni's direct imports. (Tokmanni, 2023c)

Kesko

Kesko Oyj (from now on Kesko) is a Finnish trading sector company that is shared to three divisions: grocery, building and technical, and car trade. In addition to Finland, Kesko has stores in Sweden, Norway, Estonia, Poland, Lithuania and Latvia, combining the chain stores total amount to around 1800. (Kesko, 2023a) Kesko opened their first online grocery store in 2012 that only operated in St. Petersburg at that time (Kesko, 2021). Grocery trade has already ended in Russia (Kesko, 2021), but coming to the end of 2022, Kesko was the market leader in online grocery trade in Finland (Kesko, 2023e). Kesko and the K-retailers employee around 39000 people and the whole K-group employees around 45000 people. (Kesko, 2023a) Kesko's revenue from 2022 was 11,809 million euros and operating profit 815,1

million euros including all three divisions (Kesko, 2023c). Kesko was listed to Nasdaq Helsinki in 1960 (Kesko, 2020). Kesko's own website says the company has published 'corporate responsibility reports' beginning from the year 2000, but publicly the first report that can be accessed is from 2012.

Kesko's history goes back to 1940s beginning from the need of cooperation between retailers. Kesko began to switch to chain operations in the 1990s. (Kesko, 2021) Kesko's vision is to be "leading growth-driven trading sector company in Northern Europe – aiming for the best customer experience in the sector" and their mission is to create welfare responsibly – for all our stakeholders and for all society" (Kesko, 2023a).

At the end of year 2022, Kesko had 23400 suppliers (min. purchase value of 1000 €/a). Major share of Kesko's suppliers are from Finland, 40,2 percent, however, this includes import companies, therefore also products which origin country is not Finland are purchased from these companies. The following biggest share of suppliers are in Sweden, 21,0 percent and in Norway with 12,5 percent share. The following biggest countries by suppliers are Estonia, Latvia, Lithuania and Poland. Kesko also has suppliers outside Europe and the company utilizes 'amfori Country Risk Classification' when assessing risk countries. Risk countries where Kesko has suppliers are Ukraine, Turkey, Serbia, India, Bangladesh, Thailand, Indonesia, Philippines, Vietnam and China, China being the biggest supply country measured in purchase value (in financial year 2022). (Kesko, 2023c)

Musti Group

Musti Group is a Finnish retail chain that sells pet care products and services. In addition to Finland, the company operates in Sweden and Norway as well. Musti Group's revenue from financial year 2022 was 391,1 million euros and their operating profit was 30,9 million euros. The company employees 1587 employees (September 2022) of which 664 were working in Finland and the rest in Sweden or in Norway. Together in Finland, Sweden and Norway, the company has 335 stores in addition to their online store. (Musti Group, 2023c)

The company was founded in 1988 when the first pet store 'Musti ja Mirri' was opened in Finland, and in 2012 it expanded to Sweden. In 2016, the company combined its operations,

and ‘Musti Group’ was established, and in 2020 the company was listed to Nasdaq Helsinki. (Musti group 2023b) The company’s sustainability reporting seems to have been started at the same year as it was listed to stock exchange, in 2020 or at least no public previous reports can be found before this time. The company’s mission is following “Our mission is to make the life of pets and their parents easier, safer and more fun throughout the whole lifespan of the pet.” (Musti Group, 2023c).

The company does not list their sourcing countries in their sustainability or annual report, but it was found from their website that at least the products sold are manufactured mainly in China and also in India. In Europe, products were found to be manufactured in for example in Slovenia, Switzerland and Iceland. (Musti Group, 2023f) However, these products were not necessarily sourced from suppliers located in these countries as the company does sell mainly brand products that are manufactured by other companies, for example the Finnish brand ‘Rukka’. The company does not openly communicate the number of suppliers they have, but at least it can be found from their website that they have at least 195 different brands that they sell (Musti Group, 2023f). However, it can be found that Musti Group buys 11,8 percent’s worth of their annual purchases from high-risk countries directly and 5,2 percent of direct purchases are from Nordic countries (Musti Group, 2023d).

Target companies’ key figures are listed to Table 1. The table gives a quick overview of the companies’ sizes and scale of operations. Kesko is the biggest company in every measured aspect.

	Tokmanni	Kesko	Musti Group
Revenue	1,168 (MEUR)	11,809 (MEUR)	391,1 (MEUR)
Stores (all, global)	228	1800	335
Employees	4241	45000	1587
Suppliers	< 100	< 23400	-

Table 1 - Companies’ key figures from 2022

4.2 Target companies' sustainability strategies

Tokmanni

Tokmanni has a five-year lasting sustainability strategy, and the current strategy lasts from 2021 to 2025. The sustainability strategy includes four themes: products and sourcing, climate, people, and business integrity. Tokmanni has started to publish their sustainability reports beginning from 2015. Their main listed themes and goals of the strategy are sustainable choices for all, carbon neutral Tokmanni 2025, Tokmanni is for everybody and sustainable discount retailer in the future. Tokmanni has stated that their strategic target is that *“Tokmanni is the most sustainable variety discount retailer – building a better future.”*. (Tokmanni 2023c)

Tokmanni lists many aspects in their sustainability report which will require more attention in the future, not claiming to have conquered everything yet. For example, the company aims to increase sustainability certified and traceable products and to further develop their supplier and contract management process (Tokmanni, 2023c). However, a lot has already been done, such as decreasing their emissions caused by own operations more than 70 percent from year 2015 to the end of 2022, aiming to be carbon neutral till year 2025 (Tokmanni 2023c). Tokmanni has been ranked twice in the last two years as ‘the leading company in the Finnish retail sector’ on reduced emissions related to revenue growth on the Europe’s Climate Leaders list which is published by the Financial Times (27th on a list of 400 companies). Tokmanni has also received the second-best possible score in CDP’s assessment (Tokmanni, 2023c), an organization that assess companies’ and cities’ environmental performance, transparency, and impact on environment among other factors (CDP, 2023).

Tokmanni has a head of corporate responsibility and together with different departments, they are responsible for setting group level sustainability targets, practices to meet the targets and follow-through that the targets are met on an annual basis. Tokmanni also asks for their stakeholders input on sustainability improvements. In addition, Tokmanni values consumers feedback on sustainability and this has had an impact on the company’s product assortment. Tokmanni has also formed a sustainability steering group in 2019, which gathers every two

months to discuss current event regarding sustainability and If needed, update the company's policies and targets. (Tokmanni, 2023c)

Kesko

Kesko has updated the company's sustainability strategy in 2022. The strategy covers all of Kesko's three business areas food, housing and transportation. Kesko's sustainability vision is "*We enable sustainable choices for our customers and drive change throughout the value chain.*". Kesko's sustainability strategy's listed focus areas are climate and nature, value chain, Kesko's employees and good governance. Kesko has listed targets to their strategy such as being carbon neutral until the end of year 2025, increasing sustainable products in net sales by 2024 and ensuring social sustainability within the directly imported products from high-risk countries. (Kesko, 2023d)

Kesko discusses a lot of achieved sustainability targets already in their sustainability report, but in addition there is still a lot to do with ongoing targets as well as those topics that are not yet put as targets. Kesko's sustainability work goes a long way and the company has made it to the Global 100 listing as the most sustainable companies in the world each year since 2005. In addition, Kesko was ranked on the Dow Jones Sustainability Indices and on the Global 100 listing as the best company in its own sector. (Kesko, 2023d)

Kesko's sustainability management reaches the board of directors, president and the company's CEO, who approve the sustainability strategy and its targets. Group member board approves new sustainability policies. Kesko's president and CEO are in charge of implementing the sustainability strategy to the company. These actions are followed on annual basis. Kesko has named their Executive VP to be responsible of the content of the strategy, monitoring it and implementing it to each of the three divisions. The EVP works together with 'Group Sustainability Management Team' which consists of employees from different divisions from the operative side. Sustainability work is again worked forward in each division's steering groups. Kesko also values their consumers voices as many of the expectations are arising from the customer base. (Kesko, 2023d)

Musti Group

Musti Group has updated their sustainability objectives in 2022 based on stakeholder analysis (Musti group, 2023c). Musti Group describes their sustainability work as follows, *”At Musti Group, corporate responsibility means putting the welfare of pets and people first, high quality and safety standards, uncompromising professionalism, and the development of increasingly sustainable practices.”* (Musti Grop, 2023c). Musti Group’s sustainability approach is called ‘Trusty’, which has three themes: pets and their parents, employees, and communities (Musti Group, 2023d). The company emphasizes highly on carefully selecting new suppliers, their aim is that all suppliers would follow their ethical principles (Musti group, 2023c).

Musti Group has listed many SSCM practices that they are already utilizing in the company. However, many of their practices where only at level at setting targets and no results have yet been published. This implies, that the level of sustainability is not yet as high as it is compared to Tokmanni and Kesko.

The responsibility of leading the group’s sustainability functions is at the group’s head of HR. In addition, the group has a corporate social responsibility and quality manager. In 2022, Musti Group established a sustainability steering group which aim is to help the company’s management on sustainability related issues and topics. The final approval of Musti Group’s sustainability activities is done by the group’s board of directors. (Musti Group, 2023d)

4.3 Target companies’ sustainable supply chain management practices

Tokmanni

Tokmanni has shared their sustainability policies under four categories: climate, products and sourcing, people, and business integrity (Tokmanni, 2023c). ‘Business integrity’ contains themes such as ethical marketing and employment (Tokmanni 2023c) which can be categorized under economic sustainability, but anti-corruption is the only topic related more

to the thesis subject, hence, it is the only one chosen under further discussion. Anti-corruption is mainly managed in the company with code of conduct and the general terms of purchasing, these have been signed by all of Tokmanni's suppliers, in addition to following legislation.

Under the 'climate'-category, Tokmanni has listed practices such as efficient use of materials, energy efficiency, efficient logistics and efficient recycling and waste, which are all managed with Tokmanni's code of conduct and environmental policy. Energy efficiency and efficient logistics are also managed by science-based targets for emission reduction. In addition, energy efficiency is increased by using the amfori BEPI practices and targets. With this, Tokmanni aims to be carbon neutral by 2025. Efficient recycling of waste follows the plastic bag commitment and food industry's materials efficiency commitment. Efficient use of materials and biodiversity are both following the UN's sustainable development goals. Biodiversity is also managed by high-risk raw material policies. (Tokmanni 2023c)

Tokmanni's 'people'-section includes occupational health and safety, employee training and development, non-discrimination and equality at work and remuneration. Employee training and development is carried through training plans. The rest are following multiple agreements such as code of conduct and human rights principals. In addition, Tokmanni follows the 'OECD Guidelines for Multinational Enterprises' and 'the UN Guiding Principles on Business and Human Rights' which requires companies to follow human rights due diligence actions. These reports guide Tokmanni's operations related to sustainability and more precisely, operations impacting social sustainability justice along their supply chain. Tokmanni's social sustainability is also continued to their supplier base by requiring amfori BSCI and SA8000 certificates from all suppliers located in high-risk countries before beginning cooperation with them. (Tokmanni, 2023c)

'Products and sourcing'-category includes sustainable sourcing, product safety, sustainable products and packaging, and appropriate marking of products. Tokmanni's sustainable sourcing targets and work is focused on high-risk sourcing countries. Their sourcing operations follow the code of conduct, amfori BSCI's code of conduct, principles of responsible sourcing, UN Global Compact Initiative, UN SDGs, guidelines for responsible sourcing, high-risk raw material policies, animal welfare guidelines, human rights principles, RSPO, and the general terms of purchasing. Responsible products and packaging follows all of these as well excluding RSPO, UN SDGs and UN global compact initiative. Product

safety and appropriate marking of products both follow instructions for quality and packaging. Product safety also follows the human rights principles and general terms of purchasing. Tokmanni has also highlighted on increasing their transparency along the supply chain through increasing certified raw materials in their sourced products. Sustainability practices that are taken by the company related to the topic are certification targets for high-risk raw materials, increasing certified raw materials such as cotton, and collaboration with Aalto University on a project which aim is to better understand how products' origins can be traced. (Tokmanni, 2023c)

For high-risk raw materials, Tokmanni relies on certificates such as the FSC and organic farming certificates. In addition, the company requires more specific certificated and audits for specific product categories, such as BRCGS certificate for grocery products. All Tokmanni's new suppliers comply with these, and this is monitored by 'final random inspection' reports with every shipment. Tokmanni also uses requirements for the origins of high-risk raw materials, such as coffee and wood. Wood-based raw materials will be either recycled or sourced from FSC or PEFC-certified forests and no endangered wood species are sourced for Tokmanni's products. This is still unachieved fully, but around 260 products have the certificates and around 60 products are made from recycled wood at the end of 2022. The company also aims to have 100 percent of their sourced cotton to be more sustainable (BCI/recycled) by the end of 2024, and by the end of year 2022, 33 percent of cotton was sourced more sustainably. All of the products under Tokmanni's private labels contain only RSPO-certified palm oil, UTZ-certified coffee and MSC-certified fish at the end of 2022. (Tokmanni, 2023c)

Tokmanni aims to increase certified products and products made from recycled materials in their private label collections. The company does not accept leather originated from Myanmar or Bangladesh in their private label products due to poor conditions of the animals in leather factories, as well as not using real fur in their products. Tokmanni is also aiming to reduce excess packaging by removing unnecessary packaging plastic from their products and they have also started a project to improve the transportation packaging usage in addition to product packaging. (Tokmanni, 2023c)

Tokmanni's key drivers to increase their energy efficiency are the Science Based Targets initiative and "the ambition to be one of the climate-friendliest retailers in Finland". The company also communicates that they view consumer pressure and expectations as a driver

to their sustainability work. For example, the company writes followingly in their sustainability report *“We work actively to ensure that our products and policies are responsible and meet the expectations of us, our customers, and other stakeholders.”* and *“Customer feedback on sustainability is important for us. Each message is replied to, and some of the feedback has also affected our product assortment.”* (Tokmanni, 2023c).

Majority of Tokmanni’s negative climate impacts are caused during the products’ manufacturing and their use phase, and Tokmanni has said that it is a challenge to influence and measure those phases as they are not directly in the company’s control. In addition, the company has stated a few challenges regarding sustainability practices’ implementation. The challenges are related to their category of responsible sourcing and purchasing, Tokmanni has mentioned that they have had challenges on ‘implementing social compliance features into the supplier management system’ and ‘setting targets for sustainable-labelled products’. (Tokmanni, 2023c)

Regarding current megatrends, Tokmanni has also listed challenges towards their business, such as not having proper tools and skilled employees to keep up with the phase of change and development, shortcomings of partners’ and supply chain’s sustainability performance, difficulty of audits due to “disease outbreaks”, “emerging regulation that may require supply chain data that is difficult to obtain”, “Reputation risks and their potential effect on sales, employer brand, and ability to attract competent employees”. (Tokmanni 2023c)

Kesko

The focus of Kesko’s sustainability work is on climate and nature, Kesko’s people, good governance, and their value chain (Kesko, 2023c). Kesko’s ‘people’-category is not included into further discussion as it includes in depth descriptions of their internal practices that are not related to the thesis’ topic.

Kesko’s ‘climate and nature’-category includes emission reductions, efficient energy use, circular economy and waste management, water and biodiversity. Kesko is working on reducing emissions from all their three divisions and aims to be carbon neutral by 2025. The actions taken towards this target are improving energy efficiency, using emission-free energy sources and using renewable or low emissions fuels, such as biogas that is used in

Kesko's logistics operations. Kesko works towards emission reduction targets that are accepted by the 'Science Based Targets Initiative'. However, in 2022, the company's emissions grew by 7,3 percent from baseline year 2021. It is mentioned in multiple sections, that Kesko encourages its suppliers to also set emission reduction targets that are based on the SBTi, and by the end of 2022, 27,7 percent of the company's suppliers had set the targets. Kesko's short term goal is gaining 10 percent increase in their energy efficiency by the end of year 2023. The company's waste management policies include using more sustainable materials and increasing the recyclability of their packaging. Kesko aims to rise their own recycling rate and to have all of their own brand products' packaging be recyclable by 2025. The usage of packaging materials is also reduced, favoring reusable packaging materials such as cardboard and bio-based plastics. (Kesko, 2023c)

Kesko's 'value chain'-category includes sustainable global sourcing, human rights commitment and assessment, sustainable products and capital expenditure, nutrition, and product safety. From social sustainability perspective, Kesko's purchasing practices are following the Declaration on Fundamental Principles and Rights at Work of the International Labour Organization (ILO), the Universal Declaration of Human Rights and the UN Convention on the Rights of the Child. Kesko also organizes sustainable purchasing-training sessions regularly to its employees working in purchasing operations. These trainings are emphasizing implementation of human rights in Kesko's global supply chains, sustainability policies that guide Kesko's sourcing, amfori BSCI code of conduct and process of purchasing from high-risk countries. The company also conducts audits of its suppliers and aims to do sustainability audits to all the company's direct suppliers from high-risk countries by 2024. At the end of year 2022, the share of sustainability audited suppliers from high-risk countries was 91,5 percent. In some cases, Kesko approved third-party conducted audits are also used. Kesko uses mainly Amorf BSCI audits, which are conducted every two years. Kesko also organizes sustainability trainings for its suppliers either directly or through partner organization. Kesko mentions that to improve the supply chain sustainability, it is important to increase their suppliers' knowledge on social and environmental sustainability. (Kesko, 2023c)

Kesko aims to be transparent of the origins of products and their raw materials in their website where stakeholders can view the journey of the product. They have listed eleven sustainability policies regarding sustainable global sourcing: favoring sustainable fishing

and certified fish suppliers, buying only sustainably produced raw materials when they pose a risk to deforestation, having only sustainably produced palm oil and soy products, by 2025 – all paper and timber products are fully sustainable origin, increasing sustainability of coffee and tea products by certifications, having only sustainable cocoa and certified, recycled or Better/Fairtrade cotton used in own products by the end of 2025. (Kesko, 2023c)

Under the ‘nutrition and product safety’-category, Kesko has listed that their food products must be certified with international certification such as BRC, GlobalGAP, IFS or FSSC 22000. Kesko also does their own product sample testing and they assess their own brand products in their ‘Quality and Product Development Unit’. (Kesko, 2023c)

Kesko’s ‘good governance’ includes the topics of sustainability management, stakeholder engagement, ethics and compliance, economic value creation and responsible use of data. As the last-mentioned responsible use of data is not directly related to the topic, it is not discussed in more detail. (Kesko, 2023c)

Kesko does not directly discuss the company’s drivers towards SSCM practices. However, they mention that having motivated employees in the company is a key to implement strategies and achieving set targets (Kesko, 2023c) which again are leaning heavily towards sustainability according to the company’s sustainability report. Kesko mentions employees’ wellbeing and competencies as critical factor for development and competitiveness in few other sections of their report as well (Kesko, 2023c) which implies that employees are in the key position to implement and fully utilize SSCM practices to their full potential. In addition, customers expectations and demands are highly impacting as a driver to Kesko’s sustainability work. This is communicated in their sustainability report for example as follows: *“When it comes to the sustainability of building materials and products, customer expectations are growing. We have met this demand by providing more information on the environmental aspects and level of Finnish origin of the products, thus helping our customers make more sustainable choices.”* and *“The feedback we receive from customers helps us meet their expectations and develop our service and selections. ... As part of our human rights assessment we listen to the views of our stakeholders on the realisation of human rights in our operations.”* (Kesko, 2023d).

Regarding SSCM practices implementation barriers, Kesko mentions in their sustainability report that they find it challenging to assure the sustainability through their supply chain

when purchasing products (Kesko 2023c). This might be due to long supply chains and suppliers located far from the company. Kesko has also listed challenges arising from megatrends from SSCM point of view which are for example expansion of global supply chain which grows need for secure and transparent supply chain (Kesko, 2023c), which adds to the above mentioned, already identified challenge in the company. In addition, Kesko mentions that they find it challenging to communicate the company's sustainability practices to their customers. (Kesko, 2023c).

Musti Group

Musti Group's sustainability program is called 'Trusty'. This includes three basic sustainability pillars which establish the base for everything that is done at Musti Group: sustainable supply chain, reducing environmental impact and good governance and ethics (2023d). Regarding sustainable supply chain, Musti Group's focus is having suppliers that are committed to the company's requirements regarding sustainability practices. The company wants to develop long-term partnerships with suppliers who follow the company's sustainability practices in addition to supplier code of conduct and regulations with a continuous improvement attitude on sustainability practices. (Musti, 2023e) The group has supplier code of conduct in place and all of their high-risk sourcing country suppliers are audited with the Amfori BSCI and the target is that by 2025, half of the high-risk country suppliers are audited with Amfori BEPI. In addition, all pet food suppliers must have a certificate before they are accepted as a supplier. (Musti group, 2023c) In addition to these, Musti Group uses company's own code of conduct, the people principles, the product safety and quality principles, amfori BSCI code of conduct, the animal welfare and pet parenting support principles. Musti group (2023d)

The focus of Musti Group's environmental sustainability practices is on reducing emissions, energy management and recycling and waste management (Musti Group, 2023d). Regarding emission reduction, the company has conjoined its shipments from the warehouse to its stores by 10 percent and their transportation company must use truck with at least 'Euro 6' standard and use biodiesel on their deliveries (Musti Group 2023d). The 'Euro 6' standard means, that the vehicle does not emit emissions and toxins above strict legal levels such as polluting less 98 grams of co2 emissions per kilometer (Ostler, 2022). Other practices that

are listed are baseline calculation for scopes 1 and 2 emissions in addition to scope 3 emissions calculation and reduction. However, this has mentioned to begin in 2021, but the company has not yet reported any numbers regarding emission reductions. The aim is to have emission reduction plans in place for all major suppliers by 2025. (Musti Group, 2023d) Musti Group also has practices for more efficient energy using. Their target is to add renewable energy into their own operations where they have direct influence so, that 100 percent of used energy is from renewable energy sources. This is already achieved in the company's own operations in Sweden. Another activity, where this is already achieved is in the company's own product ranges. The company has for example created a 'SMAAK'-product range, which is produced in Finland with renewable energy and local raw materials, in addition to their 'Gaia'-brand products which are manufactured from recycled or organic materials. (Musti group 2023d)

Musti Group's waste management practices are focused on reducing packaging and increase their recycling rates. By 2025, the company's aim is to reduce usage of packaging material and to reuse or recycle 100 % of the packaging material from their own operations. For now, 31 % of packaging materials are reused or recycled. Their aim is to decrease the use of packaging material by 50 percent, but last year there was an increase by 5,5 percent. (Musti group, 2023c) In addition to reducing, the company also tries to find more sustainable packaging solutions. They use thinner plastic wrap and pack the products in paper instead of plastic when it is possible. Musti Group has also changed to a single supplier for their B2C packaging materials and with the supplier, they aim to optimize the usage of carton. (Musti group 2023d)

Lastly, the company has emphasized good governance and high ethics which focus is on compliance with policies and principles (Musti Group, 2023e). The company's operations are following united nation's universal declaration of human rights, international labor organization and united nations global compact principles (Musti Group, 2023d). In addition, the company is training its employees on well-being and by 2022, 60 percent of the company's employees have finished ethics training. The company is also active in community work in the communities that it operates in. This includes campaigns such as improving animal safety and food donations. (Musti group, 2023c)

Based on their sustainability report, Musti Group is more on the phase of setting sustainability targets and planning the actions to reach them compared to Tokmanni and

Kesko who have already taken action and publishes their results and are on a more mature sustainability level. However, Musti group has also set KPIs for many of the sustainability practices they have mentioned that they are starting to act own, therefore they are accounted as active practices in the company.

Musti Group does not directly list their drivers and barriers either, but customer expectation driver can also be identified from their sustainability report. This is communicated in their report as for example followingly: *“We are constantly developing the selection to meet customer demand and have expanded the assortment with more locally produced products and more sustainable options.”* (Musti Group, 2023d). Clear barriers were not communicated either in the sustainability report or the company’s annual report, even though it is certain that the company does have their own barriers towards SSCM practices implementation.

All target companies have similar sustainability targets, and practices to reach these targets and develop them even further. Based on the companies’ sustainability reports, Kesko and Tokmanni are on a higher level of sustainability than Musti Group. This is due to above presented observation, that Musti Group has set many targets, but they do not yet have concrete actions and results regarding them that would be reported.

To the Table 2, are gathered the most highlighted examples of SSCM practices that are mentioned in the companies’ sustainability reports. The practices that are mentioned the most often and emphasized in the reports are renewable energy and energy efficiency, waste management, supplier audits, certifications, and emission reduction. However, the table does not cover even near to all mentions as for example, in Kesko’s report ‘certification’-key word search found 17 different results, in addition to other findings of different forms of the same word.

SSCM practice	Social/Economic/ Environmental	Tokmanni	Kesko	Musti Group
<i>Renewable energy and energy efficiency</i>	environmental, due to high energy prices, having own solar panels on store's rooftops can be viewed as economic practice as well	"...we continued to invest in, for example, emission-free solar energy and optimising our energy consumption..." "...reducing energy consumption, improving energy efficiency, ...and negotiating with our suppliers..."	"...Kesko initiated measures to save energy", "Energy efficiency...", "Demand was particularly strong in products related...to improving energy efficiency..." (offering consumers energy saving products)	"The focus of Musti Group's environmental work is in energy management", "100 % renewable energy in its locations whenever the electricity contract is directly influenced by the company."
<i>Waste management</i>	environmental	"More efficient use of resources as well as reduction, reuse and recycling of waste...", "...recycling, and selling recycled products.", "Improving packaging materials and methods and the recycling of packaging."	"Together with our suppliers and partners, we are constantly seeking new solutions for finding easily recyclable and reusable packaging. We favour renewable packaging materials, such as paperboard, paper, cardboard and plastics made from renewable materials.", "...reduce the use of plastic and improve the recyclability of packaging..."	"...improve recycling and waste management...", "...reduce the use of packaging material, especially the use of plastic, and aims to keep the amount of waste to be sent to landfill minimal."
<i>Supplier audits</i>	social, environmental	"98% of Tokmanni's direct sourcing from risk countries originated from factories with a valid audit.", "...42 third-party audits.", "We require amfori BSCI audits from all the factories we use in risk countries..."	"Conducting extensive, systematic supplier audits in high-risk countries to ensure responsibility and sustainability.", "...require all of their direct suppliers in risk countries to have an approved audit when the cooperation begins.", "Kesko also accepts the ICA Social Audit. ... however, suppliers are required to adopt a third-party audit approved by Kesko after a maximum of two ICA Social Audits."	"100 % of tier one suppliers in high-risk countries are audited.", "...all pet food manufacturing facilities have an audit certificate before supplier acceptance.", "...systematic auditing..."
<i>Certifications</i>	social, environmental	"We offered new sustainability certified and traceable products to our customers.", "...increasing the amount of certified raw materials such as cotton...", "Before starting cooperation with a factory in a risk country, we require them to have a valid amfori BSCI, SA8000 certification, the toy business' ICTI Care, acceptable level 4-pillar SMETA audit or BRCGS certification for groceries."	"The ISO 14001 certified environmental management system is in use in Kesko Logistics and in all operating countries...", "All of the own brand fruits and vegetables we import to Finland are GLOBALG.A.P. certified.", "Social responsibility audits and certifications are used to assess the safety of working conditions in production"	"...start co-operation with certified partner..."
<i>Emission reduction</i>	environmental	"...reducing emissions is one of our key sustainability priorities. ...we do not manufacture the goods we sell, it is particularly important that we encourage our suppliers to set ambitious science-based climate targets.", "At the end of 2022, emissions from our own operations had decreased by 78% compared to our 2015 baseline", "Energy efficiency projects, Installing solar panels on the roofs of our stores, Purchasing zero-emission energy"	"Kesko aims for 67% of its direct suppliers of goods and services to have science-based emission reduction targets set by 2025.", "We aim to reach carbon neutrality by 2025, and to cut our emissions to zero by 2030.", "improving the energy efficiency of our properties and stores, switching to emission-free sources of energy in all operating countries and replacing fossil fuels with renewable and low emission fuels in transports."	"Musti Group has set a target, to reduce their CO2 emissions by the end of financial year 2025 and to have their most significant products suppliers to set their own emission reduction targets by the end of financial year 2025."

Table 2 - Most emphasized sustainability practices in target companies' sustainability reports.

4.4 Target companies' risk management practices and identified risks

Tokmanni

Tokmanni's risk management aims to assess risks systematically to improve planning decision making in the company. Tokmanni's risk management targets include proactive risk management and the importance of risk awareness. (Tokmanni, 2023a) In addition, their target is to manage risks as part of the company's business operations and planning and decision making (Tokmanni, 2023a) not as a separate function in the company. Tokmanni aims to maintain and gain competitive advantage by efficient risk management and keeping the company's risk management in line with its risk appetite and tolerance (Tokmanni, 2023g).

Tokmanni's has listed four main categories for potential risk causes, strategic, operational, financial and hazard risks (Tokmanni, 2023a). Strategic risks are a threat for the company which can obstruct the strategic goals from being achieved, such as competitors' actions and changes in the company's operating environment. Operational risks arise from within the company, such as internal processes, employee resources and systems. Financial risks include market risks, such as interest rate and currency risks, in addition to liquidity and credit risks. (Tokmanni, 2023a) In the past year, interest rate risk has for example realized and impacted through consumers' consumption behavior changes affecting Tokmanni's sales. Hazard risks would cause damage to the environment, property, or people, and they can arise from internal or external sources such as floods or safety failures. (Tokmanni, 2023a)

Tokmanni has listed fourteen specific core risks to the company which would have significant consequences if they would realize. The core risks that Tokmanni has listed are: data system and data security risks, market risk, economic fluctuation, inventory turnover and working capital management, failure in the execution of strategic projects, as well as the competence and availability of personnel, risks of loss or damage, destruction of or damage at the logistics center, risks relating to the health and working capacity of employees, reputation risk, geopolitical changes and political country risk in sourcing, brand image and marketing risk, product quality and responsibility risk, risks related to Tokmanni's private

label products and direct sourcing and foreign exchange risks. (Tokmanni, 2023a) All of the risks are directly or indirectly linked to supply chain operations, but in terms of the meaningfulness of this thesis, only risks that are most related to supply chain operations are taken under further look: economic fluctuation, inventory turnover and working capital management, failure in execution of strategic projects, as well as the competence and availability of personnel, risks of loss or damage, destruction of or damage at the logistics center, reputation risk, geopolitical changes and political country risk in sourcing, product quality and responsibility risk, and risks related Tokmanni's private label products and direct sourcing. (Tokmanni, 2023a)

Economic fluctuation brings the risks of rising costs such as energy and material costs and could result to a shortage of these. Having shortages of materials or components, issues with electricity distribution and disturbances in the supply chain caused by these issues can result to delays, poor product availability and increased costs. (Tokmanni, 2023a)

Inventory turnover and working capital management risks can have a negative impact to the company's profits. Tokmanni monitors closely and continuously the transports of imported products, life cycles of products, depreciation of products assortment management and inventory turnover. (Tokmanni, 2023a)

The risks of failure in execution of strategic projects, as well as the competence and availability of personnel are related to having enough available and motivated employees who will carry the company towards achieving its strategic targets. Tokmanni manages risks related to these by trainings and promoting learning while working in the position. (Tokmanni, 2023a)

Risks of loss or damage are caused from natural disasters, accidents, and pandemics. These can cause major disruptions and delays to the supply chain. Tokmanni manages these risks with alternative sourcing channels and follows recommendations when executing corrective operations. (Tokmanni, 2023a)

Tokmanni has one larger logistics center in Finland. Destruction of or damage at the logistics center could therefore cause significant delays and loss of sales, if for example there is a major malfunction of equipment damage. These risks are managed in Tokmanni by safety and recovery plans and by doing preventive maintenance work at the center. (Tokmanni, 2023a)

Reputation risk can arise from multiple sources. Tokmanni mentions failure in product safety in addition to controlling the sustainability within its supply chain operations. Taking into account all the sustainability dimensions in manufacturing and sourcing is increasingly important to stakeholders. Failure of implementing sustainability practices results impact negatively to Tokmanni's reputation. Tokmanni manages product quality and reputation risks with for example external and internal quality audits, amfori BSCI code of conduct and a large-scale compliance program. Tokmanni has its own quality organization which is responsible for monitoring the product quality and safety beginning from the product's country of origin, at their logistics center when products are received there and in the company's stores. (Tokmanni, 2023a)

Geopolitical changes and political country risk in sourcing include risks that are out of Tokmanni's control (Tokmanni, 2023a), therefore, they are much more difficult to manage. The risk sources that Tokmanni has identified related to these are for example unexpected political decisions, China's changing environmental legislation and political instability in high-risk sourcing countries. Tokmanni manages these risks by continuous monitoring of geopolitical situation, taking necessary planning and measures to quickly answer to changes and developing sourcing models that are flexible sourcing. (Tokmanni, 2023a)

Tokmanni's product quality and responsibility risks arise from increased direct imports. If direct imports are increased too much too soon, product quality and supply chain's sustainability can suffer, if they cannot be monitored well enough. Failure in product quality and supply chain's sustainability management could result to loss of customer trust, financial losses, negative impact to company's reputation or health hazard. Tokmanni manages these risks by extensive pretests and self-supervision of products. Tokmanni mentions that utilizing customer feedback is also a key factor of their product quality management. Sustainability management of products is managed by having all factories in high-risk sourcing countries audited by amfori BSCI or SA8000 certificate. (Tokmanni, 2023a)

Risks related to Tokmanni's private label products and direct sourcing are operational. These are for example poor availability of products, ensuring product quality and safety, and need for working capital. To manage these risks, Tokmanni has a joint sourcing company in Shanghai. In addition, as mentioned above as well, Tokmanni develops its sourcing model and does manufacturer audits. (Tokmanni, 2023a) Table 3 gathers Tokmanni's core risks that are selected to further discussion due to relation to supply chain.

Core risk	Risk category	Internal or External	Pro- or reactive management
<i>Economic fluctuation</i>	Financial risks	External	Reactive
<i>Inventory turnover and working capital management</i>	Operational risks	Internal	Proactive
<i>Risks of loss or damage</i>	Hazard risks	External/Internal	Proactive
<i>Destruction of or damage at the logistics center</i>	Hazard risks	External/Internal	Proactive
<i>Failure in execution of strategic projects, as well as the competence and availability of personnel</i>	Strategic risks	Internal	Proactive
<i>Reputation risk</i>	Operational risks	Internal	Proactive
<i>Geopolitical changes and political country risk in sourcing</i>	Strategic risks, Financial risks	External	Proactive
<i>Product quality and responsibility risk</i>	Operational risks	Internal	Proactive
<i>Risks related Tokmanni's private label products and direct sourcing</i>	Operational risks	Internal	Proactive

Table 3 - Tokmanni's identified core risks from supply chain's perspective

Kesko

Kesko's risk management policy is based on 'the international COSO ERM framework', 'the Corporate Governance Code issued by the Securities Market Association' and 'the international SFS-ISO 31000 standard' (Kesko, 2022). Kesko has an extensive internal risk management organization, which is formed from different departments within the company such as 'K Legal and 'Sustainability and Public Affairs'. This is also complemented by for example external audits. (Kesko, 2023b) Extensive internal risk management ensures the company's risk management practices cover each risk area and that the company has a proper view of risks. It is also to assure the distribution of risk information between different functions within the company. The three divisions are responsible for their managing business risks within their divisions, but the risks that are not specifically related to one division or covers them all, are discussed separately on group-level. (Kesko, 2023b)

Kesko has a proactive take on risk management. The group systematically aims to identify and assess emerging risks in addition to identifying and assessing different existing risks from short (1-2 years), medium (3-5 years) and long-term perspectives (over 5 years). Kesko also tests their risk tolerance and risk-bearing capacity regularly when selected financial objects and other indicators imply it is needed, in addition to using loss scenarios. (Kesko, 2023b).

Kesko has defined four main risk categories strategic risks, operational risks, financial risks and risks related to climate change. In addition, they are pointing out emerging risks, that

have not been identified nor categorized yet. (Kesko, 2023b) Kesko has listed twelve significant risks for the group: “weakened demand due to inflation, rising interest rates and economic downturn, geopolitical risks, cybercrime, business continuity, compliance with laws and agreements, availability and retention of personnel, climate change, product safety, store sites and properties, responsible operating practices and reputation management, reporting to the market and risk of damage.” (Kesko, 2023c) Out of these, rising interest rates and economic downturn, geopolitical risks, business continuity, compliance with laws and agreements, availability and retention of personnel, climate change, product safety, responsible operating practices and reputation management and risk of damage are again identified to be most related to supply chain and therefore selected to be discussed in more detail.

Kesko describes ‘weakened demand due to inflation, rising interest rates and economic downturn’-risk only from consumers’ weakened purchasing power. However, as was presented in Tokmanni’s report, the rising costs of energy and raw materials can cause shortages of materials and disruptions to the supply chain.

Kesko has recognized geopolitical risks to arise from the war in Ukraine and superpowers competition on the economic markets. As Kesko has had and still has business in eastern Europe this has an impact in their supply chain continuity, operating environment and the availability of products. (Kesko, 2023c)

Business continuity is impacted by multiple different factors. One serious disturbance can cause major delays and negative consequences to companies’ business continuity. Kesko mentions for example a fire at central warehouse or personnel strikes to impact business continuity in the group. Compliance with laws and agreements are described as following the changes of legislation and regulations, with a consequence of for example fines or loss of reputation if these are not followed. (Kesko, 2023c)

Availability and retention of personnel includes an important acknowledgement of motivated personnel. Kesko discusses that it is a risk, if there are not enough and well-motivated employees, because it is necessary to implement strategies and achieve set targets. (Kesko, 2023c)

Risks related to climate change are assessed in the group with different climate scenarios. They can have a negative impact to product availability and logistics. On the other hand,

Kesko also discusses how the group's own operations impact on climate change with for example assessing their supply chain's energy solutions, emissions and lifecycle impact of their commodities. (Kesko, 2023c)

Product safety needs to be assured throughout the supply chain. A faulty product can lead to loss of reputation, trust among consumers and result as a health hazard. (Kesko, 2023c)

Responsible operating practices and reputation management includes topics such as ensuring responsible purchasing, environmental protection and fair treatment of employees. These topics are becoming more important to customers, and if the company was to misact against any of these and related topics, the company could face operational and financial damage as well as negative impact on reputation. (Kesko, 2023c) Kesko (2023c) does mention that it is a challenge to communicate their sustainability practices to consumers and ensuring the sustainability in their product supply chain.

Risk of damage are listed as nature hazards or epidemics, such as Covid-19, damages that can cause major damage to people, business or the group's properties. These risks can cause long-term damage and they are hard to predict beforehand. (Kesko 2023c) Table 4 gathers Kesko's core risks that are selected to further discussion due to relation to supply chain.

Core risk	Risk category	Internal or External	Pro- or reactive management
<i>Weakened demand due to inflation, rising interest rates and economic downturn</i>	Financial risks	External	Reactive
<i>Geopolitical risks</i>	Strategic risks, Financial risks,	External	Proactive
<i>Business continuity</i>	Operational risks, Strategic risks	Internal	Proactive
<i>Compliance with laws and agreements</i>	Operational risks	Internal	Proactive
<i>Availability and retention of personnel</i>	Operational risks	Internal	Proactive
<i>Climate change</i>	Climate change risks, Emerging risks	External	Proactive
<i>Product safety</i>	Operational risks	Internal	Proactive
<i>Responsible operating practices and reputation management</i>	Operational risks, Climate change risks	Internal	Proactive
<i>Risk of damage</i>	Emerging risks	External	Reactive

Table 4 – Kesko's identified core risks from supply chain's perspective

Musti Group

Musti Group is said to have a proactive risk management strategy which includes identifying, evaluating, implementing risk management practices to identified risks, and monitoring the risks and their management. The company regularly monitors changes in potential risk areas and risk management is continuously and systematically implemented following a scheduled risk management process. (Musti group, 2023a)

In Musti Group, the CEO and management is responsible for the risk management policy, its updating and systematic implementation. Members of management team are responsible for planning, implementing and monitoring the risk management in their own areas. (Musti Group, 2023a)

Musti group categorizes risks into business risks (strategic risks), operational risks, risks of losses or damages and financial risks. The group has identified ten most significant risks for them. These risks are related to macroeconomic environment and inflation, changes in the competitive environment, quality of products and services, changes in customer preferences, sourcing of products, inventories, logistics, cybercrimes, employees, and currency fluctuations. (Musti group, 2023a) Again, the most directly significant risks for the supply chain are taken under further discussion. These are risks related to macroeconomic environment and inflation, quality of products and services, sourcing of products, inventories, logistics and employees (Musti group, 2023a).

Macroeconomic environment and inflation impact on rising prices of energy and raw materials in addition to consumers purchasing power (Musti group, 2023a). Rising costs of energy and raw materials have an impact to product availability.

Risks related to quality of products and services might arise from a failure in quality control along the supply chain. If a quality related risk would realize, it could impact the company's financial negatively, losing customers or their trust, having reputational damage and cause a health hazard to a pet. (Musti group, 2023a)

Risk related to sourcing of products might cause the company's customer connections and competitive position to be significantly harmed by the loss of a significant supplier (Musti group, 2023a). In addition, if the company cannot purchase products from a significant

supplier that matches the company's standards and requirements (Musti group, 2023a) this might cause a disruption to product availability or compromising in product quality and standards. Consumers and the company's competitive position might also suffer a negative impact if suppliers cannot meet the demand, or their costs increase (Musti group, 2023a).

Inventory related risks arise, if the company is unable to predict the demand effectively, and a significant portion of its capital ends up being tied to the inventory. Operational challenges with inventory management and obsolescence may drive up inventory costs or force the sale of products at a loss, which could hurt profitability. (Musti group, 2023a)

Musti group has only one distribution center where most of the products are delivered from suppliers and there again to the groups stores and online store's customers (Musti group, 2023a). Having only one major logistics center causes its own certain risks. Risks associated with gathering the logistics in one place include disruptions to the communications and IT infrastructure, fires, and strikes, which may have a negative impact on business continuity and loss of sales (Musti group, 2023a).

Employee related risks in the group are identified as if the group is not viewed sustainable and attractive employer brand, it will not have motivated and best equipped employees. Having motivated employees is viewed as a key factor to reaching strategy related targets and strategy guidelines. (Musti group, 2023a) Table 5 gathers Musti Group's core risks that are selected to further discussion due to relation to supply chain.

Core risk	Risk category	Internal or External	Pro- or reactive management
<i>Macroeconomic environment and inflation risks</i>	Financial risks	External	Reactive
<i>Quality of products and services</i>	Operational risks	Internal	Proactive
<i>Sourcing of products</i>	Operational risks	Internal	Proactive
<i>Inventories</i>	Operational risks, risks of losses or damages	Internal	Proactive
<i>Logistics</i>	Operational risks	Internal	Proactive
<i>Employees</i>	Operational risks	Internal	Proactive

Table 5 - Musti Group's identified core risks from supply chain's perspective

In the below Table 6, are collected the risk categorization by Helmold et al., (2022) where supply chain risks are divided into internal (f-j) and external risks (a-e). This is complemented by the discovery of Mangla et al. (2015), who found that operational risks have the biggest impact on successfully implementing sustainability practices into the supply chain, therefore, 'other operational risks'-row is also added. In addition, to have an overview of the distributions of the identified significant risks by each company, an additional row 'no

relation to SC risks', is added, where rest of the risks are placed, if they were not found a connection to the supply chain risks.

Risk Category in LR	Tokmanni	Kesko	Musti Group
a. Demand risk	Market risk	-	Risks relating to changes in customer preferences
b. Supply risk	Destruction of or damage at the logistics centre	-	Risks relating to sourcing of products
c. Environmental risk	Data system and data security risks, Economic fluctuation, Risks of loss or damage, Geopolitical changes and political country risk in sourcing, Foreign exchange risks	Weakned demand due to inflation, rising interest rates and economic downturn, Geopolitical risks, Cybercrime, Business continuity, Climate change, Risks of damage	Risks relating to the macroeconomic environment and inflation, Risks relating to changes in the competitive environment, Risks relating to logistics, Risks relating to cybercrimes, Risks relating to currency fluctuations
d. Business risk (external)	-	-	-
e. Physical plant risk	Geopolitical changes and political country risk in sourcing	-	-
f. Manufacturing risk		Risks of damage	Risks relating to logistics
g. Business risk (internal)	Failure in the execution of strategic projects, as well as the competence and availability of personnel, Risks relating to the health and working capacity of employees, Risks related to Tokmanni's private label products and direct sourcing	Availability and retention of personnel	Risks relating to employees
h. Planning and control risk	Inventory turnover and working capital management, Product quality and responsibility risk	Product safety, Store sites and properties	Risks relating to inventories, Risks relating to quality of products and services
i. Mitigation risk	Reputation risk	Compliance with laws and agreements, Responsible operating practices and reputation management	-
j. Contingency and cultural risks	-	-	-
k. Other operational risks	Destruction of or damage at the logistics centre, Risks related to Tokmanni's private label products and direct sourcing	Compliance with laws and agreements	-
l. no relation to SC risks	Brand image and marketing risk	Compliance with laws and agreements, Store sites and properties, Reporting to the market	-

Table 6 - Target companies' risks divided to categories by Helmold et al. (2022) and Mangla et al. (2015)

Out of the identified core risks of each company, following risks were repeated in all the reports in some form; inflation, geopolitical risks, product quality risks, availability of competent employees, reputation risks, risks of damage and loss, risks in direct sourcing. The risk categories that none of the companies' core risks were not placed were contingency and cultural risks and external business risks.

It is difficult to analyze the actual proactivity in risk management, as the companies do not describe their specific practices in much detail in the public reports. Even if companies have all mentioned that they manage similar risks proactively, their actual activities can vary greatly between companies, and some might go to much higher extent in the risk management activities than others.

5. Discussion and conclusion

The objective of this thesis was to find how SSCM practices could be better implemented to companies and utilized so that they would benefit SCRM. This chapter focuses on discussing the presented literature review in connection to empirical findings. The discussion aims to find answers to the research questions of this thesis.

None of the target companies' public reports did not imply directly that these two themes are discussed together within the companies. However, all target companies emphasized that sustainability is strongly a part of their company strategy. In addition, multiple actions were identified from their sustainability reports, which imply that the companies already have some SSCM practices implemented that, according to literature, have positive impacts on SCRM. This leads to finding answer to the third research question which was following,

R3: How can sustainable supply chain management practices help mitigate internal and/or external supply chain risks?

As Trkman and McCormack (2009) found, external supply chain risks are out of the focal company's control. However, physical plant risks include suppliers' non-compliance and safety issues (Halmold et al., 2022, p. 5-6), which can be managed to some extent by social SSCM practices such audits (Awaysheh and Klassen, 2010) and supplier cooperation (Giannakis and Papadopoulos, 2016). These social SSCM practices do not themselves remove the risks, but they can help with managing their probability of occurrence, therefore, improving the risk management. However, external risks such as natural hazards cannot be managed with any SSCM practices, their probability of occurrence can perhaps only be implemented by selecting suppliers that are not located in high-risk areas for such risks in addition to choosing suppliers not located in high-risk countries from geopolitical point of view.

Geopolitical risks were also a significant risk for all target companies. According to Thomas and Chermack (2019, p. 37), focal companies can majorly increase their own risk exposure by being dependent of a supplier that is exposed to risks. All target companies have emphasized that their SSCM practices focus is especially on high-risk sourcing countries.

This supports the managing of geopolitical risks that could realize through supplier relationships, but in a bigger picture they are out of the companies reach.

Audits are a way to ensure that suppliers follow given guidelines in addition to laws and regulations (Gimenez & Tachizawa, 2012). All three target companies reported that they are executing audits at their suppliers' locations, especially to their suppliers in high-risk sourcing countries. According to Awaysheh and Klassen (2010) audits, among other supplier related sustainability practices, are used significantly more in companies where transparency of products is higher to end-users. The target companies mention that their aim is to be transparent of their product and raw material origins in addition to increasing transparency along their supply chain. Transparent supply chain enables consumers to have a better understanding of the raw materials and the conditions where the product is manufactured. If this information is unavailable or seems to be untruthful, or not fully transparent, this might lead to loss of consumer trust. By conducting audits and monitoring the suppliers, companies are able to mitigate reputational risks arising from their supplier base (Foerstl et al. 2010). These can also manage the risks related to products' quality, which was listed as a significant risk for all the target companies.

Damage to company's reputation might also be caused by supply risks (Helmold et al., 2022, p. 5-6) if there is a disruption with for example receiving materials in time for manufacturing which again delays the deliveries to consumers, having these two risks tightly related. Target companies' have mentioned these risks as 'direct sourcing risks' in their reports. These could be managed by sourcing from local suppliers or suppliers located closer, as time is saved within the supply chain, and it becomes more flexible. This is also a social, environmental, and somewhat economic sustainability practice, as this improves local employment rate, monitoring and cooperating with closely located suppliers is easier, shorter logistics chain which reduces emission in addition to better ability to use biodiesel fueled trucks or sea shipments (Nouira et al., 2016), which have lower emissions than air freight.

According to Caniato et al. (2011) focal companies operating closest to the consumer markets face the most significant risks towards company reputation even if a disruption is occurred somewhere in their supplier base and is not directly related to them, therefore, companies are even more careful regarding their supplier selection and suppliers meeting their sustainability standards and agreements (Da Giau et al., 2016). For example, Musti Group mentioned in their sustainability report that they demand a certificate and agreements

from each new supplier to ensure that they are following the set sustainability practices and standards before beginning to collaborate with them. This can help to reduce the probability of product quality risks occurrence in addition to the impacts of these risks occurring.

Risks related to new suppliers, such as information asymmetry and ensuring that they operate sustainably and according to focal companies' standards can be managed with certificates (Ciliberti et al., 2009), such as the SA8000- and SMETA-certificates, which were both mentioned to be used at least at Kesko and Tokmanni. The focal companies can demand these certificates from the new, and existing, suppliers before continuing to form a buyer-supplier relationship. For example, the certificates that Musti Group expects from their all new pet food suppliers covers areas such as factory facilities and laboratory facilities and batch traceability. Certificates can also help manage direct sourcing and reputational risks.

Investment recovery was presented in economic sustainability chapter. In addition to gaining financial benefits from investment recovery, it has an environmental benefit as well due to reducing waste ending up in landfills (Zhu et al., 2008; Thipparat, 2011). None of the target companies mentioned this as a used practice, but Tokmanni does mention 'Inventory turnover and working capital management'-risks which includes for example following products lifecycles, inventory turnover, and depreciation on products. Musti Group has also listed 'risks related to inventories'-which includes excess stock levels due to failure in demand planning which increases warehouse costs but in addition, might lead to a stock full of products which 'best before'-date is closing in. Kesko also listed a risk related to choosing a poor store location, which ties the company's financials to a location that is not profitable. This was not found majorly important to the thesis topic in the empirical section, hence, left out of further discussion. However, investment recovery can help with products not going to waste and gaining at least some of the tied financial resources back from these products/sites.

All target companies have emphasized the following SSCM practices in their reports, reducing emissions, energy efficiency, supplier audits, waste management, and certifications. However, for example, Tokmanni mentions in their report that most of their emissions are caused during products' manufacturing and use phases (Tokmanni, 2023c), which does not leave a lot of options for emissions control for the focal company. Emissions can be then reduced with green logistics practices (Vienažindienė et al., 2021) or cooperating with suppliers on emission reduction during manufacturing with practices such as investing to clean tech or developing a more efficient manufacturing method (Govindan et al., 2014).

Tura et al. (2019) found that internal resistance by the employees can cause a risk that sustainability practices are not properly implemented to the company. This is brought up by each target company, as they mention that it is a risk that their employees are not motivated and competent enough to reach strategic sustainability targets – such as being carbon neutral by year 2025. Without motivated employees who are in the forefront of the implementation process, sustainability practices might remain to be just talk. Company's top management needs to organize trainings and support to their employees so they gain competence in utilizing sustainability practices accordingly (Muduli et al., 2013) or they face a risk of not implementing the practices as effectively as they should to gain the benefits (Mangla et al., 2015). All three target companies are organising trainings for their employees regarding topics such as sustainable sourcing, ethics, and overall sustainability in the company. Employee trainings is also significant due to risk of implementing new sustainability practice which employees do not fully understand and support and therefore, its execution may only be partial or nonexistent (Sarkis et al., 2010).

In the literature, eco-design (Wu et al., 2012) and green purchasing practices (Green et al., 2012) are also mentioned as effective SSCM practices. These practices have some overlapping factors, and they are used for similar purposes, but the difference is that with eco-design, the product can be designed from scratch to be more environmentally friendly, not only purchasing more eco-friendly materials for its production. Each target company is using these practices with their own modifications from related activities. For example, Kesko's green purchasing practices include buying high-risk raw materials only from certified suppliers. Tokmanni also purchases high-risk raw materials for their own products only from certified suppliers but in addition to this, the company also launched their 'MINY'-product series which includes multiple products that are developed and manufactured from recycled materials. Musti Group has taken this even further with their SMAAK-brand, which leans more into eco-design, as the products are produced in Finland with renewable energy and from recycled or more eco-friendly materials. To add to this, all the target companies have listed that their aim is to add or fully switch to 100 percent recyclable packaging materials. Tokmanni has at least mentioned that these are designed based on their customers' demands. Musti Group has mentioned as customer changes being one of their most significant risks, and by following customers' demands this can be somewhat mitigated. If failing in these, company can face reputational risks. These practices can help manage reputational risks as well as risks related to designing green processes and

operations (Mangla et al., 2015) and responsible operating practices which were mentioned as a significant risk by Kesko.

To conclude an answer to the above presented sub-research question, internal risks can be better helped to be managed by SSCM practices, as companies have more control over them. External risks are more difficult, and some impossible, to manage with SSCM practices as they are out of the focal companies reach. Probability of occurrence can be managed for external risks as well at least to some extent if the risks arise from supplier base. The SSCM practices that imply to be most useful are audits and certifications.

In order for the SSCM practices to be useful they need to be properly implemented and followed through. By identifying and understanding the companies' drivers and barriers for SSCM practices implementation, companies can enhance the drivers and gain more benefits from the practices and on the other hand by identifying the barriers, companies can try to work on them or find solutions to work around them. By doing so, more benefits can be gained from the practices from sustainability perspective but in addition, they can be better implemented to company's strategy and strategic targets which enables utilizing them to also for example SCRM. This leads to answering to the second research question, which was the following,

R2: What are the drivers and barriers for sustainable supply chain management practices implementation?

Awaysheh and Klassen (2010) found in their study, that mitigating risks, such as public criticism and concerns from NGOs, is one of the main drivers for companies to adopt social sustainability practices. Kesko (2023c) supports this by mentioning in their sustainability report that sustainable operating practices and reputation management, including topics such as sustainable purchasing and fair treatment of employees, are increasingly important to consumers and failure against these could lead to negative publicity. However, stakeholder pressure to increase supply chain sustainability can improve sustainability practices implementation (Schmidt et al., 2017) and this is recognized and valued in all target companies. Tokmanni (2023c) for example mentions that customer feedback regarding sustainability has had an impact on their product assortment as well as increasing supply chain transparency by pressure from NGOs.

According to Lozano (2015) the most significant internal drivers for sustainability practices implementation are leadership and sustainability's business case and the most significant external drivers are customer expectations, reputation and legislation. It can be concluded from the reports that all companies have identified consumer pressure and expectations, governmental guidelines and gaining competitive advantage as drivers for SSCM practices implementation.

Regarding barriers, the target companies have not communicated in their public reports a lot of challenges regarding over all sustainability implementation, even though it is certain that each company has their own barriers. It is understandable though, as public reports are wished to be viewed in good light. However, by analyzing the reports, barriers that are identified from all of the reports are the lack of competent and motivated employees and lack of suppliers' knowledge and their interest regarding sustainability practices and how to use them.

Da Giau et al. (2016) found that sustainability implementation can actually cause risks due to poor predictability of the final outcome of sustainability initiatives due to external factors such as customer acceptance and workers commitment, and the risk increases with the complexity of the supply chain. Tura et al. (2019) also found that when a focal company implements new SSCM practice, there might arise tension if the suppliers are not able to meet the new criteria of manufacturing or product's end result brought by the practice. Kesko has mentioned that one of their overall challenges is ensuring the sustainability of their products throughout their supply chain. In addition, one of Tokmanni's barriers is 'implementing social compliance features into the supplier management system'. Tokmanni has also mentioned that majority of their products' climate impacts come from the product' manufacturing and use phase, which are challenging to control and measure. In addition, all three target companies are trying to engage and support their suppliers to set SBTI targets as well, aiming for all their suppliers having the targets set during the following years. All of these supplier related barriers could be overcome with close supplier work and long-term partnerships to develop the processes together and to manage supplier risks. This is supported by DiBella et al. (2023) who emphasized that having close supplier relationships is one important SSCM practice. For example, Kesko organizes trainings for their suppliers in collaboration with partnering organizations to increase their suppliers' sustainability knowledge. Pimenta and Ball (2015) support this as well, as according to them, purchasing

management, supplier's performance assessment, and collaboration are the key functions to implement environmental sustainability practices across the whole supply chain.

All three target companies seem to have good prerequisites for managing sustainability practices potential implementation barriers. Top-management support (Lozano, 2015; Sendawula et al., 2021) and clear strategy (Giunipero et al., 2012; Fenwick, 2007) are brought up as important drivers of sustainability practices implementation. Each company addresses top management involvement in sustainability practices implementation process and sustainability strategy's establishment widely. This can be viewed as an enabler of proper sustainability implementation, strategy that the top management has committed to, which is then turned into practices that employees are responsible for implementing to processes with top management's active support.

To conclude an answer for the second research question, the main drivers are external pressures from stakeholders such as consumers and NGOs in addition to governmental legislation, which impact to competitive advantage as a driver as well. Main barriers are lack of competent and motivated employees and suppliers. However, this barrier can be overcome by proper trainings and spreading the targets and reasoning behind SSCM practices implementation throughout the organization and suppliers to gain their support. Employees and suppliers are key factor for successful SSCM practices' implementation.

This leads up to answering to the main research question of the thesis which was,

R1: How can companies use sustainable supply chain management practices for improving their supply chain risk management?

According to Wijethilake and Lama (2019) sustainability as a core value has a significant positive impact on the company's risk management and this impact increases as the level of sustainability increases. In addition, Miemczyk and Luzzini (2018) found, that environmental and social SSCM practices do not directly add competitive value but merging them together with risk assessment practices will positively impact company's performance in the long-term. Companies can use SSCM practices to improve their SCRM by using them together with proactive risk management practices and trainings of all related stakeholders, employees, and suppliers. Training employees and suppliers to use the practices and related technologies is found necessary as if they do not understand the meaning behind the practice or do not know how to for example use a certification platform, such as better cotton

initiative's platform, the companies might risk achieving their sustainability targets in addition to being faced by reputational risks.

In their study, Gouda and Saranga (2018) found that implementing SSCM practices has a positive impact on company's SCRM, and it has an even higher impact if done simultaneously with proactive SCRM efforts. From the target companies, Tokmanni has a sustainability steering group that meets every two months. This group consists of key people of SCRM as well, such as the company's vice president of supply chain, quality manager, and the company's ceo (Tokmanni, 2023c). These existing forums with the key personnel could be the place for finding synergy benefits between the topics and furthering them.

Miller and Engemann (2019, p. 259-260) presented utilizing quality management practices when SC sustainability and risk management actions are combined, so that by prevention and assessing the risks through proper quality management the costs would be lower when a disruption occurs. This is due to SSCM practices helping the supply chain organizing itself back to normal implying a robust business continuity plan in addition to sustainability improving stakeholders' image of the company which again increases the company's brand value and stakeholders' loyalty (Miller and Engemann, 2019, p. 256-257). Each target company had mentioned product quality risks as one of their most significant risks. However, the companies already have quality management operations in place such as product tests and certifications. By expanding the view of quality management targets, companies could include SSCM practices in their quality management processes that help with reacting to disruptions.

Certification and audits (both social and environmental) can help manage risks perhaps most often, according to the target companies' sustainability reports, but their impact is not necessary the biggest. However, having them is helpful, but deeper supplier collaboration could help even more. Companies should establish supplier trainings to ensure that more practices are implemented and to ensure that the suppliers are motivated as well. The emphasize on deeper collaboration with suppliers is due to the target companies mentioning that as retail companies, most of their emissions arise from manufacturing and use phases.

As presented above, external supply chain risks are mainly out the focal company's control (Trkman and McCormack, 2009) excluding some physical plant risks which are associated with social aspects. From this, a conclusion can be made that SSCM practices can better help

manage internal supply chain risks. SSCM practices can be used to benefit companies and their supply chain's internal risks better than external risks. To gain the most benefits, companies should have proactive risk management practices in place to incorporate SSCM practices to them. The value which the target companies are putting on having motivated employees and training them implies that not having them, is a barrier towards SSCM practices implementation.

To conclude an answer to the main research question, companies can use SSCM practices for improving their SCRM by emphasizing enough and correct resources for employee and supplier trainings when beginning to implement a new practice. In addition, SSCM practices can be the most often used to manage internal risks, but the value for external risks' mitigation should not be overlooked. Companies in retail and trading fields should emphasize close supplier relationships in the development of SSCM practices, as they have limited access to try and impact their supply chain's sustainability performance themselves, and as the majority of the emissions and identified risks are caused in the manufacturing phase of the products' lifecycles, at least for the target companies and according to the literature.

As presented in the literature review, many sources support that sustainability should be implemented better to companies. It is now strongly recognized as a necessary topic to be discussed and developed further in companies. The next step is to have sustainability not only as part of companies' strategy, but in the background of all operations throughout supply chains and not as a separate function. It is evident that having sustainability fully implemented requires a lot of effort from multiple parts of the focal company and its supply chain for actually gaining its benefits.

5.1 Implications to practice

This thesis has few implications to practice. Firstly, companies need to ensure that they have the tools to communicate their sustainability strategies' targets to their employees so that sustainability is not left out of the core work on its own separate division in companies. This will ensure that employees and suppliers, understand why their operational work tasks might change and as well as the company culture. This enables to gaining all the benefits of SSCM

practices when they are properly used on the operational level as well. This requires collaboration within the companies from top to bottom.

In addition, investments to SSCM practices needs to be viewed and discussed on a broader level. The discussion must include all the practices' positive impacts to companies' financial performance, risk management, competitive advantage and others that can be identified so that they can help justify the investments. Overall, viewing sustainability from new angles to the company has its advantages as new benefits can be identified in addition to finding new activities that would require more sustainable actions.

5.2 Limitations and suggestions for future research

This thesis has its limitations. Firstly, having only qualitative data has its limitations as the results cannot be generalized due to small sample sizes. In this thesis, only three target companies were selected. In addition, only public reports are used as a data source which are published by the target companies themselves. As companies wish to be seen in a good light by stakeholders and potential customers, the reports might leave out beneficial details from the thesis perspective, but which would potentially bring negative light to the company, especially when dealing with sustainability as a subject. However, as presented previously, this was justified and beneficial for the thesis aims.

The target companies are all Finnish retailer groups with varying product categories. However, they are all sourcing products and raw materials globally, including high risk sourcing countries, but these are not discussed in detail in the companies' reports, which could bring more to the thesis as many identified risks are arising or impacting this part of the supply chain, not only the focal company. In addition, the companies do not manufacture products themselves, which leaves out a big section of the supply chain that the companies could have direct control, therefore there is not comprehensive description of this phase available. This would be interesting to be further researched.

For future research, it would be interesting to interview companies that are from different industries to gain deeper understanding of this topic from a broader perspective. Having bigger sample and concentrating on certain aspects of sustainability instead of the whole concept could bring meaningful results as well.

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