RESHORING OPPORTUNITIES FROM RISK MANAGEMENT PERSPECTIVE

Case study

Lappeenranta–Lahti University of Technology LUT

Master's Degree Programme in Supply Management

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ABSTRACT

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73 pages, 6 figures, 5 tables and 1 appendix

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Keywords: reshoring, offshoring, outsourcing, supply chain risk management, location decision, supply chain resiliency

Offshoring is a widely used strategy for obtaining low costs. As a response, reshoring has become more common sourcing strategy to reverse the offshoring-related risks and disadvantages. This thesis aims to understand reshoring opportunities from risk management perspective whilst acknowledging the complex business environment.

The study is conducted as a qualitative single case study allowing to make in-depth findings. The case company is a multinational manufacturing company. Semi-structured interviews are utilized to collect the data and the data is analyzed by using thematic analysis.

The findings emphasize that offshoring is heavily driven by cost reductions which may lead to overlooking other strategic factors impacting location decisions. Progressively uncertain environment creates challenges to managing long supply chains and increases risk probability. Reshoring can be viewed as an effective location decision but also as a risk management method increasing the supply chain flexibility and resiliency. Reshoring can lead to long-term cost savings as a result of increased process efficiency and reducing hidden costs related to long supply chains.

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Ulkomaisten toimittajien hyödyntäminen on yleinen keino ylläpitää hankinnan kustannussäästöjä. Tämän vuoksi toimitusketjuista on tullut riskialttiita ja monimutkaisia. Riskien vähentämiseksi hankintoja uudelleensijoitetaan lähempiin sijainteihin. Tämä pro gradu -tutkielma käsittelee uudelleensijoittamisen mahdollisuuksia riskienhallinnan näkökulmasta.

Tutkielma on laadullinen tapaustutkimus. Tutkielman kohdeyritys on monikansallinen valmistavan teollisuuden yritys. Aineisto kerätään käyttäen puolistrukturoituja haastatteluja. Kerättyä aineistoa analysoidaan temaattista analyysimenetelmää hyödyntäen.

Tutkimustulokset korostavat, että hankintapäätökset painottuvat kustannusäästöihin. Tästä syystä useat hankintasijainteihin vaikuttavat tekijät jäävät huomioimatta. Lisäksi ajankohtaiset globaaleihin toimitusketjuihin vaikuttavat haasteet lisäävät riskejä ja vaikeuttavat toimitusketjujen hallintaa. Puolestaan toimittajaverkoston uudelleenjärjestelyä voidaan pitää tehokkaana riskienhallinnan keinona, joka samanaikaisesti lisää toimitusketjun joustavuutta ja resilienssiä. Uudelleensijoittamalla voidaan saavuttaa kustannussäästöjä prosessien tehostuessa ja piilokustannuksia vähentämällä.

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Table of contents

Abstract

Acknowledgements

1 INTRODUCTION 1
1.1 Literature review 3
1.2 Key concepts 5
1.3 Conceptual framework 6
1.4 Aim and limitations 7
1.5 Research questions 8
1.6 Structure of the thesis 9
2 OUTSOURCING AND OFFSHORING 11
2.1 Offshoring drivers and benefits 12
2.2 Offshoring risks and disadvantages 13
2.3 China as a manufacturing location 20
3 RESHORING 23
3.1 Defining reshoring as a concept 24
3.2 Reshoring benefits 26
3.3 Drivers and barriers of reshoring 29
3.4 Reshoring as a way to respond global challenges 33
4 LOCATION AND SOURCING DECISIONS 35
5 RESEARCH METHODOLOGY 40
5.1 Qualitative case study 40
5.2 Data collection 41
5.3 Data analysis 43
6 FINDINGS 44
6.1 Offshoring motives 44
6.2 Offshoring challenges 45
6.3 Offshoring risk management 53
6.4 Reshoring opportunities 55
6.5 Reshoring barriers 59
6.6 Sourcing decision making 60
7 DISCUSSION AND CONCLUSIONS 63
7.1 Key findings 63
7.2 Answers to research questions 66

7.1 Suggestions 70
7.2 Validity and reliability 71
7.3 Limitations and future research 72
REFERENCES 74
APPENDICES 86

Appendix 1. Interview questions

1 Introduction

Global supply chain issues gain popularity continuously. One trending topic related to global supply chains is focusing on manufacturing location decisions, as manufacturing locations have a significant impact on companies' global supply chains (Ellram 2013, 3). Tate (2014, 66) states, that factors such as economic recession, increased weight on sustainability, improvements in cost performance as well as customers' increased expectations for flexibility are motivating companies to reconsider their sourcing-related location decisions.

This movement of manufacturing locations to developing locations is common, especially among manufacturing companies (Fernández-Miguel et al. 2022, 2). For decades manufacturing companies in developed countries have outsourced their manufacturing to low-cost locations, for instance, to China. These companies have continued to offshore their activities in order to obtain profit maximization. (Zhai et al. 2016, 62) As a general price level of labour and costs is lower in low-cost countries, companies aim to gain significant cost savings through offshoring (Fredriksson & Jonsson 2009, 227).

China can be considered one of the leading locations of outsourcing and it has been one for decades (Kennedy & Clark 2006, 250). Sourcing from China can offer multiple economic benefits for an outsourcing company (Alon et al. 2007, 43). However, sourcing from such emerging location comprises of multiple risks and a broad scope of problems (Alon et al. 2007, 47). These previously known low-cost locations are now more costly as the labour and material costs are higher. These locations also suffer from reduced responsiveness as well as quality. (Tate et al. 2014, 382) Moreover, long distances within the supply chain reduce the supply chain's resilience (Fredriksson & Jonsson 2009, 228).

These offshoring-related risks and pitfalls have caused many companies to reconsider their global sourcing location decisions (Fratocchi et al. 2015, 369). Also, emphasis on the production networks instead of a more integrated production process in one location, has prompted moving manufacturing to more developed countries (De Backer 2016, 7). More recently Covid-19 has caused major supply chain disruptions and the supply, as well as demand sides, have both suffered of disruptions (van Hoek & Dobrzykowski 2021, 689).

Covid-19 has caused multiple supply chain disruptions among different industries on a global as well as on a domestic level (Mahajan & Tomar 2021, 35). However, Covid-19 threatened especially supply chains that are dependent on parts and components manufactured in China (Bryson et al. 2021, 115) as the pandemic has had a significant impact on China. (Kähkönen, Evangelista, Hallikas, Immonen & Lintukangas 2021, 1) Bryson et al. (2021, 117) argue, that Covid-19 will be an essential factor in reshoring decisions.

The impacts of the hidden costs and risks related to outsourcing have forwarded the companies' interest towards reshoring as a new sourcing strategy (Boffelli et al. 2020, 1; Fratocchi et al. 2015, 369). Reshoring can benefit the company by providing product development opportunities, customisation, cost savings, delivery performance and improved product quality (Theyel, Hofmann & Gregory 2018, 300). Reshoring as a sourcing strategy allows a company to have more control over quality and reduces the uncertainty of communication and allows faster response. Additionally, decreasing the risks is one of the key benefits of reshoring. (Xie, Liu, Han & Qiu 2022, 2) Reshoring can also be an effective way of reducing the dependence of sourcing from China (van Hoek & Dobrzykowski 2021, 670).

The global competitive business environment is comprised of multiple internal as well as external risks, which makes the supply chain more prone to vulnerabilities (Aqlan & Lam 2015, 5640). Globalisation through offshoring practices has led to supply chains becoming more exposed and fragile to disruptions. For instance, natural disasters have proved the extensive negative impacts on the functionality of supply chains. (DeBacker 2016, 10) Moreover, the pandemic highlighted the vulnerability of global supply chains, and how supply chain disruptions have significant strategic and operational consequences (Bryson et al. 2021, 117). These supply chain disruptions have guided the interest towards more efficinent risk management (Sodhi et al. 2012, 2) whilst also creating the need for effective supply chain risk management strategies (Aqlan & Lam 2015, 5640). According to Ciabuschi, Lindahl, Barbieri and Fratocchi (2019, 141), reshoring can be considered as a risk management decision besides a location decision. Reshoring should aim to relocate manufacturing, service as well as supply to locations where risk management and mitigation are easier (Tate & Bals 2017, 107).

1.1 Literature review

This chapter focuses on the literature review of the topic. The review focuses on the nature of already existing academic literature, and research perspectives. Reshoring, offshoring, as well as risk management perspectives in academic literature, are discussed in this chapter. The end of the review discusses the possible research gap of this study.

There exists a substantial amount of literature on location decisions (Gray, Skowronski, Esenduran & Rungtusanatham 2013, 28). Ketokivi, Turkulainen, Seppälä, Rouvinen and Ali-Yrkkö (2017, 20) state, that literature related to location decisions is very extensive but simultaneously diverse. Nevertheless, reshoring can be considered as a somewhat new research stream (Boffelli & Johansson 2020, 53), although it has been a rising trend since 2005 (Tate 2014, 66). Reshoring has gained a lot of attention recently (Boffelli, Golini, Orzes & Dotti 2020, 1) and companies from different industries have made a decision to reshore the previously offshored activities (Fratocchi et al. 2015, 366). The reversing process of offshoring has gained a lot of attention in the academic literature as well, and several scientific studies are focusing on reshoring (Ockicka 2016, 104). As reshoring is an upward phenomenon, it is expected that level of research from the field will increase within upcoming years. (Pietanesi & Arauzo-Carod 2019, 807)

However, Dachs et al. (2019, 1) state, that reshoring as a phenomenon requires further research in order to increase the amount of reliable coverage and to understand the drivers and barriers of reshoring. According to Fratocchi et al. (2015, 367) the extent, geographical limitations and underlying motivations of companies' reshoring decisions are yet relatively unknown. Additionally, the literature related to companies' location decisions is somewhat limited and location decisions are usually included in outsourcing-related literature (Ellram 2013, 3).

Case studies are a typical form of research when studying reshoring and there is a lack of theoretical papers on reshoring as well as quantitative evidence (Dachs et al. 2019, 1-2; Fratocchi et al. 2015, 367). According to Fratocchi, Di Mauro, Barbieri, Nassimbeni and

Zanoni (2014, 57), the extend of reshoring related quantitative evidence is fragmented and simultaneously often of anecdotal nature.

Reshoring case studies are often studied from the focal company's perspective and/or from a location perspective as well. Many authors have researched reshoring to the United States (Ellram 2013; Tate 2014; Zhai, Sun, Zhang 2016; Rasel, Adbulhak, Kalfadellis, & Heyden 2020). Additionally, Western companies are also commonly studied in the field of reshoring (Dahs et al. 2019; Fjellstrom, Fang & Chimenson 2019; Gylling, Heikkilä, Jussila & Saarinen 2015; Ketokivi, Turkulainen, Seppälä, Rouvinen & Ali-Yrkkö 2017; Pegoraro, De Propris & Chidlow 2022). Correspondingly, Ockicka (2016, 107) states, that focus of reshoring publications and studies is on companies' perspective, which are located in highly developed countries such as in the United States or Western Europe. However, the perspective of companies located in Central, as well as Eastern Europe, is not as recognized in the research.

Offshoring-related research is also relevant when discussing reshoring (Zhai et al. 2016, 63), since reshoring can be considered as a reversing process of past offshoring decision (De Backer 2016, 7). Also, to fully understand the reshoring process, an analysis of the previous offshoring decision is required (Pietanesi & Arauzo-Carod 2019, 808). In recent decades literature has also focused on the risks and criticalities of offshoring in addition to offshoring benefits (Fratocchi et al. 2015, 368). Additionally, the linkage between offshoring and China from different perspectives is also recognized in the academic literature by multiple authors. Risks and benefits (Kennedy & Clark 2006), drivers and obstacles (Lau & Zhang 2006) as well as outsourcing related costs (Platts & Song 2010) of offshoring from China are recognized and discussed in the literature. More specifically, Fredriksson and Jonsson (2009) studied the consequences of low-cost sourcing in China from a viewpoint of a European manufacturer.

Due to the high probability of risks in the current business environment, companies and researchers are emphasising the focus on risk management. Supply chain risk management has also become an important research stream in the supply chain management literature. (Aglan & Lam 2015, 5641) Many authors highlight the complex nature of today's supply chains and the need for risk management (Aglan & Lam 2015; Fan & Stevenson 2018; Vilko

& Hallikas 2012; Tang 2006a; Tang & Musa 2011). It has been recognized in the literature, that supply chain risk management requires an increased amount of research, as companies report on continuously rising supply chain risks (Sodhi, Son & Tang 2012, 1). Moreover, a limited number of companies have committed to supply chain risk management, although they recognize the negative impacts of supply chain disruptions (Tang 2006b, 43).

As mentioned, the research on reshoring strategies and location decisions is already quite extensive. Nevertheless, already existing research on the subject provides a good base for further research, and multiple different academic viewpoints can be utilized. This study aims to address many problems acknowledged in the literature and connects risk management and reshoring research streams. Existing research on reshoring, offshoring and supply chain risk management can be utilized in this study to analyse and create suggestions for the case company. Moreover, the business environment around global sourcing is constantly changing. This makes it important to study global sourcing topics to include current global changes into consideration.

1.2 Key concepts

This chapter presents the key concepts, that are used in this thesis. Concepts are briefly presented and defined from the perspective of this study. Key concepts are based on literature, and together with conceptual framework, aim to create a base for the theoretical part as well as the empirical part of the study. The linkage of key concepts and the subject of the study is further discussed in the theoretical part of the thesis.

Reshoring

Reshoring is essentially only a location decision. Therefore, reshoring mainly considers where activities are moved, and not who is performing those activities. Thus, reshoring does not take ownership into consideration and reshored activities can be performed either in-house or externally. Reshoring is also a reversing process of offshoring which separates reshoring from a usual location decision. (De Backer et al. 2016, 8; Gray et al. 2013, 28)

In addition to reshoring, there are different terms describing the activity of bringing manufacturing back to the home country or closer. However, all of the concepts are describing the reversing process of offshoring. For example, backshoring, nearsourcing and insourcing are commonly recognized terms besides reshoring (De Backer 2016, 7; Ockicka 2016, 105). Even though, there are multiple definitions in the literature, that slightly differ from each other, in this study reshoring is defined as bringing previously offshored activity closer to the focal company. Other concepts of moving manufacturing closer or to the home country are further described in the theory part of the study.

Outsourcing

Outsourcing refers to an activity, when a process, for instance, manufacturing is subcontracted to a third-party company. Outsourcing plays a major role in a cost-effective supply chain but there are also multiple risk-related to outsourcing activities. (Olson & Wu 2011, 402) Activities can be outsourced to either domestic or an international supplier (De Backer 2016, 7-8)

Offshoring

Offshoring as a concept covers both, international outsourcing and international insourcing. Therefore, offshoring is not dependent on the ownership and is essentially a location decision. (De Backer et al. 2016, 7) The typical meaning of offshoring is moving activities to low-cost locations as a way to obtain cost savings (Gray et al. 2017, 37).

1.3 Conceptual framework

Figure 1 illustrates the conceptual framework of this study. The framework is comprised of the concepts of location decisions, offshoring, reshoring and risk management. The key concepts of the study aim to form a structure for the study. The theoretical part of the study is mainly based on the conceptual framework, and it forms a base for an empirical case study.

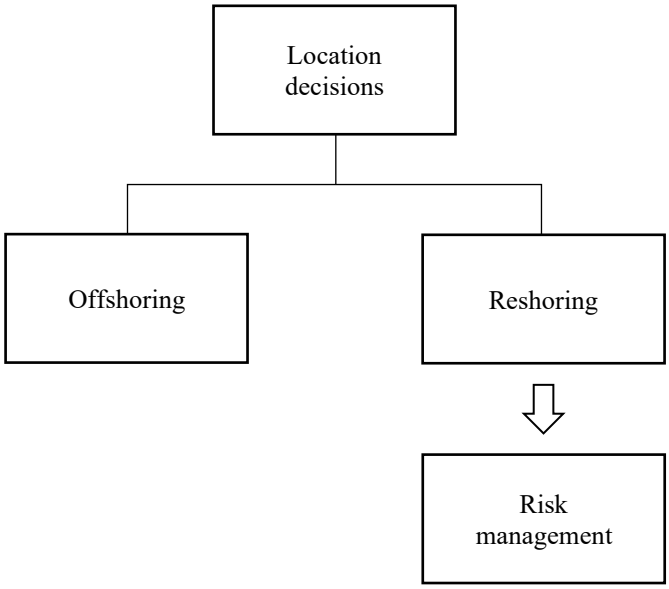

Figure 1. Conceptual framework

This study focuses on location decisions, in this case offshoring and reshoring, and their characteristics as a strategic decision. The theoretical part of this study focuses on offshoring to understand the underlying motivations and aimed benefits in previous offshoring decisions. When studying reshoring, the starting point of past offshoring decision should be studied as well (Gray et al. 2013, 29). The benefits and disadvantages of offshoring are discussed to create understanding of how they impact on the following reshoring process, and if reshoring is a suitable option. Reshoring is presented as a reversing process of offshoring. Reshoring is discussed from a risk management perspective as reshoring can be also considered an effective risk management method besides a location decision.

1.4 Aim and limitations

The aim of this study is to find practical answers to research questions whilst also acknowledging the complexity of the current global supply chain affected by recent global events. The purpose of the study is to explain the phenomenon of reshoring from a risk

management perspective in a case company context. Additionally, the study aims to recognise the affecting factors to reshoring to Europe within the manufacturing industry. The study examines the connection between the focal company and its external purchases and does not take other viewpoints into account.

Using a single case study sets some limitations to research as conclusions, models or developed theories based on one single case are not that generalizable (Voss et al. 2002, 201). Therefore, this study offers conclusions and findings from the case company's perspective on the research subject. Additionally, the number of interviewees within the case company is limited, and therefore this study has a limited viewpoint on the topic.

1.5 Research questions

Research questions are answered based on the relevant academic literature and the empirical findings of the study. There is one main research question and three sub-questions, that support the main research question. Research questions are formed based on the purpose of this study.

Shortening the supply chain through reshoring can be considered to have variety of advantages including operational and strategic assets (Tate et al. 2014). The main research question studies how beneficial option reshoring is in comparison to offshoring. The question aims to provide an overview of the possible reshoring benefits also considering the risk management perspective. To study the reshoring phenomenon and its benefits as a location decision, the main research question is:

What reshoring benefits can be gained through moving to closer location?

Many companies have started to consider reshoring due to different drivers (Wiesmann et al. 2016, 32) and reshoring has become a more common strategy to reverse past offshoring decision (Fratocchi et al. 2015, 366). To recognize the factors leading to reshoring decisions, the first sub-question is:

What are the possible reshoring drivers?

Global sourcing is comprised of multiple internal and external challenges (Fjellstrom et al. 2019, 279). In addition, Pietanesi and Arauzo-Carod (2019, 808) state that moving resources to another location is a major strategic and structural change. Therefore, it is important to consider the pitfalls and risks related to location decisions. In order to mitigate the possible risks, risk related to possible reshoring decisions should be identified. Therefore, the second sub question is:

What are the current risks and pitfalls in reshoring?

The last sub-question is formed to understand the risks related to offshoring and consequently long supply chains. As stated by Steven and Britto (2016, 56) long supply chains consists of various internal and external risks. Thus, managing the risks of offshoring is one major problem when including offshore location into the supply chain (Cabral, Quelin & Maia 2014, 365). Offshoring risks often also acts as the starting point for reshoring (Tate et al. 2014, 386). By examining the offshoring-related risks, it can be considered whether the offshoring is a suitable strategy or whether the company should consider to move away from offshore location. Therefore, the last sub question is:

What are the possible risks of offshoring?

1.6 Structure of the thesis

Figure 2 presents the structure of the study. The structure of this study comprises of introduction, theory chapters, and methodology followed by the empirical part of the study. The last part of the study is discussion and conclusions. The introduction chapter of the study consists of the background of the study, literature review of relevant academic literature, conceptual framework and the key concepts used in the study. The research questions are also presented in the introduction chapter.

Figure 2. Structure of the thesis

The theory chapters aim to explain relevant topics regarding the subject of the study. Further information on the key concepts, and how they can be connected to the study subject, are also discussed within the theory chapters. Topics such as supply chain resilience, dependency on China in international trade and current global events, and their impacts, are further discussed. As reshoring is considered as a reversing process of offshoring, one theory chapter also focuses on offshoring. Reshoring chapter aims to explain the reshoring phenomenon comprehensively. Motives for reshoring are discussed to create a further understanding of the subject. Additionally, the last theory chapter discusses location and sourcing decisions.

Methodology chapter presents the study method. Also, data collection and analysis methods are discussed in methodology. Interview results are presented in detail in the findings chapter. The last chapter of the study includes discussion and conclusions. In the final chapter, suggestions for the case company are presented. Based on study results and academic literature, research questions are answered in discussion and conclusions. Also, future research and limitations as well as validity and reliability are discussed.

2 Outsourcing and offshoring

This chapter discusses outsourcing and offshoring. Firstly, the concepts of outsourcing and offshoring are discussed in detail. Additionally, the benefits, drivers, risks and disadvantages related to distant production locations are discussed. Also, China as a manufacturing location and its characteristics are presented as Chinese production is involved in numerous today's global supply chains.

Outsourcing and offshoring are important concepts when studying reshoring. Gray et al. (2013, 29) argue, that reshoring cannot occur, if the choice to offshore has not been done previously. To gain thorough understanding of reshoring, past offshoring process should be analysed as well (Pietanesi & Arauzo-Carod 2019, 808). Thus, literature on outsourcing and offshoring is reviewed to gain deeper understanding of the reshoring phenomenon as well.

Outsourcing can be considered as an activity to move either products or services to be performed by an outside provider. Offshoring is more a location decision and it considers where activities are performed. Therefore, both international outsourcing an international in-sourcing can be considered as offshoring. (DeBacker et al. 2016, 7) Outsourcing can be viewed as a mandatory business strategy in order to succeed in a highly competitive business environment. By outsourcing, companies can aim to achieve strategic goals. (van Weele 2014, 175) Outsourcing is viewed as a way to improve competitive advantage in a highly competitive environment by expanding supply chain to global geographic locations (Mudambi & Venzin 2010, 1514). Outsourcing is often understood as a way to improve company's performance as suppliers are expected to operate in a cost-efficient way whilst simultaneously offering a great level of value for the focal company (McIvor 2013, 24).

The typical meaning of offshoring is moving activities to low-cost locations as a way to obtain cost savings (Gray, Esenduran, Rungtusanatham & Skowronski 2017, 37). Improving competitiveness by obtaining lower costs or gaining access to new markets, or both, are the main reasons to offshore operations in foreign locations (Theyel et al. 2018, 302). Offshoring can include international outsourcing as well as insourcing (De Backer et al. 2016, 7). However, some academics refer to offshoring as international outsourcing (Alon et al. 2006,

34). Globalisation and internationalisation have enabled the global spreading of resources and markets. Therefore, companies have a possibility to access these resources and markets with lower prices by offshoring. (Heikkilä, Martinsuo & Nenonen 2018, 659) Additionally due to improved supplier networks, there is broader and highly specialised manufacturing networks globally (Johansson & Olhager 2018, 639). Within the past decades supply chains have experienced major changes in upstream and downstream as a consequence of globalisation and the focus to low costs (Handfield et al. 2020, 1651).

2.1 Offshoring drivers and benefits

Outsourcing activities to third parties in offshore locations have multiple benefits for the focal company. It offers a significant potential for growth whilst optimising the use of employees located in the home country. (Alon et al. 2007, 34) Outsourcing decision is made to benefit multiple different business functions and to obtain various different benefits (Fredriksson & Jonsson 2009, 227). Based on the study of Lau and Zhang (2006, 777), there are three main categories in which the common drivers for outsourcing in low-cost areas can be categorised to: economic, strategic and environmental. Economic factors include factors such as cost reductions and savings. Focus on core competence, improving flexibility, acceleration of business process re-engineering are strategic factors and IT development, globalisation as well as supplier capability are environmental factors.

Outsourcing also allows companies to focus on their core competence and to minimize the focus on the manufacturing functions, that do not directly add to company's competitive advantage. Therefore, emphasis on core competence is the one main motive of outsourcing. (Hartman et al. 2017, 363; Lau & Zhang 2006, 783; van Weele 2014, 181) Core competence can be considered as the combination of those activities, that produce sustainable competitive advantage for the company. Based on the core competency approach, companies should focus on their core competence, and outsource the activities, that can be defined as non-core competencies. (van Weele 2014, 181) However, outsourcing has shifted from moving only secondary activities to external operators to moving also critical activities to be performed by external operator (McIvor 2013, 45).

Cost reductions and savings are often the main factor and aimed benefit of moving to low-cost regions (Fredriksson & Jonsson 2009, 227; Lau & Zhang 2006, 783; Song, Platts & Bance 2007, 858; Dekkers 2010, 956). Moving activities to be performed by an outsider operator often gives companies an opportunity to manufacture and purchase with lower costs (Olson & Wu 2011, 407). Additionally, companies can achieve competitive advantage through cost savings and improved efficiency resulted from outsourcing (Lau & Zhang 2006, 782). Besides cost savings, increased efficiency gained from offshore locations is one motive for offshoring decisions. By strengthening the efficiency through offshoring, companies aim to increase their competitiveness. (Roza et al. 2011, 316)

However, Wiesmann et al. (2016, 27) emphasize that offshoring decisions should not be based only on labour cost savings gained from low-cost locations because offshore markets are quite dynamic. Dynamism creates sudden changes, and many companies struggle to adapt to changing market environment. Correspondingly Fredriksson and Jonsson (2009, 245) state that the high focus principally on low costs decrease the sought-after benefits of offshoring.

In the Nordic countries and within the manufacturing industry, the labour costs are higher as are also the labour laws and rules. These reasons have prompted especially Nordic manufacturing companies to move to low-cost locations in developing countries. (Heikkilä et al. 2018, 650-660) Additionally, low-cost countries typically have laxer sustainability-related regulations and smaller sanctions. than in developing countries, and are therefore more attractive as a manufacturing location (Chen & Lee 2017, 2799).

2.2 Offshoring risks and disadvantages

The trend of offshoring has been followed by numerous offshoring failures due to complexity of long supply chains (Wiesmann et al. 2017, 16). Supply chains have transformed to be increasingly complex but also international. This change has been driven by outsourcing, broadly dispersed supply networks, the amount of supply chain tiers and continuous supply chain globalization. This has led to supply chains becoming vulnerable

and exposed to variety of risks. (Helmold et al. 2022, 131) Entering developing countries through offshoring adds multiple uncertainties due to complexity of supply chain and unpredictable markets in destination country (Steven & Britto 2016, 56).

Steven and Britto (2016, 56) state that offshoring and outsourcing are strongly linked to risks due to long distance between manufacturers and the home market. Kumar et al. (2009, 447) introduces risks formulated in offshoring context in the form of fishbone diagram. Due to complexity related to operating within multiple countries additional risks can occur reducing the profitability of offshoring. Fishbone diagram of offshoring risk cause is presented in Figure 3.

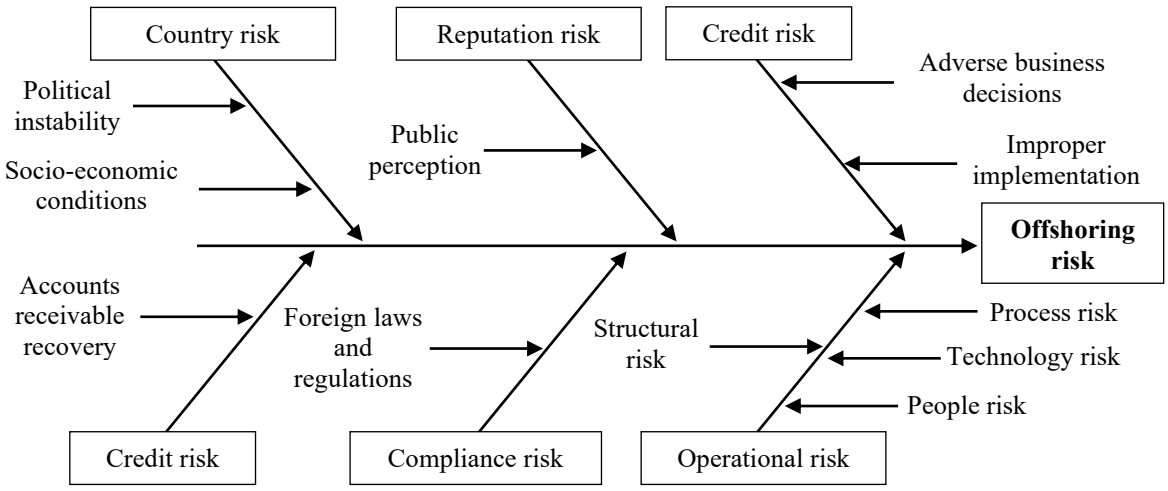

Figure 3. Offshoring risk cause effect (Kumar et al. 2009, 447)

Global supply chains can extend beyond the focal company and its suppliers including many sub-suppliers in the supply chain. Sub-suppliers increase the complexity and riskiness of long supply chains as handling those is out of focal company's responsibility. (Steven & Britto 2016, 56) Correspondingly Helmold et al. (2022, 132) state that, the current supply chain structures are often very complex and include many tiers of suppliers. The sub-suppliers of companies increases the already complex supply chains and highlights the need to manage them effectively.

Wiesmann et al. (2016, 33) highlight that there are multiple ways an offshoring can backfire especially if the offshoring decision and implementation is not done carefully. Additionally, offshoring as a sourcing strategy is not always the most advantageous option regarding the performance. According to Fjellstrom et al. (2019, 279) global sourcing includes multiple internal as well as external challenges. The risks and uncertainties of outsourcing and offshoring increases the longer the distance is between the focal company and the supplier. In some cases, the risks and uncertainties of offshoring can lead to additional costs or even to monetary losses (Song, Platts & Bance 2007, 858). Table 1. presents different offshoring-related disadvantages based on the relevant literature on the subject.

Table 1. Offshoring disadvantages

Offshoring disadvantages	
High logistics costs	Fredriksson & Jonsson 2009; Tate et al. 2014; van Hoek & Dobrzykowski 2021
Increased inventory	Fredriksson & Jonsson 2009; Tate et al. 2014; Steven & Britto 2016
Obsolete inventory	Wiesmann et al. 2016
Cultural differences and communication problems	Tate et al. 2014; Fjellstrom et al. 2019; Weele 2014
Increased unemployment in developed countries	Tate et al. 2014; Zhai et al. 2016
Slower supply chain	Tate et al. 2014
Reduced supply chain flexibility	Fredriksson & Jonsson 2009; De Backer et al.
Rising labour costs in offshore locations	Tate et al. 2014; De Backer et al. 2016; Baraldi et al. 2018
Lack of skilled workforce	Tate et al. 2014; Baraldi et al. 2018
Intellectual property risks	Gray et al. 2013; Weele 2014; De Backer et al. 2016; Kumar et al. 2008
Delivery delays Delivery unreliability	Gray et al. 2013; Eriksson and Jonsson 2009
Reduced quality	Tate et al. 2014; De Backer et al. 2016; Baraldi et al. 2018; Gray et al. 2017; Britto & Steven 2016
Increased vulnerability of supply chain	De Backer et al. 2016; Tate et al. 2014
Trade tariffs/protectionism	Handfield et al. 2020; Jiang, Lu, Song & Zhang 2023
Currency risks	Fjellstrom et al. 2019; Tate et al. 2014; Hansen et al. 2017
Lower visibility and tracreability	Steven & Britto 2016
Difficult innovation and product development	Wiesmann et al. 2016
Reduced level of supply chain control	Wiesmann et al. 2016; Foerstl et al. 2016

Offshoring from foreign locations makes the company's supply chain considerably longer. Long supply chain creates different issues for the focal company and exposes companies to variety of internal as well as external supply risks. (De Backer et al. 2016, 27; Tate et al. 2014, 384) This length and complexity has negatively affected companies' agility to respond ever changing consumer demand and simultaneously reduces the overall supply chain flexibility (De Backer et al. 2016, 27; Fredriksson & Jonsson 2009, 228). As the most significant reason for offshoring is cost savings, flexibility and agility are often ignored factors in offshoring process and decision-making (De Backer et al. 2016, 11). Consequently, offshoring limits the company's ability to operate in highly competitive, dynamic and uncertain environment (Theyel & Hofmann 2021, 180). Vulnerability of supply chain exposes the chain for supply disruptions. Disruptions can have extensive impacts on the company. (Steven & Britto 2016, 58) Wiesmann et al (2018, 33) state that the probability of supply chain disruption risks increases as supply chains extend across countries as well as long distances. Additionally, based on the case study of Eriksson and Jonsson (2009, 238) component manufacturers located in low-cost regions tend to have delivery reliability issues which increases the probability of supply chain disruptions.

Once the distances within the supply chain are long, keeping control of the whole chain becomes challenging and requires more resources (Wiesmann et al. 2016, 33). Additionally, supplier control becomes harder due to longer distances between the supplier and the focal company. Auditing and supervising suppliers located in far-off location can also involve high costs. (Foerstl et al. 2016, 501) According to Gray et al. (2017, 39) offshoring includes high responsibility rate from the focal company. Purchasing components from distant location requires advanced planning that takes for instance, local holidays, possible strikes, long transit time into consideration. Long distances and slow supply chain leads to companies increasing their inventory or having back up suppliers in more local locations to mitigate the impacts of unreliable supply chain (Fredriksson & Jonsson 2009, 228). However, long transportation times due to long distance combined with big order batches can increase the risk of obsolete inventory (Wiesmann et al. 2016, 33). In some cases, items can even be expired before arriving to the destination due to long transit times (Steven & Britto 2016, 58).

Different currencies in global sourcing creates certain risks for focal company (Fjellstrom et al. 2019, 28). According to Hansen et al. (2017, 2059) exchange rate fluctuations create instability in the macro environment. The research of Alon et al. (2007, 54) notes that currency exchange rate stability is critical for the companies. Consequently, doing business with another than company's own currency increases the risks due to volatility in currency valuation (Tate et al. 2014, 384).

The total cost of offshoring can rise higher than expected and therefore the cost savings tend to be lower than intended (De Backer et al. 2016, 8). Unsuccessful estimation of offshoring implementation-related costs can result in opportunity costs. Those costs negatively affect process performance of the activity that is being offshored. (Larsen 2016, 315) Additionally offshoring decision can result in various unexpected costs. Long distances between the focal company and its suppliers increase the costs associated with supply chain coordination and monitoring (Steven & Britto 2016, 58). Also, the study of Wiesmann et al. (2016) argues that working with globally dispersed supply chain include high coordination costs. High costs can offset the potential cost reductions resulted from cheap labor. Thus, the planned cost reductions may fail as extra costs can occur resulted from moving activities to third-party operator located in far-off location (Song, Platts & Bance 2007, 858). Also, many earlier lower prices have now increased in developing locations as well. For instance, labour and energy costs have increased and can inflate beyond the primarily estimation. (Larsen 2016, 308; De Backer et al 2016, 8) Additionally, due to increasing customer demand, supply markets are tighter, and prices become higher. This combination decreases the attractiveness of a certain market area from a cost point of view. (Tate et al. 2014, 385) Due to big offshoring trend to low-cost locations, competition in offshore locations has increased. Thus, many companies are competing for same resources in offshore locations which can impact on availability and prices of resources. (Wiesmann et al. 2016, 31) Also, logistics is one significant cost element of offshoring, depending on the item characteristics. Transporting heavy items for long distances involves high logistics costs. (van Hoek & Dobrzykowski 2021, 697)

Quality problems are a well-known hurdle of offshoring to offshore developing locations (De Backer et al. 2016, 8; Gray et al. 2017, 39). Similarly, Steven and Britto (2016, 56) state that offshoring locations are often strongly linked to the conception of low quality. Quality

problems in offshore locations can be a consequence of not capable suppliers. The lack of capable service providers is one considerable obstacle as well as problem of offshoring (Lau & Zhang 2006, 781). Also, shortage of skilled workforce has created quality issues for companies. Some companies can even face a situation when hiring not skilled workforce is the only option due to low education level in developing locations. (Tate et al. 2014, 384) To tackle offshoring related quality issues, supplier capability should be carefully considered prior of making final sourcing decision. Lack of quality will also eventually lead to higher total costs as quality issues require new production runs and recalls of faulty products (De Backer et al. 2016, 8), Additionally, possible quality issues have also a negative impact on company's reputation (Gray et al. 2017, 39).

Offshoring has also negative social impacts. Offshoring can result in unemployment in jobs located in the home country, that are chosen to be moved to be performed in another country. There is already evidence of this and over time unemployment rate in developed countries has increased due to moving manufacturing to other locations (Tate et al. 2014, 382). Within the time period from 1980-2010 millions of manufacturing jobs were eliminated due to moving manufacturing to low-cost countries. (Zhai et al. 2016, 62)

Typically, companies have made offshoring decisions based on mainly costs, that are measurable. Therefore, some intangible risks are left to unnoticed such as possible intellectual property (IP) leakages. (Gray et al. 2013, 30) Offshoring process might require sharing sensitive information with suppliers related to trade secrets, manufacturing techniques or product designs (Kumar et al. 2008, 447). Intellectual property leakages are a major issue when considering moving activities to a foreign location. It can be noted that the protection of IP is not on the same level in emerging countries that it is in focal company's home country in developed countries. This increases the probability of the suppliers gaining confidential information of company's production practices. IP leakages can be a result from less developed legal systems and weaker enforcement in emerging countries. This also drives companies to move to another location to prevent losing confidential information to third-parties. (De Backer et al. 2016, 10)

Wiesmann et al. (2016, 31) state that many of the location specific factors are often overlooked when making the offshoring decisions. This can impact negatively on success of

the previous offshoring decision. Creating a successful offshoring strategy requires extensive knowledge on how to obtain the potential benefits of offshoring but simultaneously managing the manufacturing relocation related risks to prevent the possible disadvantages (Johansson & Olhager 2018, 641). Also, the study of Alon et al. (2007, 53) highlights that the company that is offshoring, needs to be continuously aware on factors that are impacting on offshore location. Therefore, mitigating the risks of failure is one of the major dilemmas related to offshoring from distant locations (Cabral, Quelin & Maia 2014, 365).

2.3 China as a manufacturing location

Offshoring in general has multiple risks that can affect business operations. Some specific locations have multiple country-related risks for doing business in a certain area. Due to aiming for the lowest possible sourcing costs, focal companies located in the Western countries have become highly dependent on suppliers in Southeast Asia (Handfield et al. 2020, 1652). China can be viewed as one of the most attractive global sourcing and foreign direct investment location (Li, Lee, Hong, Haney & Kang 2017, 489). China is a popular low-cost sourcing location especially for companies located in Europe or in North America (Fredriksson & Jonsson 2009, 227). China has a strong position of a major manufacturer of products and components (Seuring et al. 2022, 1093), and many different industries are heavily dependent on Chinese supply chains (Ash, Kroenig & Schneider-Petsinger 2022, 3). Companies that have chosen to offshore, have utilized low labour costs, a business-friendly regulatory environment and raw materials China can offer as an offshoring location (Wiesmann, Snoei, Hilletofth & Eriksson 2017, 15). According to Fel and Griette (2017, 24) main motives for offshoring to China, besides the low costs, are availability of products as well as raw materials. Also, imitating competitors and therefore sourcing from the same locations can be viewed as a reason to move resources to China.

Nevertheless, offshoring to China has substantial opportunities but simultaneously it includes many challenges (Alon et al. 2007, 53). China as a sourcing location has inherent defects related to offshoring. Such as risk of cross-cultural conflicts and miscommunication, instability of the political and economic landscape, legal barriers, disparity in contract

expectations, poor partner selection are outsourcing challenges to consider. (Alon et al. 2007, 48) Local laws and regulations in China also create some problems for companies operating within the country (Kennedy & Clark 2006, 250). China as a manufacturing location is also connected to having problems with intellectual property (IP) thefts. These thefts can seriously cause damage in company's reputation and thus competitive advantage. (Tate et al. 2014, 385)

One of the main challenges of international outsourcing is that China has become an increasingly expensive location among other low-cost locations (Fjellstrom et al. 2019, 279). Tate et al. (2014, 383) state, that hourly payments in China have even doubled. The increased hourly payments have made areas such as Vietnam and Mexico more cost-effective manufacturing locations for consumer markets located in North America. For instance, market rivalry and companies competing for the same resources in low-cost locations has affected on wages by increasing them. However, low costs in China can be still considered as a major obstacle of moving manufacturing to higher cost locations (Xie, Liu, Han & Qiu 2022, 2).

Additionally, trade with China has been limited with political initiatives such as protectionism. For instance, China and US have a complex relationship in international trade. In 2018 US increased tariffs of certain products imported from China. As a response China imposed retaliatory tariffs to products imported from the US. (Jiang, Lu, Song & Zhang 2023, 3) This trade war between China and United States as well as protectionist policies of Trump's administration indicate the change in international relations (European Union 2021, 9). As imports on Chinese products are increasing, companies are considering supplier diversification whilst continuing to pursue global sourcing (van Hoek & Dobrzykowski 2021, 699). Besides Covid-19, the current trade war between United States and China has emphasized the understanding that globally dispersed supply chains are prone to supply disruptions (Zeng 2021, 27).

As stated, many factors have negatively affected the attractiveness of China as a sourcing location. For instance, rising labour costs in China made companies in United States to reconsider their location decisions, and to reshore back to the United States (Zhai et al. 2016, 62–63). In addition, since the dependency on Chinese supply chain is relatively high,

companies are aiming to decrease the dependency by moving their activities to another locations. These strategic dependencies have also guided the interest towards increasing supply chain resilience by utilizing more local manufacturing. (Ash, Kroenig & Schneider-Petsinger 2022, 3)

3 Reshoring

This theory chapter covers reshoring as a phenomenon and its drivers, benefits but also its weaknesses as a location decision. Additionally, since there exist various different terms used to describe reshoring, these definitions of reshoring are discussed to create more in depth understanding around the subject recognized in the literature. Also, recent global challenges and their impact on location decisions are discussed because they may act as a driver for future reshoring practices.

The reversing process of past offshoring decisions has become more common among companies operating in different industries (Fratocchi et al. 2015, 366). De Backer (2016, 7) state, that even though reshoring is relatively a new trend, due to insufficient experiences as well as poor performance of production abroad, there has always been movement of activities to back to the home country.

Companies typically move production to low-cost locations to obtain profit maximisation. However, after realising, and possibly experiencing, the offshoring related risks, the companies have made a decision to reshore previously offshored activities to another location. (Gray et al. 2013, 30) Similarly the study of Wiesmann et al. (2017, 37) states that reshoring is often continuum for failure of previous offshoring decision. Additionally, understanding the total cost of companies' manufacturing processes has increased the attention towards reshoring as an advantageous option. Factors such as working capital tied to inventory due to safety stocks and limited flexibility due to long lead times have made sourcing from nearer location a cost-effective decision. (Tate et al. 2014, 386). However, reshoring companies, that relocate their manufacturing activities, tend to aim to obtain more strategic assets as a location advantage rather than cost advantages (Johansson & Olhager 2018, 642).

In addition to studying reshoring, also the starting point of past offshoring decision should be studied. Studying previous offshoring decision besides reshoring is important since the starting points of a reshoring decision may differ based on why and when offshoring decision had been made and also where and to whom the outsourced activity was transferred to. (Gray

et al. 2013, 29) Therefore, understanding a company's reshoring decision to its full extend requires a thorough analysis of past offshoring process, since reshoring is partially a consequence to offshoring (Pietanesi & Arauzo-Carod 2019, 808). Additionally, Fjellstrom et al. (2019, 290) argue that reshoring should be seen as an evolving process that aims to response changing business challenges rather than perceiving reshoring as a short-term decision.

3.1 Defining reshoring as a concept

Gray et al. (2013, 28) discuss the issues regarding the definition of reshoring. Reshoring is essentially only a location decision. Therefore, reshoring mainly considers where activities are moved, and not who is performing those activities. Reshoring is also a reversing process of offshoring which separates reshoring from a usual location decision. Reshoring and offshoring are similar concepts as they both describe transferring manufacturing from one geographical location to another without taking ownership into consideration. However, outsourcing and insourcing cover ownership perspective. (Gylling et al. 2015, 92–93) Similarly, De Backer et al. (2016, 8) state that reshoring does not take ownership into consideration and reshored activities can be performed either in-house or externally. Furthermore, reshoring does not refer to repatriation or the total closure of all offshoring activities and therefore company can still preserve some of its activities in foreign location even though some activities are reshored. Aside from a location decision, reshoring is also a major strategic choice (Baraldi, Ciabuschi, Lindahl & Fratocchi 2018,158).

Literature includes multiple definitions besides reshoring, that describe the reversing process of previous offshoring decision. Reshoring could be defined as an umbrella term for more specified concepts. Reshoring as a concept is complex (Fjellstrom et al. 2019, 279) and it includes and relates to, for example, offshoring, outsourcing, nearshoring, rightshoring, backshoring as well as insourcing (De Backer 2016, 7). Foerstl et al. (2016, 495) argue, that the concept of reshoring can be more specifically determined into backshoring as well as nearshoring. Correspondingly, Barbieri et al. (2019, 2) make a similar division and define two types of relocation of offshored manufacturing: relocation back to the home country

(RHC) and relocation to a third country (RTC). The reshoring-related concepts are next discussed.

Backshoring is commonly used to describe the activity of moving previously outsourced activities back to domestic location. (Pietanesi & Arauzo-Carod 2019, 807) Correspondingly, Johansson and Olhager (2018, 638) describe backshoring as an activity of moving the production activities back to the country of origin they were originally offshored from. *Insourcing* refers to moving an activity from external operator to be performed back in-house (Wiesmann et al. 2017, 22). Similarly, Foerstl, Kirchoff and Bals (2016, 493) describe insourcing as reintegration of previously outsourced activities. Therefore, insourcing and backshoring are somewhat overlapping as concepts, but as Gylling et al. (2015, 92–93) state, insourcing is more of an ownership decision whereas backshoring a location decision.

Nearshoring is referred to as relocating formerly offshored activities to nearby location, for example, to the neighbouring country (DeBacker 2016, 7). Nearshoring aims to allowing the company to source with lower production costs but simultaneously offering higher level of quality and quick delivery. Therefore, nearshoring connects the benefits of offshoring and backshoring. (Pietanesi & Arauzo-Carod 2019, 807)

According to Tate & Bals (2017, 110) *rightshoring* connects the concepts offshoring, reshoring, outsourcing as well as insourcing. According to Brannemo (2006, 552), the concept of rightsourcing aims to using the right sourcing strategy in right situation. Companies should use both in and outsourcing continuously in a strategic way in order to obtain competitive advantage. Using sourcing activities to one direction only is rarely the optimal way to operate. *Onshoring* differs slightly from reshoring as it relates to the location of activities close to the market demand. Onshoring can be a similar process than reshoring or offshoring. (De Backer et al. 2016, 8)

Additionally, there are less recognized terms for describing the activity of moving manufacturing to be performed back in-house. Cabral et al. (2014) refer to reintegration, which describes the process of moving activities back in-house. Additionally, concepts

international divestment, de-globalization as well as de-internationalisation are used within the reshoring discussion (De Backer et al. 2016, 8). In addition to other conepts, Dezenski and Austin (2021) use the definition of ally-shoring for sourcing goods or commodities with countries that share similar democratic values and also commit to rules-based international order.

3.2 Reshoring benefits

As earlier discussed, long supply chains create hidden costs as well as risks for the focal company (Gray et al. 2013, 30). On the contrary, reshoring as a strategic location decision can offer multiple benefits for the focal company as a consequence of a shorter supply chain. Benefits include both cost savings as well as strategic assets. Many offshoring-related risks and uncertainties can be tackled by reshoring. Simplified supply chain and shorter distances create multiple benefits regarding the focal company but also its customers in downstream of the supply chain. In addition, moving manufacturing to a closer location can create competitive advantage. Reshoring benefits are presented in the Table 2.

Table 2. Reshoring benefits

Reshoring benefits	
Improved supplier commitment and communication	van Weele 2014; Gray et al. 2016; Xie, Liu, Han & Qiu 2022
Reduced inventory levels	Bryson et al. 2021; Tate et al. 2014
Increased supply chain resilience	DeBacker 2016; Seuring et al. 2022; Helmold et al. 2022
Decreased logictics costs	Tate et al. 2014; Seuring et al. 2022
Decreased level of emissions	Gray et al. 2013
Flexible supply chain	Tate et al. 2014; Bryson et al. 2021; Seuring et al. 2022; Xie, Liu, Han & Qiu 2022
Increased level of quality	Theyel et al. 2018; Steven & Britto 2016
Shorter lead time	DeBacker 2016; Seuring et al. 2022; Tate et al. 2014
Increased delivery reliability	Theyel et al. 2018; Eriksson and Jonsson 2009
Increased supply chain control	Wiesmann et al. 2016

Reshoring together with risk identification and assessment are important actions to increase supply chain resilience (Seuring et al. 2022, 1094). By shortening the global supply chain and bringing production closer, the resilience of the supply chain can be increased significantly (DeBacker 2016, 10). By increasing resiliency, supply chain is able to anticipate, manage and prevent supply chain disruptions at an early stage. (Helmold et al. 2022, 131) Hence, reshoring allows focal company to be more flexible and quicker to respond changes in demand (Seuring et al. 2022, 1092; Xie, Liu, Han & Qiu 2022, 2; Tate et al. 2014, 384). Fast response to changes in demand and rapidity to access markets are long-term benefits that can be gained from reshoring. Customers are also willing to pay for faster product availability which can compensate and reduce the impact of higher production/labour costs in nearer locations. (van Hoek & Dobrzykowski 2021, 697)

Therefore, the company is able to increase its competitiveness in a dynamic business environment. (Theyel & Hofmann 2021, 181)

Shortening supply chain through reshoring will shorten transportation distances and therefore also reduce the lead times of purchased items but also the final product. Streamlining the supply chain will also result in decreased logistics costs (Seuring et al. 2022, 1092; Tate et al. 2014, 386). A shorter supply chain benefits the company by giving it the opportunity to reduce inventory levels and simultaneously improve the overall flexibility of the company's supply chain (Bryson et al. 2021, 115). Therefore, inventory levels and working capital are easier manageable as well. Reshoring results in leaner supply chain as well as faster response time. Additionally, end customer closeness is beneficial. This combination saves working capital in inventory as well. (Tate et al. 2014, 384)

Lengthy supply chain also impacts on information as information also must travel long distances besides the physical goods (Wiesmann et al. 2016, 32). By relocating to a nearer location, lead times can be reduced, but also communication between the focal company and other parties involved in the supply chain is simpler and faster (van Weele 2014, 176; Xie, Liu, Han & Qiu 2022, 2). The study of Gray et al. (2017, 40) argues that reshoring decisions have led to increased cooperation and control over suppliers. The study also highlights that supplier commitment as well as communication is more streamlined with more local suppliers. When compared to Chinese suppliers the level of input into supplier relationship can be considered better among nearer suppliers.

As a consequence of long distances, offshoring reduces control over supply chain functions (Wiesmann et al. 2016, 33). The research of Theyel et al. (2018, 305) states that keeping manufacturing close, benefits the company through increased control over the supply. Therefore, also production development is easier and more efficient. Better control over the supply enables the company to achieve more reliable product deliveries. Ensuring product deliveries is one key benefit of reshoring as delivery reliability is important for maintaining good customer relations. Increased control over supply chain can also result in lower costs due to the possibility to managing indirect and directs expenses more effectively when suppliers are closer to the focal company. Besides increased control over supply, reshoring can be considered to increase the control over quality (Xie, Liu, Han & Qiu 2022, 2). Based

on the research of Theyel et al. (2018, 307) companies achieved net gain through reshoring and increased product quality as well as delivery reliability

By reshoring company can benefit from decreased political risks. Offshoring can involve multiple political risks which are aimed to decreased by reshoring and moving to more stable locations (Wiesmann et al. 2016, 32). As many global supply chains are heavily dependent on China (Ash, Kroenig & Schneider-Petsinger 2022, 3) reshoring is a suitable option to reduce the dependency on China (van Hoek & Dobrzykowski 2021, 670) and to mitigate risks related to sourcing from China. Additionally, focal company can differentiate its products by strengthening the brand through producing in high-cost locations. (Wiesmann et al. 2016, 32)

3.3 Drivers and barriers of reshoring

There are multiple reshoring drivers, that support local as well as nearer manufacturing. For instance, earlier mentioned reshoring benefits such as customer closeness, improved quality and increased supply chain flexibility are major drivers for reshoring (Kandil, Hammami & Battaïa 2022, 1). Additionally, Theyel et al. (2018, 301-302) state that quality problems as a consequence of loss of control, inadequate cost savings due to small production batches, importance of goodwill of origin, strong relations with local suppliers and customers, the probability of intellectual property (IP) theft, and support of the national economy are recognized drivers for reshoring, but also support for keeping manufacturing in domestic country.

Many researched drivers of reshoring are usually related to the macro environment of the host country and comparing it to the home country context (Baraldi et al. 2018, 158). Companies are encouraged to reshore through political incentives, to increase local manufacturing (Wiesmann et al. 2016, 32). Government in the United States has utilized tax incentives as an encouragement for businesses to move production back to the home-country (Zhai et al. 2016, 62). Trade tariffs are also a way utilized to maintain production back in home-country and also to accelerate reshoring (Handfield et al. 2020, 1651). Correspondingly, Theyel et al. (2018, 302) state that many European countries as well as the

United States, have utilized administrative protectionism to restrict international trade. This has increased companies' reshoring decisions. Governments in developed countries are using reshoring as a strategy to support manufacturing industries and also to impact positively on economic recession and unemployment (Kim & Chung 2022, 1).

Environmental considerations are recognized to be one driver for reshoring (Handfield et al. 2020, 1651). Increased awareness towards environmental impact and increased focus on sustainability are both factors that indicate that sustainable and environmental values have gained interest amid stakeholders (Wiesmann et al. 2016, 32). Consumers are more aware of sustainability and environmental footprint of the companies. This consumer behaviour will also affect on companies and they are less likely to source from locations with higher pollution. In practise, these higher pollution locations are the offshore locations. (Gray et al 2013, 30) Sourcing from an offshore location makes the supply chain harder to manage from a sustainable point of view as well. Ethical and environmental scandals can have a straight effect on sales of an international company. This sustainability factor has also affected on companies' reshoring decisions. (Orzes & Sarkis 2019, 481) By reshoring and moving manufacturing closer to the focal company, emissions can be decreased as well when the shipping distance is shorter (Gray et al. 2013, 30).

Developed countries have some attractive characteristics, that encourage moving manufacturing to higher cost locations. According to Wiesmann et al. (2016, 32) qualified personnel located in developed countries can act as a major driver of reshoring in order to tackle the quality issues in offshore locations. Correspondingly, there tends to be higher productivity and work morale among employees in nearer locations which can result in decreased direct production costs as well as associated costs including for instance quality costs and employee training. Increased level of automation solutions in developed countries can increase interest towards reshoring or keeping manufacturing in local locations (Arlbjørn & Mikkelsen 2014, 61). Increased degree of automation can reduce the focus on labour cost and makes the manufacturing more feasible in high-cost location as well (Wiesmann et al. 2016, 32). Developed countries continue to grow and simultaneously the demand increases as well. The increased demand can trigger moving manufacturing closer to the so-called demand centres. (Gray et al 2013, 31)

Butt (2021, 389) argue, that companies will experience competitive pressure to increase the level of their production in domestic locations. Similarly, Handfield, Graham & Burns (2020, 1650) state, that instead of seeking for the most low-cost source, managers should guide their interest towards more regional suppliers. Also, Tate et al. (2014, 387) claims that companies should stop chasing the lowest costs from far-off locations and consider the possibility to move away from offshore locations.

In addition to reshoring drivers, Wiesmann et al. (2016, 32) recognized also barriers to implementing reshoring as a sourcing strategy. Strict sustainability-related laws in developed countries, unavailability of raw materials and components, lack of qualified personnel, and reduced flexibility within the labour markets are factors that can act as a barrier for reshoring. Reshoring process may also involve multiple opportunity costs. For instance, whilst labour costs can be higher the logistics costs tend to be lower when moving activities to nearer locations. (van Hoek & Dobrzykowski 2021, 695) Sirilertsuwan, Hjelmgren and Ekwall (2019, 563) recognize these higher production costs as a major barrier to moving manufacturing to a closer location. Also, reconstruction of previously transferred activities to another location can include other major costs. (Cabral et al. 2014, 366)

Due to different reshoring drivers, Hartman et al. (2017, 364) argue, that focus on global offshoring will shift towards nearer locations, from international outsourcing towards reshoring and even insourcing. Figure 4. illustrates the evolution of past outsourcing shift and the anticipated shift of moving manufacturing back to more geographically nearer locations.

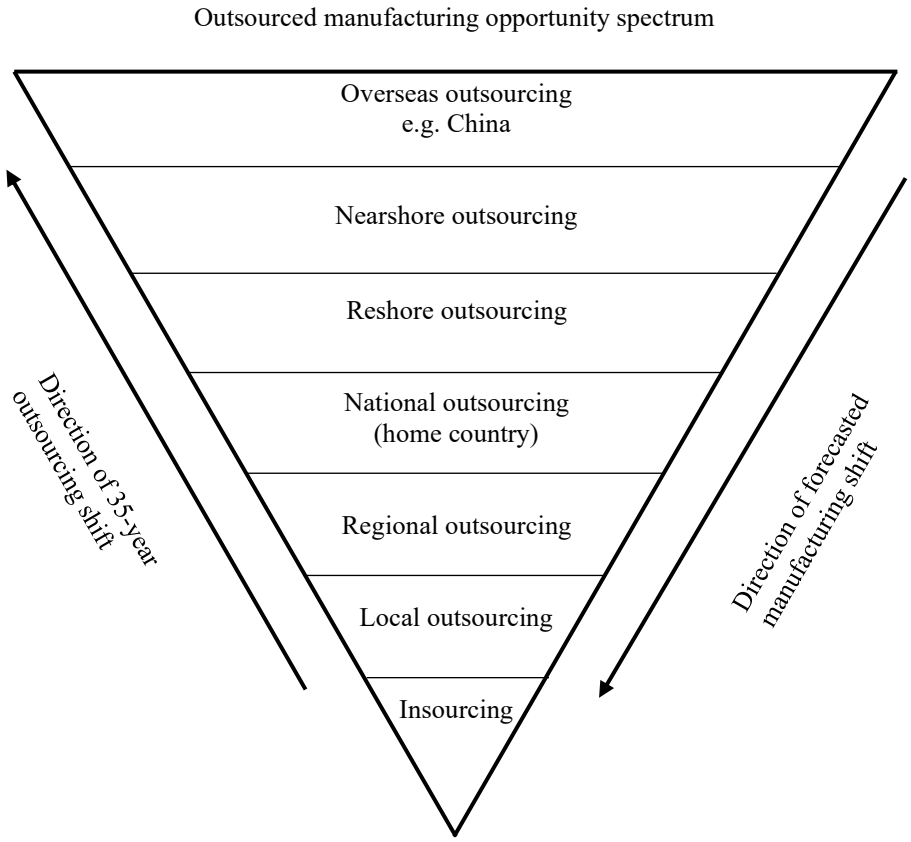

Figure 4. Shift in global outsourcing (adapted from. Hartman et al. 2017, 364)

Cabral et al. (2014, 365). suggest, that three main factors impact on the reshoring decision. Either company has experienced failure in previous outsourcing process, external and environmental changes can trigger reshoring or strategic intents lead to reshoring. Similarly, Fel and Griette (2017, 25) recognize similar reshoring drivers which are: following company's internal strategy, correcting past offshoring mistakes and changed business environment in offshore location. Tate et al. (2014, 386) argue, that reshoring is most probably a suitable option, if a company notices an increased level of offshoring risks which might lead to supply chain disruptions.

3.4 Reshoring as a way to respond global challenges

Global supply chains have experienced major systematic shocks during past years (Mariotti 2022, 768) and the current business environment is comprised of multiple risks due to the pandemic and geopolitical tensions globally. These current global challenges will most probably act as a significant driver for reshoring practices in the future. (Karatzas et al. 2022, 1; Ciravegna and Michailova 2021, 176)

Starting in China in 2020, Covid-19 has created one of the most significant economic shocks after the great depression (Hameiri 2021, 31). The impacts of the pandemic have been more extensive than other types of supply chain disruptions. Covid-19 has had effects on manufacturers as well as service providers (Butt 2021, 371). The pandemic has created a large-scale negative impacts on supply chains that operate globally (Seuring et al. 2022, 1092) causing supply shortages, increased transportation costs, and created delivery challenges for supply from China as well as from other low-cost locations (van Hoek 2020, 2). Covid-19 had major effects on both, supply and demand, which resulted high price volatility of many commodities. In addition, the pandemic had also significant impacts on logistics and global logistics suffered from major disruptions as a consequence of port terminal closures and transportation delays (UNCTAD 2022, 19–20).

Covid 19 has highlighted the vulnerability of global supply chains. Especially companies and supply chains, that have high trade intensity, and are dependent on import and export, are prone to external shocks. (European Union 2021, 7; Seuring et al. 2022, 1091) Thus, the pandemic has emphasized the need for reduced dependency on imported commodities (Ciravegna & Michailova 2021, 176).

Even tough extensive supply disruptions in Chinese supply chains may have been transient, these disruptions highlight the significance of moving from global manufacturing to more local locations to prevent similar risks (Zeng 2021, 28). The pandemic has created multiple global supply chain risks, which have made companies to reconsider reshoring as a way to respond to the increasing risks (van Hoek & Dobrzykowski 2021, 697). Academics argue that Covid-19 will impact on companies' reshoring decisions and reshoring will become a

relevant option when considering the effects of the pandemic (Karatzas et al. 2022, 1). Similarly, Mariotti (2022, 762) states that global value chains can react to shocks by possibly focusing on de-globalisation and regionalisation processes. Ciravegna and Michailova (2021, 176) argue, that Covid-19 kickstarted many protectionist initiatives such as reshoring, but they will be long-term policies. Covid-19 is promoting political pressures to increase manufacturing in developed countries (Ancarani, Di Mauro, Virtanen & You 2021, 1435).

Another significant global shock besides Covid-19, the Russian-Ukrainian war, has created a broad category of business risks globally right after the pandemic. Braun et al. (2023, 2) states, that the ongoing Russian-Ukrainian war has created similar disruptions due to exogenous shocks in global trade as Covid-19. The war in Ukraine has destroyed the infrastructure and stopped transportation comprising international trade. Russia has experienced multiple negative impact from invading to Ukraine. Multiple restrictions and sanctions to restrict international financial operations, control import and export have been set towards Russia. Additionally, many international relationships have been affected due to the war. (Braun et al. 2023, 2)

The Russian-Ukrainian war has already showed its impacts on global growth which has decelerated (UNCTAD 2022, 2) even tough, all of the possible impacts of the war are yet unexplored. Reshoring is recognized as a way to improve resilience, robustness and to face political instability, Covid-19 pandemic as well as the Russian-Ukrainian war (Mariotti 2022, 776). In current geopolitical shifting, reshoring can be considered as an appropriate strategy for mitigating risks related to dependency on suppliers in foreign locations. (UNCTAD 2022, 30) Additionally, the occurrence of natural and man-made shocks affecting global supply chains will probably increase in the future (European Union 2021, 8). This highlights the need for proactive risk mitigation measures.

4 Location and sourcing decisions

This chapter focuses on location and sourcing decisions. First, sourcing related determinants and location decisions are discussed. Then, purchasing portfolio is presented to gain understanding of how different product categories affect sourcing strategies and to recognize product categories with high risk as well as financial impact.

Sourcing-related decisions have a high impact on supply network structure (Fredriksson & Jonsson 2009, 230). Those decisions can be often perceived as operational including multiple essential operative decisions, but the strategic consequences are also significant (Theyel et al. 2018, 301; Larsen 2016, 308), as reorganising the supply chain can move strategic resources to new locations (Karatzas, Ancarani, Fratocchi, Di Stefano & Godsell 2022, 2). Correspondingly, Pietanesi and Arauzo-Carod (2019, 808) state that location decisions create significant structural and strategic changes within the organisation. Additionally, manufacturing location decisions tend to have long-term effect on the competitive advantage as well as profitability of a company (Gylling et al. 2015, 93).

A successful manufacturing location decision requires careful consideration of multiple affecting factors (Tate et al. 2014, 364). Location decisions are often of a complex nature and are challenging as prices as well as availability of raw materials are continuously fluctuating. This also makes the location decisions risky. (Tate et al. 2014, 383) Additionally, manufacturing locations evolve over time which increases the complexity of location related decisions (Lampón & González-Benito 2019, 6270). Manufacturing location decisions should be dependent on the operating environment and the internal factors. As both of these experience changes over time, continuous assessment of location decisions is required. (Theyel & Hofmann 2021, 181) This highlights the need for long-term perspective in manufacturing location decisions. When making decisions, long-term viewpoint needs to be utilized that takes the total costs, life cycle costs as well as risk issues into consideration (Tate et al. 2014, 388). Dekkers (2010, 957) argues, that many companies fail to make an outsourcing decision, and therefore companies should consider carefully before making such strategic decisions.

The location decision should be also assessed based on the company's product portfolio. For example, heavy and large in size as well as difficult to move items are most beneficial to produce in a near location. (Tate et al. 2014, 386). Correspondingly van Hoek and Dobrzykowski (2021, 697) state that heavy and voluminous products are the most favourable to source from near locations as it will result in reduced logistics costs. Characteristics such as product weight, value labour costs as well as logistics costs are interrelated and have a significant impact in location decision making (van Hoek & Dobrzykowski 2021, 695) Available resources and competencies within the company also need to be analysed when making location decisions. Even if the location itself is appropriate it may not be a suitable option if a company is lacking in utilizing certain capabilities and is incompetent to develop them. (Theyel et al. 2018, 300)

Manufacturing locations have differences which are dynamic and important in location decisions (Ellram et al. 2013, 19). According to Zhu et al. (2016, 63) multiple factors affecting the offshoring decision should be considered by the manufacturing company before making location decisions. For example, local labour costs, skills of local workforce, and long-term as well as short-term perspective to trends affecting related criteria. Fredriksson and Jonsson (2009, 229) argue that matching the right product with the right supplier at the right location is essential when creating secure and profitable supply chain. Therefore, specific characteristics of suppliers and locations need to be taken into account when making sourcing decisions.

Companies are somewhat lacking in considering the possible long-term changes and their effects in business environment due to location decisions (Tate et al. 2014, 386). Therefore, a comprehensive risk assessment analysis and adopting a total cost of ownership approach to business function in a certain location will support companies making the suitable sourcing decision (Ellram et al. 2013, 19). According to Song, Platts and Bance (2007, 858) adopting a total cost of ownership model helps to conceptualise all the possible costs of offshore outsourcing. Similarly, Hameiri (2021, 31) highlights, that assessing the cost of relocation of activities is an important part of location decision-making. Based on then study of Tate et al. (2014, 364) for example, labour costs cover only a minor share of the total cost of doing business. If the other manufacturing costs are not competitive or even cheaper, the manufacturing location will not be attractive for the focal company.

Companies can utilize multiple sourcing strategies, for example reshoring, insourcing, offshoring and outsourcing, simultaneously (Foerstl, Kirchoff & Bals 2016, 493). Wiesmann et al. (2017, 16) state that reshoring can occur even if outsourcing and insourcing are occurring simultaneously. Theyel et al. (2018, 303) define simultaneous occurrence of outsourcing and insourcing as hybrid approach to combine both sourcing strategies at the same time. The hybrid approach considers company's component portfolio and suggests, that products that do not require IP production or as much innovation should be produced with lower costs. Other components may be more of a more complex nature, require constant innovation and it is beneficial to integrate them with other functional activities. The hybrid approach gives companies an opportunity to answer customer requirements and demand but also utilize technological innovations. Chakraborty, Chauhan and Ouhimmou (2019, 3619) state that, supply chain disruptions prevent the normal product and material flow within supply chains. Having a back-up supplier for a certain commodity helps to ensure functionality of the supply chain, as stock-outs can be reduced, and negative impacts of disruptions can be mitigated.

The purchasing portfolios emphasizes the fact that not all purchasing categories can be managed similarly (Hesping & Schiele 2016, 101). Purchasing portfolios are used to forming and implementing differentiated purchasing strategies for items with certain characteristics (Gelderman & van Weele 2002, 30). In this context purchasing portfolio is presented to gain understanding around sourcing decisions combined with different item categorisations, and how different item categories should be considered when assessing the best possible purchasing strategy for a certain item category.

Especially Kraljic's purchasing portfolio is strongly linked to making strategic purchasing decisions (Montgomery, Ogden & Boehmke 2018, 201). Kraljic's purchasing portfolio is based on the idea of each supplier is representing different market position reflected to focal company's operations. Therefore, focal company must create individual purchasing strategy for each category to ensure the best outcome of a purchase. (van Weele 2014, 162) Purchasing portfolio can be utilized to create the most successful supply strategies regarding individual item characteristics and to minimize supply vulnerability (Kraljic 1983, 112).

Additionally, Gelderman and van Weele (2002, 30) note that an individual supplier approach is needed for each item category.

Kraljic's purchasing portfolio is based on two variables: financial impact of a purchase and supply risk. The financial impact is measured based on material costs, total costs and purchasing volume. Alternatively, financial impact can be assessed by determining impact on product quality. In this context supply risk refers to, for instance, short-term and long-term product availability, the number of potential suppliers, geographic distance, risks related to inventory and supply market structure. (van Weele 2014, 163) Based on a certain commodity's purchasing volume, purchasing costs, or impact of product quality and supply risk, four categories can be identified. Products can be categorised into strategic, bottleneck, leverage, and non-critical. (Kraljic 1983, 113) The purchasing matrix is presented in Figure 5.

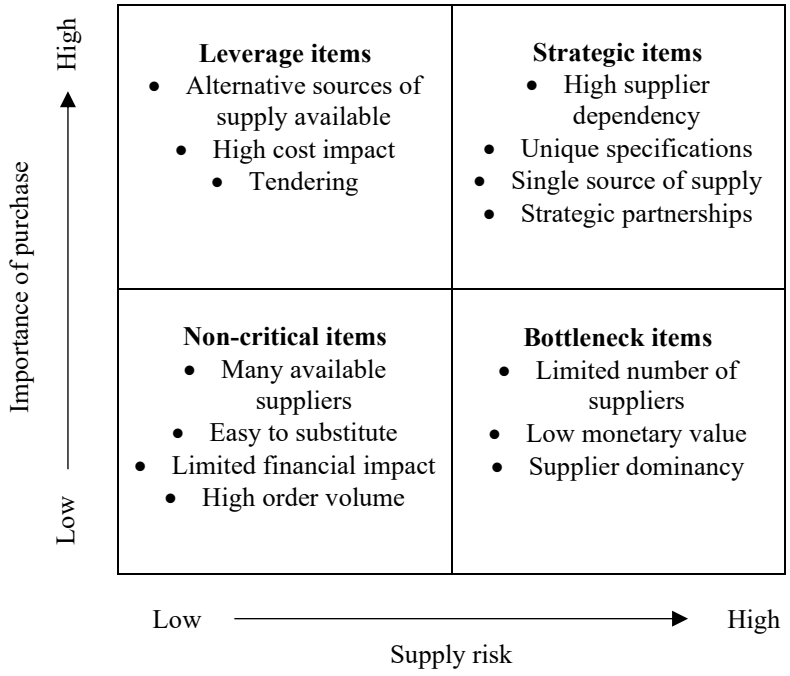

Figure 5 Kraljic's purchasing portfolio (adapted from. Kraljic 1983, van Weele 2014, Gelderman & van Weele 2002)

The categorisation according to purchasing portfolio provides recommendations on how to manage different categories and therefore to maximize purchasing performance. Some of the item categories require higher level of coordination due to increased risks and financial impact whereas some items are easier to manage. (Hesping & Schiele 2016, 111) According to Kraljic (1983, 112) making sourcing decisions for each category requires decision making from different levels within the organization. For instance, decisions related to strategic items requires input from top level management, for example, vice president, whereas purchasing decisions of non-critical items can be made at a lower level, for example, by buyers.

5 Research methodology

This chapter presents the research methodology of this study and the justification of selected methods. Firstly, qualitative approach to case study design is presented. Then data collection in the form of interviews is discussed. Among data analysis methods, thematic analysis was chosen to analyse the data of this study. Thematic analysis as a data analysis method is further evaluated in this chapter. Figure 6 presents the empirical research process of this study.

Figure 6. Methodology process

This chapter focuses on discussing and justifying the selected research approach for this study. The findings based on the data collection and analysis are presented in next chapter, chapter 6.

5.1 Qualitative case study

The empirical part is conducted as a qualitative case study. According to Seuring (2008, 135), case studies are a common form of research in the field of supply chain management. Qualitative research benefits the outcome of the research by aiming to offer a holistic understanding of the research issue (Eriksson & Kovalainen 2008, 5). On the contrary, quantitative research is often based on numbers and the systematic, as well as the statistical, connection of numbers (Alasuutari 2011).

This thesis is conducted as a case study of a case company. According to Eriksson and Kovalainen (2008, 116) using case study research allows one to present complex and hard-to-grasp research issues in a practical form. According to Kähkönen (2011, 33), this combination of case study used together with interviewing has multiple benefits regarding the outcome of the research. Case design can help to gain a thorough conception and particular understanding of the researched phenomenon, which is usually contemporary (Farquhar 2012; Kähkönen 2011, 33). Single or multiple units can be researched by using case research (Farquhar 2012). However, single case study provides an increased opportunity for in-depth observations (Voss, Tsikriktsis & Frohlich 2002, 201).

The case for this study is selected from multinational manufacturing company operating in the technology industry. The company has globally dispersed supply chain which sets its own limitations for company's operations. The aim of the study is to map the risks and costs related to a long supply chain and buying parts from far off supplier. Simultaneously, the study aims to consider moving supply to closer locations and map the possible benefits of making such location decision.

As the aim of this thesis is to study the subject comprehensively and gain deep understanding around the research questions in case context, qualitative case study was chosen as research methodology. Qualitative study is appropriate method because it can be utilized to gain in-depth analyses (Farquhar 2012, 72). Correspondingly, case study design supports the in-depth analyses and provides specific viewpoint regarding the researched subject.

5.2 Data collection

Farquhar (2012, 68) presents three main data collection methods for case study research which are surveys, interviews and observations. Correspondingly, Sarajärvi & Tuomi (2018) state, that the most commonly used qualitative data collection methods are interview, survey, observation and documents. This study utilizes interviews as a primary data collection method. Employees with different relevant working backgrounds are selected to be interviewed to provide a more extensive understanding of the subject. Using primary data can create new insight into the research by simultaneously utilizing fresh data (Farquhar

2012, 68). Besides using interviews as a data collection method, secondary data collection methods are utilized to support collecting relevant data. Internal company data as well as participant observation are used as secondary data.

The interviewees were based on relevant professional background related to the studied subject to gain both strategic and operative perspective to the subject, people with different backgrounds were chosen to be interviewed. In total of five employees were interviewed. The respondents and their background are presented in Table 3.

Table 3. Interviewees

Identification	**Title**
Interviewee 1	Purchasing Project Manager
Interviewee 2	Strategic Buyer
Interviewee 3	Sourcing Project Manager
Interviewee 4	Tactical Buyer
Interviewee 5	Supply Chain Manager

Interviews were conducted as semi-structured interviews. Semi structured interviews allowed interviews to be more flexible (Farquhar 2012, 73). Open-ended questions were used in the interview process. Interview questions were formed based on theoretical framework of the subject as well as the aim of the study. Question forms were shared with the interviewees beforehand. Interviews took place in April and May 2024 and were conducted in Microsoft Teams or in person. Interviews were recorded with interviewees' permission and then transcribed into text format. The Interview questions can be found in appendices (Appendix 1).

5.3 Data analysis

To analyse the data of this study, thematic analysis was utilized. According to Clarke and Braun (2017, 297) thematic analysis is a flexible data analysis method to recognize themes from the qualitative data. Recognizing the themes provide structure for the study by organizing the observations formed based on the research findings. Thematic analysis can be used broadly in qualitative research regardless of the research question, sample size or data collection method. Thematic analysis can be considered as an effective approach for analysing data. It is a good method for summarizing, recognize the main elements and process extensive amount of data. (Kiger & Varpio 2020, 853) For this study thematic analysis was selected due to its flexibility and its ability to identify participants' viewpoints and perspectives (Clarke & Braun 2017, 297).

In this study thematic analysis process is utilized, that is originally presented by Clarke and Braun (2006). They have identified a six-step process to guide the thematic analysis. Firstly, the recorded interviews were transcribed. Transcribing the verbal data can be perceived as a great way of getting familiar with the research data (Braun & Clarke 2006, 88). After getting familiar with the data through transcribing, the data was organized by coding. Next, among codes, themes were found. Themes represent a broader significance (Kiger & Varpio 2020, 307). In next steps themes are reviewed and named. During these steps the relevancy and the connection between themes is reviewed. After, the themes were named. (Braun & Clarke 2006, 91-92) Lastly, the report is written based on the thematic analysis.

6 Findings

This part of the study presents the findings and results constructed based on interviews and observations. This chapter focuses only on findings based on the study and does not take existing literature or previous research of the subject into account. The connection between previous research and this study is discussed in the following chapter.

Currently case company uses suppliers located in offshore locations as a single-source supplier for many components. Aa a result, the supply chain has become considerably long and complex including many countries and continents. Thus, current supply chain model is prone to vulnerabilities and is lacking resilience to respond sudden changes. Majority of the components, that are offshored, are made by company specifications and not stock parts which sets its limits to supplier availability and increases supplier dependency. For offshoring, China is a leading location for the company. Additionally, other countries in Asia are popular offshoring sources.

6.1 Offshoring motives

Based on the interviews, in highly competitive markets, such as the company's own business environment, the biggest motive for offshoring is maintaining the competitive advantage through lower costs in offshore locations. Labor costs in Asia are significantly lower than in Europe and that has acted as a major driver for offshoring to offshore locations. Therefore, China and other countries located in Far East are still key countries for offshoring to maintain lower purchasing costs. Besides low costs, raw material availability was another key motive for offshoring recognized in the interviews. Many of the main raw material sources are located in Asia. For some products, China is the main source of raw material. Those products are the most cost efficient to produce close to the raw material source. Long distance to raw material supply would be also very visible in the purchasing price and thus closeness to raw materials impacts positively on final purchasing prices. Some products are only manufactured in offshore locations which has led to utilizing suppliers that are located far. Overall, the supplier availability can be considered to be better in offshore locations in Asia.

It was also stated among the respondents, that it is unlikely that offshore suppliers have a monopoly status that is impacting the sourcing decisions. If the available suppliers have the same characteristics, the purchasing price is often the leading factor when making sourcing decisions.

> *Interviewee 2: "Lower prices and cost savings are the main motives for offshoring."*

> *Interviewee 1: "The closeness of materials and raw materials is very visible on the purchasing price."*

Additionally, one major motive for offshoring was recognized to be available supplier capacity in far-off countries. Typically, suppliers located in low-cost regions have more available capacity than supplier locates in nearer location, for example, within Europe and in Finland. The suppliers are bigger in size in offshore locations which can result in more capacity and available workforce. Availability of capacity impacts on manufacturing lead times and suppliers' ability to react changes in demand in shorter timeframe. Currently, for example, Chinese suppliers have been able to respond company's demand without any problems as the demand is still relatively small. The available capacity is supporting company's growth and has acted as a key motive of using an offshore supplier.

6.2 Offshoring challenges

It was noted among respondents that long supply chains including offshore suppliers have specific challenges regarding managing the supply chain and ensuring successful outcome. It was considered that managing long supply chain includes increased number of risks because in case of long supply chain there is a higher chance to something happening on the way within different countries. Overall, the long supply chain is also perceived to be slow compared to rapid business environment. Additionally, specific offshore locations have negative characteristics that increases the risks' probability.

> *Interviewee 5: "More risks and uncertainty occur the longer the distance is within supply chain."*

Some offshore locations noted to have negative characteristics that impact on managing long supply chains. Currently offshore locations such as China are associated with location specific risks due to political instability. Political instability could lead for example to trade restrictions in the form of increased import duties. One takeaway from the interviews was that the risk of intellectual property (IP) leakage is bigger in low-cost countries. Some critical components including product specifications and designs are manufactured in offshore locations. Some offshore locations can be unreliable and the probability of losing sensitive information can increase. The risk for IP leakage was seen to be bigger the longer the distance becomes. IP leakages can have major negative effect on the company if sensitive information of the products or company gets leaked.

> *Interviewee 3: "There are geographical risks related to offshoring. Offshore locations can be unreliable and there is higher risk for losing intellectual property."*

It was highlighted that offshoring requires big order volumes to keep purchasing and logistics costs on a reasonable level. Besides cost efficiency, also suppliers' motivation against the focal company is more likely higher and cooperation easier, if a bigger share of the supplier's turnover is covered through big order batches and purchasing volumes. However, big order volumes can increase the financial risk for the company by tying working capital into purchase orders.

> *Interviewee 5: "To optimize the transportation and manufacturing costs, big order batches are needed when purchasing from offshore locations. However, big order batches include the risk having high inventory and the risk of not being able to sell the existing inventory."*

Supplier responsiveness for suppliers in far-off locations was considered to be worse than for suppliers located in nearer locations. Especially difficulties in communication,

cooperation, willingness to respond requests was viewed to be harder with offshore suppliers. Additionally, as the company's demand is still relatively small compared to big markets in Asia, that might impact negatively on far-off suppliers' interest to respond the company's requests as the sales are not that big. On the contrary, cooperation with nearer suppliers was considered to be more streamlined and easier.

For some items, the offshore suppliers are the only supplier and there is no possible substitute either in near location or overall. This single sourcing with offshore supplier was considered to be very challenging based on the interviews. If offshore supplier fails to deliver, finding alternative solution might be very difficult or undoable. This can lead to stockouts and negative impacts on production. Additionally, looking for a substitute source for a certain component can lead to extra costs.

> *Interviewee 4: "If there is only one supplier for a certain component, in the situation of supplier failure, the impacts are extensive."*

Interviews emphasized that challenges with far-off supplier are usually not supplier originated. The difficulties are often more related on how the company is able to manage its upstream supply chain including offshore suppliers as well as external challenges. Based on responds, supply chain management could be better to increase the resilience of the upstream supply chain. Based on the interviews, forecasting was emphasized to be the main internal challenge, that can have an impact on upstream supply chain. Forecast accuracy can be poor due to changes in customer demand. Additionally forecasts itself does not commit the supplier to, for example, reserve the needed capacity. Poor accuracy of forecasts can also lead to suppliers' perceiving the focal company as unreliable. Especially forecasting components with long lead times was considered challenging. When forecasting these items customers' forecasts can fluctuate which can create even a bullwhip effect.

> *Interviewee 1: "Poor accuracy of forecasts creates a bullwhip effect and impacts upstream supply chain intensively."*

Long lead times in general impact on production planning negatively. One of the key issues of offshoring is that upstream supply chains including offshore supplier are not able to

answer sudden changes in demand as a consequence of various factors that create unreliability across the supply chain. Thus, production planning becomes hard if there is no reliability, that the components will arrive to the warehouse on time. Additionally, rescheduling the production was seen as a significant factor in supply chain performance. Rescheduling can be seen in supply chain context as advanced need for certain components. In these cases, suppliers must reorganize their production to meet the changed demand. Due to long lead times the supply chain cannot respond to sudden shifts in demand rapidly. Besides production lead time, long transit times are challenging in cases of advanced need for offshore components.

Interviewee 3: "Offshoring does not allow rapid changes in demand."

The interviews highlighted logistics as a significant risk of offshoring. As the physical distance and lead time are long, supply chain is prone especially for logistical challenges along the way. Sea freight is mostly utilized transportation method for components coming from offshore suppliers. Sea freight is mostly used due to product specifics. Volumes for offshored products are high and they can be considered as heavy-weight products. The volume and weight have a significant impact on freight costs and thus sea freight is the most cost-efficient option. Still, logistics costs cover a major share of total acquisition cost. However, as a freight mode, sea freight can be perceived as very slow and unreliable. Additionally, offshoring from locations in different continents include handling with customs as goods need to be imported from third countries. Customs process can prolong the transit time even more. Also, delays in customs handling are hard to predict. As transportation distances are long, the number of countries, that goods pass on the way, increases. This increases the probability of disruptions due to country-related regulations or restrictions.

Interviewee 2: "As distances and lead times are longer, there is a higher probability that something might happen along the way."

The amount of goods handling increases the longer the transportation route is and in cases of multimodal transportation. Transportation methods can include many offloading and reloading within the transit from supplier to focal company. As goods ae handled more, they

can be more easily damaged which can lead to monetary losses but also need for replacement parts.

Interviews emphasized, that different past global challenges have highlighted the vulnerability of a long supply chain also in the case company context. The effects of global challenges have impacted heavily especially on global logistics creating variety of delivery problems. Additionally, offshore locations had some restrictions due to global challenges that complicated the risk mitigation. The pandemic impacted global logistics and created multiple delivery problems due to long transit times and routes. The company has suffered longer delivery times as well as higher logistics costs as a consequence of the pandemic and disruptions in global logistics. Before Covid-19, the company was able to utilize different logistics routes which were faster and more cost efficient. During global challenges freight forwarders' delivery reliability has decreased and schedules have become inaccurate and hard to forecast. Most previously the geopolitical situation in Gaza has prolonged the transit times even more causing delivery difficulties among many different components. Delivery reliability challenges in logistics create challenges for estimating component arrival to production.

> *Interviewee 4: "Before geopolitical conflicts in Europe, we had a fast route from China to Finland. After restrictions we had to shift to sea freight which slowed down transit times significantly."*

During Covid-19, especially Chinese suppliers faced delivery difficulties due to global lockdowns. This made it difficult to manage supply chains including Chinese suppliers due to the uncertainty. Chinese lockdowns impacted heavily on supplier's production and thus the availability of components. Additionally, Covid-19 highlighted the issues related to single suppliers. Supplier failures due to lockdowns had extensive impacts on the company as a consequence of single source approach.

Besides logistics costs, different global external shocks have impacted on energy and raw material prices. As the prices of energy and raw materials increased, the purchasing costs increased simultaneously. However, these increases in prices were not bound to location but were more global issues. Past global challenges have also created trade restrictions. Those

restrictions have impacted on raw material availability and thus also increased prices. The Ukrainian-Russian war has also impacted on suppliers located in Eastern Europe. Many components require manual workforce and due to war, the availability of workforce has decreased in certain areas during the geopolitical conflict.

Latest external shocks have increased global logistics lead times substantially and created a need for alternative transportation solutions. As a consequence of the geopolitical situation in Gaza, sea transportation times have increased even more as routes have changed. Sudden shift in geographical limitations in global logistics has led to freight forwarders' capacity constraints and rise in freight rates. These suddenly increased logistics costs are hard to predict and therefore avoided. Global geopolitical issues have resulted in changes is logistics routes and increased logistics related costs. Logistics costs have increased due to demand increase and decreased freight forwarders' capacity.

As a consequence of route changes and delays in global logistics, alternative transportation modes have to be used. Also, slowness of sea freight has forced to choose other transportation methods. In these cases, air freight is needed to compensate for long transit time by sea. For instance, demand fluctuations have caused need for air freight to prevent stockouts and therefore increase in overall acquisition costs. Additionally, sudden changes in global sea logistics have increased the need for air freight due to longer transit time by sea. Air freight was seen as bad transportation mode due to its very high price point and negative impact on sustainability.

> *Interviewee 2: "Air freight can be used to compensate the long transit time, but it will reverse the cost savings gained from using suppliers in low-cost countries."*

> *Interviewee 4: "After adding air freight costs, the component quickly becomes as expensive as when purchased from closer location."*

It was noted that slowness of the long supply chain impacts negatively on company's processes. Based on the interviews, the company is rapidly growing, and product designs are constantly developed with the suppliers. Design changes in product development process

can require multiple samples. Slowness of the supply chain as a consequence of long distances and transit times, impacts on product development projects negatively as transits alone take a lot of time. The slowness of offshoring supply chain also sets its limitations to revision changes of the products. In some cases, as the product is leaving from offshore supplier it is the correct revision but as it arrives to production, the revision is already changed.

Offshore locations as major raw material sources have created complexity through supply chains. Many of the sub-suppliers might locate in offshore locations which includes the same risks of long distances and lead times. This complexity due to many tier supply chains increases the risks in different parts of the supply chain. Thus, from risk management perspective, it becomes hard to estimate the final impact on the focal company. It was highlighted, that understanding the complex supply chains including multiple tiers and sub-suppliers is important to estimate the impacts of such supply chains.

Based on the interviews, currently the upstream supply chain including far-off supplier is not very resilient to respond external or internal changes. The issues with global logistics have decreased the level of resiliency significantly. Additionally, complexity of the upstream supply chain has impacted negatively on supply chain's ability to recover, for example, from global challenges. The lack of supply chain resilience can be seen as a negative factor regarding the company's ability to meet customer demand. Delivery dates become harder to estimate and possible risks are more difficult to avoid. In cases of failing to meet customer's delivery schedules, the company's delivery reliability suffers. Thus, the lack of supply chain resiliency can have extensive impacts on company performance overall.

> *Interviewee 4: Delivery difficulties due to complex supply chain impacts negatively on our reliability towards customers.*

However, some interviewees thought that supply chain resilience is considerably on a good level due to overall order volumes being relatively low. As volumes for products purchased from far-off suppliers are relatively low, the probability for major internal crises is similarly quite low. If volumes were bigger and incoming product flow were constant, there would be

a higher probability of immediate impacts for company's operations. Table 4 presents the offshoring related risks based on the data collection.

Table 4. Offshoring risks in case company context.

Offshoring risks
Political instability in offshore locations
Increased intellectual property risk
Financial risks due to increased inventory and order batch sizes
Decreased delivery reliability
Need for advanced supply management
Decreased supplier responsiveness and commitment
Long lead times
High logistics costs
Reduced supply chain flexibility
High supplier dependency for single suppliers
Complex supply chain
Slow product development

Interviews noted that offshoring includes multiple negative effects on the company increasing the resource intensiveness associated with working long supply chains. The risks of offshoring can be seen in multiple parts of company's operations, impacting also on delivery reliability towards customers. In addition, additional costs due to offshoring risks or failures in the supply chain impact on profitability of the supply chain structure.

6.3 Offshoring risk management

One of the key findings based on interviews is that offshoring related risks are mapped and managed reactively more than proactively. One reason for reactivity was said to be stability of far-off suppliers. Many suppliers located in distant locations have very stabilized practises that create a sense of reliability. To some extend reactivity is because of some problems as a consequence of long supply chain are very hard to predict beforehand. It was stated in the interviews that risk management becomes more difficult and complex as the distance between the supplier and company increases.

Based on interviews, risks related to offshoring are mitigated through different methods. The methods include ways to mitigate the impacts due to long distances and also ways to ensure desired supplier performance. As a one risk management method, safety stocks were recognized from the interviews. Safety stocks are set for the parts that are purchased from offshore suppliers to mitigate the risks of the long supply chain. For example, in a case of sea freight delay, safety stocks prevent stockouts and negative impacts on production. However, safety stocks were considered to have negative effects as they increase inventory levels and working capital tied to inventory. Additionally, make to order parts have limitations in safety stocking. There is a risk that inventory will not be sold due to complexity and different variations on parts.

Supplier contracts are used to ensure a certain level of supplier performance and good practices with suppliers in offshore locations. For some far-off suppliers operational and service level contracts are utilized to compensate and decrease the impact of long lead times. Supplier safety stocks are determined in the contracts, and suppliers are obligated to maintain a certain level of safety stocks at their premises. Thus, in case of a sudden change in focal company’s demand, components can be dispatched straight from suppliers' warehouse and lead time can be shortened only to transit time. Even though the goods are ready to be dispatched from suppliers’ premises, in some cases it is still too slow option because transit time is considerably long from offshore locations. In these cases, express freight might be still needed to prevent impacts on production. Using, for instance, air freight becomes very expensive for the company. Instead of storing items in offshore location, using intermediate

warehouse in Europe or in home country was seen to be a more advantageous option. Thus, transportation lead time would be reduced significantly. Additionally, supplier contracts can be also viewed as a risk mitigation way to manage financial risks due to material or energy cost fluctuations.

> *Interviewee 1: "For some offshore supplier, there are certain agreed safety stock levels at supplier premises. However, if customers' demand changes rapidly, getting material to production is still too slow or very expensive."*

> *Interviewee 3: "Supplier contracts have a big impact on how price increases affect on the company and how additional expenses are dispersed across the supply chain partners."*

Based on the interviews, reduction of supplier base could be one way to mitigate risks. As a result of supplier base reduction, supplier related risks could be decreased as the number of suppliers would be lower. It was also considered that lower number of suppliers would improve supplier relationships. In addition, one risk mitigation method was considered to be keeping the system up to date. Updating the system with correct lead time information and stock levels is important from the risk management viewpoint as well. Thus, information in the system is correct and decisions made according to system are more likely accurate. Even tough component come through longer distance and the lead time is long, they are ordered in time as the system triggers the purchasing requisition on time. Therefore, system timeliness is a significant factor whether the components are ordered in time.

> *Interviewee 2: "By having correct and up to date information in the system, the components have all of the needed premises to be ordered and reach our plant in time."*

Risks are aimed to be mitigated proactively by implementing capacity analyses for offshore suppliers. Currently the business is growing, and capacity analyses are utilized to examine suppliers' capabilities to answer possible increase in future demand. Thus, suppliers' limits and constraints with capacity can be recognized in early stages. Forecasting for suppliers is used as one way of risk management. Forecasts are sent to supplier to reserve capacity and

to give supplier opportunity to plan according to the company's future needs. However, forecasting as a risk management method can be seen a bit ineffective as forecasts itself do not obligate suppliers to actions. Additionally, forecasts are made based on customer demand and that can fluctuate quite heavily. This demand fluctuation makes it hard for forecasts to be accurate.

It was mentioned that it is mainly dependent on the company itself, how well it is able to manage its long supply chain. Generally, suppliers in offshore locations have a good ability to answer the demand and supplier-related risk factors are more a consequence of inadequate supply chain management. By ordering the goods on time and maintaining good communication between the focal company and its suppliers many, suppliers-based risks can be avoided. On the contrary, external challenges targeting to supply chain are hard to predict and avoided.

6.4 Reshoring opportunities

Based on the interviews the biggest benefit of reshoring would be lead time reduction and increased flexibility. The reduced lead time would benefit the company from multiple different viewpoints. Overall, the supply chain would become quicker to react on changes. Increased flexibility can also be seen to benefit sales as the company's supply chain would be better to respond customers' demand.

Risk management was considered as a one potential driver for reshoring in company context. Reduced lead time and distances would benefit from risk management perspective. Number of potential risks as a consequence of long lead times and distances could be decreased by using suppliers within the home country or in nearer location. Long distances within supply chain involve multiple risks in global logistics due to unreliability and including multiple countries in logistics routes. Through reshoring, many of these risks could be mitigated by shortening the distance goods have to travel. In addition, offshoring locations have some location specific negative characteristics. By reshoring, those risks could be avoided by moving to more stable areas.

> *Interviewee 4: "Reshoring would benefit us through flexibility and being able to react faster."*
>
> *Interviewee 5: "Increased flexibility from reshoring could even bring us more sales because the material availability is better."*

It was noted that, processes such as product development are more streamlined and efficient when the supply chain distances are shorter. Product development process can be resource intensive, and it would be beneficial to visit suppliers to deepen the understanding around products and processes. When the distance is shorter, visits can be carried out within a shorter time frame and lower costs. Thus, the supplier closeness would support in making the processes more cost efficient and thorough.

Some interviewees emphasized that supplier relationships are easier to maintain when supplier is located closer. Thus, visiting the supplier is easier and cheaper when supplier is located closer to the focal company. Supplier visits can be perceived as a good way to upkeep good supplier relationship. In problem situations with the supplier, good supplier relationship can be considered as a key factor to solve the challenging situation. Consequently, travelling costs to suppliers would decrease when the supplier is closer to the company. Supplier closeness was seen to significantly improve the overall collaboration with suppliers.

> *Interviewee 1: "Generally building up supplier relationship has always a positive impact on service and problem solving. Good supplier relationships, proactive way of working and transparency are things that need to be considered in this kind of business."*

Interviewees recognized the difference between more local suppliers and offshore supplier from the supplier relationship point of view. With far-off suppliers it was perceived harder to build deeper supplier relationship than with closer suppliers. Interviewees noted that communication with suppliers closer to own culture is easier. Also, doing business in native language with suppliers located closer was seen as an advantage regarding the supplier relationship. With offshore suppliers the nature of the supplier relationship was perceived to

be more formal than close partnership. Additionally, big companies in offshoring locations have different organization structure than in smaller companies located in closer locations. With big organizations, operating might be perceived to be more bureaucratic which sets its limitations to cooperation.

Interviews highlighted the fact that usually supplier located in nearer locations are also more committed to focal company. Same notion is with smaller suppliers, which tend to locate in nearer locations. On the contrary, supplier commitment with companies located in offshore locations can be perceived to not meet the same level. Offshoring suppliers are also usually bigger in size compared to the focal company itself which can impact on the motivation towards smaller companies. It was also seen that negotiation and ability to solve problems is easier with supplier located in nearer location than with offshore suppliers. Closer suppliers would increase the transparency within the supply chain. When suppliers are closer to the focal company, the company has better conception what is happening at supplier premises. This is resulted from easier supplier visits as well as auditions and better supplier relationship with closer suppliers.

Supplier closeness would enable the company to decrease its safety stocks held at company premises. As a consequence of shorter lead time and increased resiliency as well as flexibility, safety stocks due to long transit times could be decreased. Smaller safety stocks would benefit the company but the supplier as well. By decreasing the safety stocks working capital tied to inventory would decrease. Additionally, order batch sizes could be decreased which would reduce the financial risks. This would be resulted due to not needing to optimize logistics costs and manufacturing batches in offshore locations by high order volumes. Possible reshoring benefits and drivers are presented in Table 5.

Table 5. Reshoring benefits and drivers in case company context

Reshoring drivers
Shift in international supply chains
Political instability in offshoring locations
Competitive advantage through sustainability
Intellectual property risk
Reshoring benefits
Improved supply chain risk management
Quicker and agile supply chain
Improved supplier relationship and better supplier commitment
Reduced financial risks as a result of decreased inventory and smaller order batches
Increased supply chain transparency
Favourable country of origin

Political incentives were seen as a on possible driver for reshoring. For example, international relations can impact heavily on importing from China. Thus, possible increased import duties can be set to restrict the volumes imported from Fareast. Currently China can be viewed as unreliable source due to country's political instability and therefore possible restrictions on international trade could be seen as driver for reshoring. Correspondingly, the current complex international business environment impacts on other locations' stability as well. Thus, by moving to more stable locations, high risks due to political instability could be avoided or mitigated.

Based on the interviews one significant driver for reshoring would be increasing sustainability and reducing emissions by moving to closer location. Shorter distances and reduced need for different transportation modes would decrease emissions as a result of shorter logistics distances. Especially emissions due to transporting big volumes and heavy

items would decrease significantly. Sustainability through reshoring would acts as a competitive advantage for the company to differentiate from the markets with more sustainable end products. Green values were considered to impact as a reshoring driver through customer base due to the fact that the company's customer base includes industries that are driven by green transition. Customers want to focus on sustainability and the origin of the components. Thus, moving to closer areas would also benefit the country-of-origin label. However, customers should value sustainable products enough as price point would also be probably higher.

> *Interviewee 1: "We are involved in carbon neutral business. It is an important point to support closer and home markets to make the final product as green as possible."*

6.5 Reshoring barriers

The first and the most significant barrier for reshoring among interviewees was considered to be higher costs in nearer locations. For example, Europe is known to have higher labour costs which will be visible in the purchase price. Higher purchasing price would impact negatively on company's competitiveness due to higher acquisition costs of reshored component.

> *Interviewee 1: "The only barrier for reshoring would be losing competitiveness through purchasing price. I don't see any other reason."*

> *Interviewee 3: "Labor costs in Europe are significantly higher, there is no way around it."*

Supplier capacity was considered as one barrier for reshoring. Available capacity of suppliers located in closer locations, such as in Europe and home country, can be lower compared to offshoring locations. As the business is growing, less supplier capacity could be seen to restrict growth. However, the possible lack of capacity is not a significant obstacle

for reshoring at the moment, as company's demand is still comparatively low. The generally smaller company sizes in nearer locations also impacts on how well the suppliers are able to respond the company demand and the possible changes in it. Thus, suppliers' flexibility in closer locations can be relatively lower.

As a one barrier it was mentioned that it is unlikely that the company would reshore unless there occur a major issue with existing supplier in far-off location or a big global event. Something would need to change permanently in the supply chain structure to guide the interest more towards reshoring. For example, previous global challenges are perceived more as transilient and the impacts of those have not been that major having long-term negative effects on the company. Additionally, it was highlighted that even when utilizing closer locations, supply chains are still prone to different risks.

> *Interviewee 2: "Long distance is more of a conception that anything can happen. But that can also be the case within shorter distances."*

6.6 Sourcing decision making

To recognize the process of sourcing decision making in the company, interviewees were asked sourcing related questions. Based on responds, sourcing decisions such as reshoring or offshoring are complex in company context and involve multiple steps and people. Sourcing decisions are heavily driven by costs and aiming for cost reductions. Consequently, cost reductions guide the interest towards low-cost locations which are usually located in offshore countries. In addition to costs, supply chain changes are assessed from other perspectives as well, such as risk management. Additionally, available supplier capacity was considered as major factor in sourcing decision as available supplier capacity ensures better success factors for supply chain performance. Overall, the supplier selection process is quite strict, and suppliers are evaluated through certifications, supplier capabilities, reliability and quality.

> *Interviewee 1: "I would say that the first things impacting decision making are price and availability. Especially price."*

> *Interviewee 5: "Purchasing and warehousing costs are the most significant costs for the company. That is why the importance of decisions related to those is major."*

Based on interviews sourcing decisions are aimed to be proactive in nature. For example, earlier mentioned capacity analyses are used to map the supplier capabilities, and if needed to start finding new suppliers with better ability to respond the demand. However, some factors have led to part of the sourcing decisions to be reactive. In some cases, something unexpected can happen that leads to making new sourcing related decisions reactively. For example, rapid changes in demand or sudden supplier related risks can lead to reactive sourcing decision. However, it was stated that within the company sourcing related decisions are considered as slow, taking approximately over a year. The slowness of decisions can be seen to have negative impacts on operations in some cases if the sourcing decision is not able to compensate the supply chain related problem rapidly enough.

Sourcing related decisions were seen to have significant impacts within the company and its supply chain. Thus, it was also stated that sourcing strategies need to be aligned with overall strategy. As purchasing related costs cover majority of the company's cost structure, cost savings can be achieved by implementing successful sourcing strategies and assessing them regularly. It was also mentioned that if previously implemented strategy does not work as intended, the company need to be willing to modify the strategy to better answer the needs and to complement the overall strategy.

> *Interviewee 5: "The sourcing strategies need to be assessed. Strategies also need to be changed if they are not working as intended."*

Sourcing related major strategic decisions are made in top management. Top management decisions process sets its limits to dynamic business environment as decisions are quite slow. Generally, in sourcing decisions, multiple different viewpoints are taken into account such as sales, R&D and production. However, some interviewees would see beneficial to include,

for example, buyers to sourcing related decision making as adviser since buyers are the first point of contact to suppliers and have good overview on supplier operations and responsiveness.

> *Interviewee 3: "After all, sourcing covers managing the whole supply chain and the surrounding value chain."*

7 Discussion and conclusions

This chapter consists of discussion between findings based on data collection and existing academic literature. The results of this study are compared to previous research of the subject. Additionally, research questions of this study are answered within the chapter. In the end of this chapter, concepts of reliability and validity are assessed in the context of this study. Lastly, limitations and future research on the subject are discussed.

7.1 Key findings

This thesis continued to deepen understanding around reshoring motives and sourcing as well as location decisions. The findings emphasized that sourcing decisions are heavily driven by gaining cost reductions through offshore low-cost locations and thus maintaining competitiveness in highly competitive markets. However, it was recognized that offshoring can include extra costs which are not necessarily considered when making the initial offshoring decisions. This implies that companies focus more on lower labour costs and do not go beyond them to analyse the total cost of acquisition costs. Thus, total cost can rise higher and reverse the expected cost savings. Correspondingly, the research of Gray et al. (2013, 30) argues that offshoring decisions are often made based on measurable costs, which leads to many of the other factors being unnoticed.

The study results highlighted that long supply chain is prone especially for external challenges. The number of possible risks was considered to increase the longer the distance is between the focal company and its suppliers. Similarly, Fjellstrom et al. (2019, 279) state that global sourcing is comprised of multiple risks and the probability increases with longer distances. The results of the study also emphasized that companies have high responsibility to ensure the success of supply management for offshore suppliers. Correspondingly it is stated in existing research that due to long distances managing the long supply chain and suppliers becomes challenging and more resource intensive (Wiesmann et al. 2016, 33; Foerstl et al. 2016, 501).

Results of the study indicate that successful offshoring requires proactive risk management measures to mitigate risks related to long supply chain. Due to complexity and slowness of the upstream supply chain, reactive risk management can be seen as a major obstacle for successful supply chain performance. However, it is noteworthy that global supply chains will be experiencing external shocks increasingly in the future (European Union 2021, 8). Thus, the business environment will become more uncertain, and companies need to implement proactive measurer to prevent the risks and ensure supply chain performance. Correspondingly, Helmold et al. (2022, 131-132) highlight that previous disruptions due to inefficient upstream supply management has emphasized the need for proactive measures managing the global supply chain.

As reversing process of offshoring, reshoring can be considered to have variety of positive impacts on supply management as well as risk management. By reshoring multiple risks as a consequence of long distances and lead times can be mitigated. Additionally, streamlining the supply chain benefits supply management by reducing its resource intensiveness and increases efficiency. Improving and making processes faster would lower the costs long-term. Reshoring is a recognized way to increase supply chain resiliency (DeBacker 2016, 10) and increasing the supply chain resiliency can lead to cost savings, whereas long supply chain that is unable to respond sudden changes can create different extra costs. Successful location decisions will also provide value to the focal company's customer as the delivery reliability increases as a result of more stabilized supply chain and supply base. Thus, changes in upstream of the supply chain can be visible in downstream of the supply chain as well and benefit sales. Van Hoek and Dobrzykowski (2021, 697) also state that customers are more willing to pay for faster product deliveries resulted from reshoring. This can compensate the higher labour costs of reshoring.

Reshoring is prompted by different means and many countries have utilized political incentives to decrease the level of offshoring by protectionism (Wiesmann et al. 2016, 32; Theyel et al. 2018, 302). Similarly, findings note that political incentives could act as a reshoring driver in the form of restricting current trade with offshore countries. Current business environment can be considered to be unstable and the probability of sanctions regarding imported goods can impact on reshoring decisions. Additionally, some offshoring

locations have some location-specific risks that could be tackled by moving to closer locations.

Past global events have continuously changed supply chains by changing the structures and the operating environment. Increased supply chain risks as a consequence of unreliable global environment due to global events are recognized as a possible reshoring driver (Karatzas et al. 2022, 1; Ciravegna and Michailova 2021, 176). Different global events have impacted supply chain by increasing delivery times and creating unreliability. However, these past global events are more seen as transilient and not permanently impacting on supply chain structure. Thus, current offshoring structure can act as a reshoring barrier as possible risks have not yet impacted negatively on company's operations. This finding is supported by the study of Wiesmann et al. (2016, 36). They recognized that among companies who have not faced major offshoring issues are less likely to reshore. Correspondingly, the research oh Gray et al. (2017, 39) suggests that companies have made their reshoring decisions after experiencing negative impacts with previous offshoring decision.

Sourcing decisions are major strategic decisions changing the supply chain dynamics and structure (Fredriksson & Jonsson 2009, 230; Theyel et al. 2018, 301; Larsen 2016, 308). Similarly, the findings highlighted the complexity of sourcing decisions in supporting the company's overall strategy and simultaneously operations. Location related sourcing decisions such as reshoring can benefit the company by various ways. However, to attain the best possible outcome, attention should be given to making a suitable sourcing decision aligned with the objectives and the company strategy. Correspondingly, it is stated by academics that companies are facing difficulties in making suitable locations decisions by simultaneously mitigating the risk of failure of such decisions (Dekkers 2010, 957; Wiesmann et al. 2016, 31). This notion accentuates that comprehensive assessment by simultaneously taking risk perspective into consideration is required when making sourcing decisions.

Study findings also highlighted that the magnitude of location decisions is significant and thus they should be carefully considered and regularly assessed to benefit the company long-term. In addition, if the previously made sourcing decision is not working as intended, some

changes need to be made to support the company's operations. Correspondingly, Theyel and Hoffman (2021, 181) highlight that location decisions need to be continuously assessed to take the changing environment into consideration. According to Tate et al. (2014, 388) the constantly changing environment emphasizes the importance of long-term perspective in location decisions. The findings indicate that the leverage power between different suppliers and different items can differ having possible impacts on supplier motivation towards the focal company. Therefore, also these item category based factors should be taken into consideration when reorganizing the current supply chain by location related sourcing decisions. Correspondingly, the purchasing portfolio originally presented by Kraljic (1983) also highlights the need to manage different item categories and suppliers differently.

7.2 Answers to research questions

Based on the literature combined with the findings from the empirical part of the study, answers to research questions are formed. Main research question as well as three sub-questions are answered in this chapter.

Main research question:

What reshoring benefits can be gained through moving to closer location?

Reshoring previously offshored resources would benefit especially in risk mitigation and by shortening the lead times. When compared to offshoring, the lengthy supply chain increases the uncertainty of delivery performance due to multiple internal and external risk factors. As a result of reshoring, major risks associated with long supply could be better managed and avoided. Especially the number risks due to uncertainness of global logistics could be significantly reduced. Reshoring would also improve supplier relationships and thus managing the supply chain would be more cost efficient. By reshoring overall transparency across the supply chain could be increased as well leading to better manageable supply chain. As a consequence of shorter lead times and distances between the focal company and its suppliers, supply chain structure could be streamlined, and processes would become more efficient.

Reshoring is a recognized way to support supply management. As a result of shorter distances, the supply management is easier and does not require as high coordination leading it to be less resource intensive. Additionally, coordination costs related to long supply chains can be reduced by reshoring. As a comparison to reshoring, supply management for offshored items can be considered as resource intensive and complex as well as including high coordination related costs. Also, generally better supplier relationships with closer suppliers benefit supply management as cooperating with suppliers is more effective. Strong supplier relationships combined with short distances lead to increased flexibility to respond to market demands. Reshoring also benefits inventory management, and thus financial risks can be decreased as a consequence of having less inventory and being able to maintain smaller order sizes.

Both this study and existing research highlighted the increased need for supply chain resiliency due to increasingly uncertain business environment as a result of different global events and their consequences. Considering the uncertain environment associated with long distances and lead times, reshoring would be a suitable strategy to build supply chain resiliency. In constantly changing environment increased supply chain resiliency is significant to improve the ability to respond internal as well as external changes. More resilient supply chain would also lead to increased customer satisfaction through more reliable component deliveries and better ability to answer sudden needs. Uncertain environment also highlights the need for proactive risk management.

When considering cost reduction, offshoring could be seen as a more attractive strategy based on the purchasing price. However, when considering the possible hidden costs resulted from unexpected supply chain disruptions and inefficiency, reshoring could be advantageous option leading to long-term cost savings. Even tough, the company has not faced major offshoring risks impacting heavily on operations, reshoring would act as a great proactive risk management method.

Sub-questions:

What are the possible reshoring drivers?

Many risk factors resulted from offshoring can act as a reshoring driver prompting to utilize nearer locations. Especially improving overall supply chain risk management can be considered to drive reshoring decisions. Additionally, potential threats creating instability to the current offshoring location guide the interest towards more local manufacturing as a way to manage location specific risks. Overall, comparing the environment in closer locations to offshore location can act as a driving force for reshoring.

Increasing competitive advantage through using closer suppliers is guiding companies towards reshoring to gain more strategic benefits than focusing only on low costs. As reshoring benefits the company by increasing its ability to operate in highly competitive and evolving markets, company can achieve competitive advantage by moving its resources to more preferable location. Sustainability is also a recognized driver for reshoring practises increasing the competitive advantage of the company. The emphasis on sustainability has increased and thus it is also recognized as a factor impacting location decision making. Overall improving the supply chain structure and gaining the benefits from reshoring can drive towards using closer suppliers.

What are the current risks and pitfalls in reshoring?

Similarly, when making offshoring decisions, also reshoring decision needs to be thoroughly examined. Changing the supply chain structure by moving resources to another location is a major strategic change for the company. Thus, the risk of failure related to location decisions should be managed to prevent long-term negative effects as a consequence of poor judgement in sourcing decisions. To ensure the successful implementation of the reshoring strategy, careful consideration needs to be made to align the decision with overall strategy of the company. Therefore, location decisions require careful calculation of the total costs, risk assessment and also considering the internal capabilities to implement a successful location decision.

Also, reshoring can have some location specific issues. Moving to closer location can impact on raw material availability as offshore locations are typically good sources for raw materials. The long distance to the raw material source can impact on purchasing price and add complexity to the supply chain. Additionally, moving to generally smaller markets, can be visible in available capacity of more local suppliers.

Based on the results, the biggest barrier for reshoring can be considered to be higher costs in closer manufacturing locations. Higher costs as a result of moving to another location would impact on company's competitiveness through pricing. Thus, reshoring might involve some opportunity costs when moving from low-cost locations to areas with generally higher costs. However, it should be considered in this context, that offshoring can involve multiple hidden costs that are not that visible and can increase the total acquisition cost.

What are the possible risks of offshoring?

Managing long supply chain consists of multiple different risks. Due to long distances within supply chains, the supply chain is prone to multiple external as well as internal risks. Some of the risks can be location specific such as political risks or restrictions on international trade. Some offshoring risks are more related to long distances within the supply chain. Global logistics includes multiple risk factors than can impact negatively on focal company. Many of the offshoring risks and effects of those are hard to predict and mitigate beforehand, which highlights the riskiness of utilizing offshore resources. Offshoring also increases the resource intensiveness with managing the long supply chains. In addition, due to complexity of long supply chains including multiple countries, offshoring requires advanced planning and supply management.

Long supply chain can involve multiple hidden costs that are not estimated when making the initial decision of moving to offshore location. Hidden costs, that are not primarily calculated, can offset the cost saving gained through using an offshore location instead a closer location. These hidden costs can be a result of sudden additional expenses, high coordination costs of long supply chain or overall the inefficient processes due to slowness of the supply chain. Also, previous and ongoing global crises have increased the uncertainty related to offshoring and long supply chains. It can also be stated that, the number of risks

related to offshore supply chains will increase in the future, which highlights the need for measures to mitigate the risks.

The constantly changing environment also sets its limits of benefiting from offshoring. The global business environment is constantly changing and impacting on offshore locations by creating different risks related to offshore locations and managing the offshore suppliers. Additionally, different factors such as changing logistical challenges have significant impacts on the profitability of long supply chains. Due to the changing environment, previous offshoring decision might not support the company similarly as originally intended. This emphasizes the need to reconsider and evaluate earlier made location decisions to gain the best possible benefits.

7.1 Suggestions

Current global business environment comprises of multiple different risks. However, even without global crises occurring, long supply chain has its own risks and vulnerabilities that should be taken into consideration when assessing the possibility to move manufacturing to another location or to remain in the same location. Based on the findings, company somewhat lacks of proactive risk management measures related to managing long supply chains. Thus, risk assessment should be implemented including external as well as internal risk factors in offshoring, to recognize the possible risk factors and ways to mitigate them. All in all, more emphasis on risk management would allow to gain more benefits from previously made location decisions.

To improve current supply management, it should be ensured that existing offshore suppliers have all of the success factors to act against the company's requirements. This includes the need for proactive measures and good supplier relationships. Current forecasting methods are somewhat ineffective due to demand fluctuations and thus forecasts can be inaccurate. To increase suppliers' the trust towards the company, improved forecasting methods are needed to better forecast customer demand and thus component need for suppliers. Well-implemented forecasting would also improve raw material availability and reduce the risk of suppliers' raw material stockouts. As also stated by Hesping and Schiele (2016, 102) good

forecasting is needed especially when managing strategic items. Also, supplier relationships with offshore suppliers were perceived as challenging, and supplier commitment relatively low. Improving the supplier relationships with offshore suppliers, would potentially lead to less supplier originated risk and additional costs. Additionally, supplier contracts were recognized as a risk management method in long supply chain. Nevertheless, supplier contracts could be reinforced to improve the contracts as risk management method and to encourage offshore suppliers to obey the required level of performance.

Due to long supply chains involving multiple risks in current business environment, interest should be guided beyond offshoring to support the business success in different areas. As cost reduction emphasis sets its limits to fully committing to reshoring previously offshored suppliers, dual sourcing could be utilized as a complementary strategy. Through dual sourcing the focal company could attain a possibility to reduce risks resulting from a long supply chain but simultaneously gain cost reductions by keeping the supplier located in low-cost area. Thus, the supply chain would be better prepared for external stocks that threatens the success of the supply chain and resilience would be improved. Dual sourcing should be implemented especially for strategic items and hard to replace items. Also, items that require constant product development and are resource intensive to manage, should have alternative source of supply in nearer location to streamline the supply chain and improve the efficiency of the surrounding supply chain. Similarly, the study of Theyel et al. (2018, 303) suggest that especially components, that are complex in nature and involve continuous innovation, benefit from keeping the items closer to the manufacturing location. On the contrary, components requiring little to no innovation and are not associated with intellectual property protection issues, can be purchased from offshore location. This approach follows hybrid model utilizing multiple sourcing strategies simultaneously. Dual sourcing would also allow the company to reduce the inventory levels associated with offshore components and thus reduce the financial risk related to high inventory levels.

7.2 Validity and reliability

The chosen study method is often evaluated by using concepts of validity and reliability. The concept of validity means if the conclusions of the research give an accurate explanation

of the researched phenomenon and of what happened (Eriksson & Kovalainen 2008, 292). Validity is often further divided into three categories: construct validity, internal validity and external validity (Stuart, McCutcheon, Handfield, McLachlin & Samson 2002, 430). Construct validity refers to whether the research is studying what it claims to study with correct operational methods (Farquhar 2012; Voss et al. 2002, 211). Internal validity refers to if the findings of the study are based on a critical investigation of the research data (Farquhar 2012). Moreover, external validity means that the results of a study can be generalised (Voss et al. 2002, 211). After conducting this study, it can be stated that it succeeded to respond the aimed subject with selected research methods. The findings of this study mainly follows existing research on the subject. This can be considered to increase the validity as well. Individual interviews allowed to make sure the respondents understand the questions, which ensured the data collection to be in line with the interview questions and also the study objectives.

The reliability of the study needs to be assessed in addition to validity, in order to evaluate the overall quality of the study (Kähkönen 2011, 39). Reliability indicates the repeatability of the study, and if the same results can be achieved when repeating the study (Farquhar 2012). The reliability of the case study can be improved by using a case study protocol and by maintaining a case study database. Thus, another researcher could also conduct the case study research by utilizing the same data. (Stuart et al. 2002, 430) In this study, the case study design limits the generalisation of the study results as the results cannot be fully repeated. However, by using the same research approach and data collection method besides same set of interview questions, similar results can be achieved.

7.3 Limitations and future research

Case study design sets some limitations to this study's generalization. As results are based on the specific case company, they cannot be generalized across all of the industries and company sizes. This limitation should be taken into account when considering the study findings as well as results. However, this case study continues to deepen the understanding of location decisions in the manufacturing industry among multinational companies. To gain more understanding around the subject, interviewee selection could have included

respondents from top management level to provide general perspective from top level. Bigger and broader sample size would have provided more viewpoints on the subject and thus also supported the generality of the study.

Global operating environment is continuously changing, and it brings its challenges to location and sourcing decisions. For instance, political incentives can have a major impact on reshoring decisions in the future. Therefore, future research on the subject is needed to provide more viewpoints on how global challenges impact on location decision making and whether they act as a significant reshoring driver. As reshoring is still a developing research stream, more research should be conducted of its drivers and strategic benefits as a opposite to low-cost focus, but also to understand the challenges related to reshoring.

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Appendices

Interview Questions

Offshoring

- What are the main motives for offshoring?
- What are the possible risks due to long supply chain and offshoring?
- Are offshoring related risks mapped proactively?
    - If yes, how?
- How are offshoring related risks mitigated?
- Is the current upstream supply chain structure able to respond internal and external changes?
- Have offshoring and long distances impacted the supply chain performance?
    - If yes, how?
- What effects did recent global crises (e.g. Covid-19 and the Ukrainian-Russian war) had on the company from SCM point of view?

Reshoring

- How would reshoring and shortening the supply chain benefit the company?
- What are the possible barriers related to reshoring decision?
- What factors would act as possible drivers for reshoring?
    - Are global crises considered as reshoring driver?

Sourcing decisions

- What is considered when making sourcing related decisions?
- Are sourcing decisions more proactive or reactive?
- At which organization level are sourcing decisions made?
    - Are people from different organization levels included?