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Cooperation within the supply chain

Inbound process development

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Table of Contents

List of figures and tables	3
Abstract	4
1 Introduction	6
1.1 Background for the study	6
1.2 Research gap	7
1.3 Research question and objectives	7
1.4 Structure of the study	8
2 Supply chain management	9
2.1 Defining Supply Chain Management	10
2.2 SCM from different perspectives	13
2.3 SCM and competitive advantage	18
2.4 Supply chain integration and collaboration	24
2.5 Supply chain relationships and partnerships	28
2.6 Business networks	32
2.7 Learning in networks	36
2.8 Supply chain risk management	41
2.9 Conclusion	44
3 Research design and methodology	45
3.1 Research methodology	45
3.2 Research method	45
3.3 Data collection and analysis	46
3.4 Reliability and validity	47
4 Empirical findings	50
4.1 Inbound process at Metso Outotec	51
4.2 Intra and inter-organizational cooperation	56
4.3 Intra and inter-organizational communication	63
4.4 Organizational changes and their impacts	70

4.5	Cross-team learning	80
4.6	Trust – internally and externally	85
4.7	Risk Management	90
5	Discussion	94
6	Conclusion	100
6.1	Theoretical and managerial implications	102
6.2	Limitations and future research	103
	References	105
	Appendices	109
	Appendix 1. Interview questions	109

List of figures and tables

Figure 1. Types of channel relationships	11
Figure 2. Perspectives on logistics vs. SCM	14
Figure 3. Framework on SCM and competitive advantage	19
Figure 4. Involvement and continuity of supplier relationships	29
Figure 5. The Partnership Model	31
Figure 6. A firm's value net	33
Figure 7. Levels of relationship and network management	34
Figure 8. Business net classification framework	35
Figure 9. Conceptual model	36
Figure 10. How Toyota facilitates network learning	38
Figure 11. Evolution of Toyota network	39
Table 1. The breadth and depth of SCM	15
Table 2. Features of the four perspectives	16
Table 3. List of sub-constructs for SCM practice	20
Table 4. Summary of risks	42
Table 5. List of interviewees.	47
Table 6. Inbound process at Metso Outotec	51

UNIVERSITY OF VAASA**School of Management**

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ABSTRACT:

In order to efficiently manage a supply chain, several processes need to be aligned. Purchasing, logistics and warehousing all are part of a company's inbound process. Decisions made at external suppliers can have impacts later in the process, at the warehouse or even later at the end customer. The inbound process needs to be managed as a whole in order to have an efficient supply chain. Extensive cooperation is required internally between different teams, and externally within the supply chain network.

This study looks into literature on supply chain management from different perspectives, SCM as a source of competitive advantage, cooperation within a supply chain, cooperation in partnerships and business networks, learning in a network context and supply chain risk management.

This research was conducted using a qualitative research method. Semi-structured interviews were conducted in February 2021 at a case company and their external warehouse partner to gauge how the inbound process is managed and developed in cooperation with internal and external partners.

The findings of the interviews are discussed and compared to the presented academic literature. Main findings of this study indicate that managing the inbound process requires cooperation, both internally and externally. The roles and responsibilities of each stakeholder need to be clearly aligned and communicated throughout internal and external partners. Organizational change is a major risk that can hinder process development. When going through organizational changes, companies should allocate sufficient resources to cope with the adaptation period.

KEYWORDS: Supply chain, inbound process, internal cooperation, external cooperation, business networks, network learning, organizational change

VAASAN YLIOPISTO**Kauppatieteiden yksikkö**

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TIIVISTELMÄ:

Hallitakseen toimitusketjua tehokkaasti, useiden eri prosessien tulee toimia yhteistyössä. Osto, logistiikka ja varastointi ovat kaikki osia yrityksen sisään tulevan tavaravirran hallinnassa. Päätöksillä, joita tehdään ulkoisilla toimittajilla voi olla vaikutuksia toimitusketjun myöhemmissä vaiheissa, niin varastolla kuin jopa loppuasiakkaalla. Saapuvaa tavaravirtaa on hallittava kokonaisuutena, jotta koko toimitusketju säilyttää tehokkuutensa. Yhteistyötä vaaditaan niin sisäisten kuin ulkoisten kumppanien kesken.

Tässä tutkielmassa käydään läpi akateemista kirjallisuutta koskien seuraavia aiheita: toimitusketjun hallinta eri perspektiiveistä, toimitusketju kestävän kilpailuedun lähteenä, yhteistyö toimitusketjun sisällä, yhteistyö kumppaneiden välillä ja verkostoissa, verkostoissa oppiminen ja toimitusketjun riskien hallinta.

Tässä tutkimuksessa on käytetty kvalitatiivista tutkimusmetodia. Puolistrukturoidut haastattelut toteutettiin helmikuussa 2021 tutkimuksen kohteena olleessa yrityksessä ja heidän ulkoisella varastopartnerillaan. Haastatteluissa selvitettiin miten sisään tulevaa tavaravirtaa hallitaan kyseisessä yrityksessä, ja miten prosessia kehitetään yhteistyössä sekä sisäisten osapuolten, että ulkoisten kumppanien kesken.

Haastattelujen tulokset esitellään ja niitä verrataan esitettyyn olemassa olevaan kirjallisuuteen. Tutkimuksen johtopäätökset ovat, että toimitusketjun hallinta vaatii yhteistyötä niin sisäisten kuin ulkoisten kumppanien välillä. Eri toimijoiden roolit ja vastualueet tulee linjata selkeästi sekä kommunikoida kaikille osapuolille. Organisaatiomuutokset ovat suuri riski prosessien kehittämiseksi. Yritysten tulee varmistaa riittävät resurssit organisaatiomuutosten läpikäynnin ajaksi.

AVAINSANAT: Toimitusketjun kehittäminen, yhteistyö, verkostot, verkostoissa oppiminen, organisaatiomuutos

1 Introduction

This thesis studies the process of developing the inbound process from the perspective of a distribution center handling physical goods. The first chapter introduces the background and research gap for the study. The research method, research question, aim of the study and the structure of the thesis are introduced as well.

1.1 Background for the study

In an age of global supply chains and accelerated product life cycles, well-integrated purchasing and logistics functions would seem to be a necessity (Ashenbaum & Terbend, 2010). Effective supply chain management (SCM) has become a potentially valuable way of securing competitive advantage and improving organizational performance since competition is no longer between organizations, but among supply chains (Li et al, 2006). Strategically developing supply chain management capabilities such as efficient inbound and outbound transportation, warehousing, and inventory control, production support, packaging, purchasing, order processing, and information dissemination enable a manufacturing firm to identify and take advantage of opportunities in the global marketplace (Tracey et al., 2005). In order to serve the end-customers' needs, the inbound process needs to function seamlessly and not create interruptions to the supply chain. The cooperation of teams inside an organization is vital to ensure that all teams are pushing for the same goal and that roles and boundaries are clearly communicated.

An organization never exists within a vacuum, but within the context of a supply chain. The individual success of an organization has become increasingly dependent on the efficient functioning of its supply chain, with one common focus on quality. (Roethlein & Ackerson, 2004.) Therefore, in addition to focusing on the internal cooperation, external cooperation within a network of companies part of the same supply chain requires focus from management. Different companies focusing on a specific part of a supply chain, possess expertise and specialized knowledge on that part of the process. Combining that

knowledge and learning from other teams in order to develop the whole supply chain provides an interesting study object. The possible gains can have tangible benefits for practitioners, and therefore provide a valid reason for this process to be studied.

1.2 Research gap

Although topics like supply chain management, supply chain integration, supplier relationships, business networks, network learning and supply chain risk management are widely researched topics, this study discusses those topics focusing on the inbound process. The scope of the inbound process in this study is considered in the same order as the physical flow of the goods, starting from suppliers, moving forward with the inbound logistics, and ending to the inbound side of the warehouse operations. Different parts of the process will be discussed in detail. The importance of each step of the process in cooperation with other teams and organizations on the whole inbound process is also discussed later in this study. Research on the warehouse operations is not as frequent as for example on the purchasing side of the supply chain. Cooperation between teams and organizations is widely researched, but not as often including the warehouse operations. This study aims to provide visibility on the effects and challenges that are met at different parts of the inbound process, and how cooperation between teams can impact that process.

1.3 Research question and objectives

Objectives of this thesis are to study the inbound process development from supply chain management perspective and focusing on the different parts of the organization and its network – how internal teams cooperate within an organization in order to work together efficiently and develop the processes, how external partnerships help and facilitate learning in a network context. This intra and inter-organizational cooperation is required to ensure an efficient supply chain, in order to serve customers successfully.

The main research question is:

How to develop a distribution center's inbound process?

Questions that help answering the research question are:

- 1) How is inbound process development divided to different departments or organizations in the business network?
- 2) How are different parties of the organizational network (internal and external partners) cooperating in order to develop the inbound process?

1.4 Structure of the study

This study consists of six chapters. In the first chapter, the topic of this study is introduced, and the objectives and the research question are presented. Short background as well as the structure of the study is explained. The second chapter consists of literature review, where several concepts are defined and discussed. The literature review focuses on first defining supply chains and supply chain management, then going into more detail on supply chain integration and further to cooperation within networks. Learning in networks and risk management are also discussed. The third chapter introduces the research methods and methodology. Data collection and also the reliability and the validity of the study are argued for. Fourth chapter introduces the case company for this study and the empirical findings are presented. The findings based on interviews are discussed mainly in the same sequence as the literature review in chapter two. In chapter five the empirical findings are discussed in relation to the theoretical topics presented in the literature review chapter. The sixth and final chapter provides conclusions, theoretical and managerial implications, limitations and suggestions for future research.

2 Supply chain management

As competition in the 1990s intensified and markets became global, so did the challenges associated with getting a product and service to the right place at the right time at the lowest cost. Organizations began to realize that it is not enough to improve efficiencies within an organization, but their whole supply chain has to be made competitive. The understanding and practicing of supply chain management (SCM) has become an essential prerequisite for staying competitive in the global race and for enhancing profitability. (Li et al, 2006.) In almost every industry, supply chain has become a much more important strategic and competitive variable. It affects all of the shareholder value levers - cost, customer service, asset productivity, and revenue generation. (Scott et al, 2003.)

The opportunities and problems created by globalization, for example, are requiring companies to establish relationships with new types of suppliers (Scott et al, 2003). Increasingly, corporations turned to global sources for their supplies. The primary goal of SCM is to create or enhance value provided to the end-customer. Ideally, a firm should attempt to fulfill customers' orders and simultaneously meet all their expectations – delivering 100% of the exact items and quantities ordered on time, damage free, and with errorless invoicing. (Stank et al, 2001.)

The global economy's life-blood is an interconnected network of suppliers and producers, retailers and consumers, spanning the planet (Wible et al, 2014). This globalization of supply has forced companies to look for more effective ways to coordinate the flow of materials into and out of the company. Key to such coordination is an orientation toward closer relationships with suppliers. (Mentzer et al, 2001.) As customers have various global sources more and more easily available to them, the suppliers have needed to adjust with the changing landscape. Getting a defect-free product to the customer faster and more reliably than the competition is no longer seen as a competitive advantage, but simply a requirement to be in the market (Mentzer et al, 2001). When more sources

are available, the demands from customers become stricter and more defined. Customers are demanding products consistently delivered faster, exactly on time, and with no damage. Each of these necessitates closer coordination with suppliers and distributors. (Mentzer et al, 2001.) Firms have benefitted from these global supply chains for many reasons, chief among which has been access to low-cost labor and raw materials. In addition to increasing global collaboration on the supply side, the desire to serve customers in emerging markets has further contributed to the globalization of supply chains. (Aydin et al, 2014.) As the customer-base has become more global due to various technical advantages, so too has the supplier-base broadened. This naturally offers new possibilities for firms, but at the same time the change brings with itself new requirements. This global orientation and increased performance-based competition, combined with rapidly changing technology and economic conditions, all contribute to marketplace uncertainty. This uncertainty requires greater flexibility on the part of individual companies and supply chains, which in turn demands more flexibility in supply chain relationships. (Mentzer et al, 2001.)

The third-party logistics (3PL) provider business is developing as a result of the emerging demand of advanced logistics services. Globalization, lead time reductions, customer orientation, and outsourcing are some major changes contributing to this interest in logistics. (Hertz & Alfredsson, 2003.) Global supply chains will therefore form extended networks, including manufacturers, suppliers of components and logistics service providers - be that as carriers or for example 3PL warehouses. The movement of global manufacturing operations is in a constant state of interaction with factors such as labor, energy, transportation, and exchange rates (Aydin et al, 2014), and the same factors impact all operations further forward in a global supply chain.

2.1 Defining Supply Chain Management

Before discussing the various definitions of supply chain management, a supply chain is first briefly defined here. Mentzer et al (2001) defined a supply chain as a set of three or more entities (organizations or individuals) directly involved in the upstream and

downstream flows of products, services, finances, and/or information from a source to a customer. Different types of supply chains are shown in Figure 1. The third depicted scenario, Ultimate Supply Chain, reminds a supply chain network, which will be discussed later in this study.

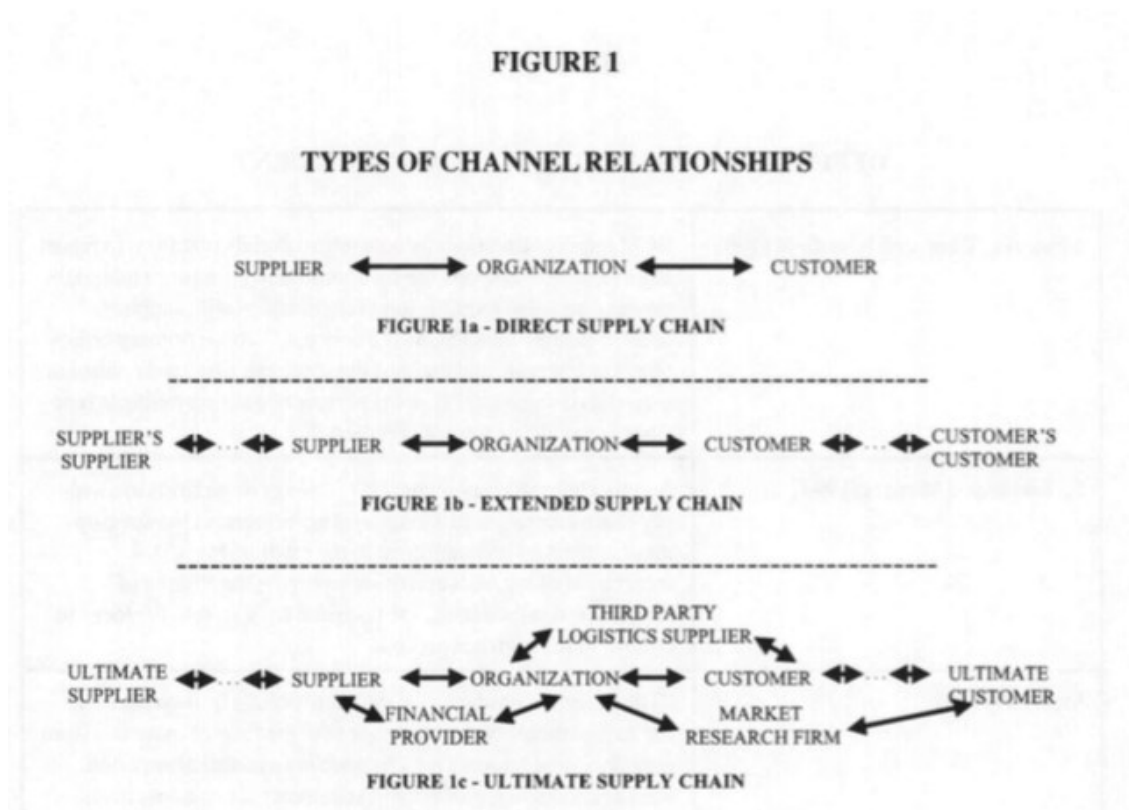


Figure 1. Types of channel relationships (Mentzer et al, 2001).

SCM is generally considered to involve integration, coordination, and collaboration across organizations and throughout the supply chain. The concept includes the broad array of activities needed to plan, implement, and control sourcing, manufacturing, and delivery processes from the point of raw material origin to the point of ultimate consumption. (Stank et al, 2001.) Both Mentzer et al (2001) and Larson et al (2007) studied various differing definitions of supply chain management starting from the 1960's to the mid 2000's. For the purposes of this paper, every different definition is not presented, but discussing the differences of a few definitions will help better understand

the concept from multiple perspectives. Also, to provide one starting point, an “official” definition is first provided.

The Council of Supply Chain Management Professionals (CSCMP) (2020) have defined supply chain management as follows:

Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies. (2020.)

Although CSCMP present this definition as “official”, in academic literature there are plenty of different definitions and no single definition is universally agreed upon. Further, CSCMP (2020) have defined the SCM boundaries and relationships as follows:

Supply chain management is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the logistics management activities noted above, as well as manufacturing operations, and it drives coordination of processes and activities with and across marketing, sales, product design, finance, and information technology.

Mentzer et al (2001) defined supply chain management as the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole. The perspectives on SCM by CSCMP and Mentzer are similar,

and the overall scope is also quite broad in both definitions. The varying perspectives and the effects of those perspectives are discussed in the following chapter.

SCM has been defined to explicitly recognize the strategic nature of coordination between trading partners and to explain the dual purpose of SCM: to improve the performance of an individual organization, and to improve the performance of the whole supply chain. The goal of SCM is to integrate both information and material flows seamlessly across the supply chain as an effective competitive weapon. (Li et al, 2006.) Achieving this will keep the end-customer satisfied. Furthermore, SCM practices are defined as the set of activities undertaken by an organization to promote effective management of its supply chain. The practices of SCM are proposed to be a multi-dimensional concept, including the downstream and upstream sides of the supply chain. (LI et al, 2006.) The SCM practices, including possible barriers are discussed in more detail in the next chapter.

2.2 SCM from different perspectives

As previously mentioned, there is no common, single definition of SCM within the academic literature. Therefore, it is useful to discuss the varying perspectives on the topic, as the differing perspectives will also have impactful implications for practitioners.

The concept of SCM has been involved from two separate paths: purchasing and supply management, and transportation and logistics management. According to purchasing and supply management perspective, SCM is synonymous with the integration of supply base that evolved from the traditional purchasing and materials functions. In the perspective of transportation and logistics management, SCM is synonymous with integrated logistics systems, and hence focus on inventory reduction both within and across organizations in the supply chain. Eventually, these two perspectives evolved into an integrated SCM that integrates all the activities along the whole supply chain. (Li et al, 2006.) As the term SCM has evolved over time, so too has the academic research evolved with different points of focus over decades.

Larson et al (2007) studied four conceptual perspectives on SCM vs. logistics in order to both differentiate and integrate logistics and SCM. These perspectives are shown in Figure 2. If logistics and SCM are considered fields within business, then the four perspectives cover all possible ways the two fields might be inter-related: logistics equal SCM (re-labeling), logistics subsumes SCM (traditionalist), logistics is subsumed by SCM (unionist), or logistics and SCM overlap partially (intersectionist) (Larson et al, 2007). The four perspectives are discussed briefly.

PERSPECTIVES ON LOGISTICS VS. SUPPLY CHAIN MANAGEMENT (SCM)

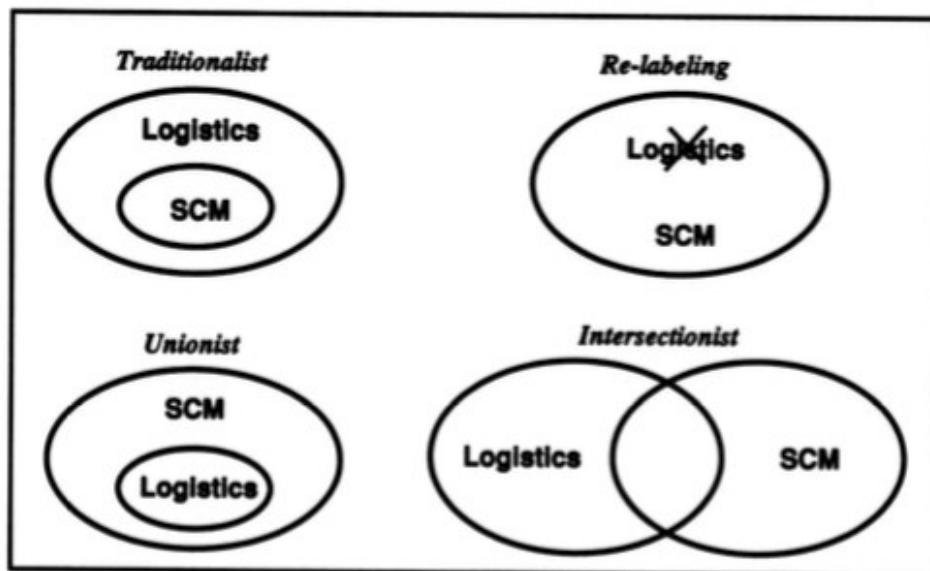


Figure 2. Perspectives on logistics vs. SCM (Larson et al 2007).

In the traditionalist view, logistics is a broader term and SCM is a function of logistics. Traditionalist practitioners may create new “SCM analyst” positions within the logistics group to focus on problems, perhaps in a cross-functional and/or inter-organizational context (Larson et al, 2007). Re-labeling is self-explanatory, what used to be considered as logistics is now considered as supply chain management. In practitioners’ case, holding this view may just result in new titles but no changes in the job description. Practitioners also use *supply chain* and *logistics network* as synonymous terms (Larson

et al, 2007). The unionist view is the opposite of the traditionalist view, now logistics is a function of SCM, and SCM can entitle many functional areas such as purchasing, logistics, warehouse operations and even marketing. This perspective is broad and deep, and the top supply chain manager would have CEO-like responsibilities (Larson et al, 2007). Also the definitions by CSCMP (2020) and Mentzer et al (2001) fall into this category. CSCMP have even gone to lengths to define Logistics Management as a part inside SCM, fortifying their unionist perspective. Furthermore, the two paths towards current SCM described by Li et al (2006) previously encompass a similar view. Also Stank et al (2001) consider the relationship between SCM and logistics similarly: “Logistics is viewed as a value-adding supply chain process”. (p.30)

The intersectionist concept of SCM focuses on the strategic, integrative elements across purchasing, logistics, operations, marketing, and other functions. For instance, in logistics, negotiating a long-term 3PL deal is a strategic element, while warehouse order picking and packing is a tactical element within the logistics function. (Larson et al, 2007.) Tables 1 and 2 summarize the four perspectives based on their breadth and depth, as well as the various features of each perspective.

THE BREADTH AND DEPTH OF SCM

Depth	Breadth	
	Narrow	Broad
Shallow	<i>Traditionalist</i>	<i>Intersectionist</i>
Deep	<i>Re-labeling</i>	<i>Unionist</i>

Table 1. The breadth and depth of SCM (Larson et al, 2007).

FEATURES OF THE FOUR PERSPECTIVES

Feature	Traditionalist	Re-labeling	Unionist	Intersectionist
Definition	SCM is a part of logistics	SCM is logistics	SCM is logistics +	SCM & logistics partially overlap
Breadth	Narrow, single function (logistics)		Broad, multiple functions	
Depth	Shallow, strategic only	Deep, strategic and tactical		Shallow, strategic only
Implementation	Hire supply chain analysts within logistics	Re-title the department & its employees	Change the organizational structure/chart	Add a SCM staff function

Table 2. Features of the four perspectives (Larson et al, 2007).

As shown previously, the views on other academic studies often tend to gravitate towards a unionist view. The study of Larson et al (2007) also indicated that senior supply chain executives strongly prefer broad, multiple function perspectives (unionist and intersectionist) to single function, logistics-based perspectives (traditionalist and re-labeling). These executives also report that SCM implementation is more difficult, more expensive, slower, and broader than expected (Larson et al, 2007). Consequently, SCM decisions will have more far-reaching effects in the organization and for their partners, and making such decisions requires strategic capabilities.

Intra- and inter-organizational barriers need to be considered, making sure that people within the organization itself are on board with the process before other organizations are brought into the mix. Both intra- and interorganizational coordination are needed (Stank et al, 2001), focusing only on either one is not enough. Functional silos within organizations, incompatible technology/systems across organizations, conflict within the supply chain and inadequate employee skills are ongoing obstacles to SCM implementation (Larson et al, 2007). The survey by Larson et al (2007) found internal resistance substantially more of a barrier to SCM implementation than external (customer and supplier) resistance. Making sure your own organization is on board, will help presenting a unified front towards external partners. If the internal resistance is not overcome, also external partners will notice this and the buy-in from all parties is

significantly hampered. Once the organization has worked through its internal resistance, it can anticipate less resistance from suppliers and customers (Larson et al, 2007). In similar vein, Stank et al (2001) concluded that if firms want to improve service performance through collaboration with external customers and suppliers, they need to enhance internal collaboration.

A practical example on how to enhance intra-organizational integration was discussed in an interview in the Harvard Business Review by Scott et al (2003):

We've created a capability - five people, very senior program managers, who can look horizontally across functions. They bring together executives or senior managers and facilitate discussions about the tensions between product division goals, supply network goals, and customer goals. We have lots of people who are deep in their silos. They're also really smart. So getting them together on a fairly regular basis to deal with strategic topics in a facilitated session has been a breakthrough for us. It's probably been one of the best investments we've made.
(p.68)

As the varying perspectives on SCM were discussed previously, having different perspectives inside the organization can also become a barrier for effective supply chain management. To overcome the barriers, supply chain professionals should start by working toward a common SCM perspective – within their own firm first, and then among important members of their supply chain (Larson et al, 2007). Reaching this state can require for example extensive training programs. The leading facilitators – top management support, customer relationships, and organizational re-structuring – are about relationships with customers and within the organization, rather than technology. In general, it appears the relational facilitators are paramount over technological facilitators for SCM. This implies that training programs to enhance the skill set of supply chain managers should first focus on the people and relational issues in SCM. (Larson et

al, 2007.) Simply put, people are the most important resource in SCM implementation, not the technology.

Different perspectives on the scope and broadness of SCM also naturally mean that practical implementation varies a lot. If the re-labeling view means just changing job titles, on the other side of the coin the unionist view results in much more dramatic changes on allocating budgets and even the whole organizational chart. Breadth of perspective determines which functional departments to involve in implementation, and aids identification and selection of the right supply chain partners (Larson et al, 2007). Gammelgaard & Larson (2001) concluded in their study that ability to communicate is of utmost importance. Supply chain managers need to communicate upwards to sell their ideas and gain top management's support, and also downwards to motivate the employees working towards common goals. On top of that, as discussed previously, communication across different organizations and also across different functions within an organization is hugely important, regardless of what the perspective of the organization is on SCM. SCM implementation focuses on achieving functional integration, within and between supply chain organizations. The implementation plan should address perspective alignment, within the organization as well as across the supply chain. Ideally, the organization will identify and select supply chain partners that share a common perspective on SCM. The plan must gain top management support and address issues of organizational re-structuring, especially in the case of the unionist perspective. (Larson et al, 2007.)

2.3 SCM and competitive advantage

Integration of the supply chain has become an important way for industry to gain competitive advantage (Hertz & Andersson, 2003), and partnering with vendors — sharing valuable knowledge with them through organized networks — can be a sustainable source of competitive advantage (Dyer & Hatch, 2004). Li et al (2006) presented a framework in their study, which proposes that SCM practices will have an

impact on organizational performance both directly and also indirectly through competitive advantage. The framework is shown in Figure 3.

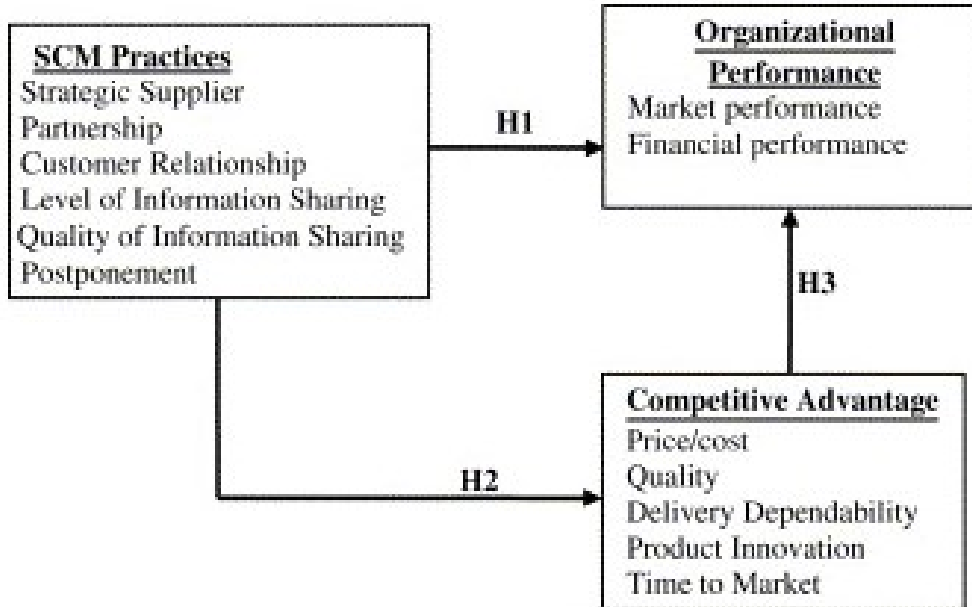


Figure 3. Framework on SCM and competitive advantage (Li et al, 2006.)

In the framework, SCM practices include five aspects. The five constructs cover upstream (strategic supplier partnership) and downstream (customer relationship) sides of a supply chain, information flow across a supply chain (level of information sharing and quality of information sharing), and internal supply chain process (postponement) (Li et al, 2006). The list of those subconstructs and their definitions are elaborated on in Table 3. The study also acknowledges that even though the five dimensions capture the major aspects of SCM practice, they cannot be considered complete (Li et al, 2006). Other factors do come in to play, such as for example geographical location or organizational visions and goals. In this section of the study, the main focus will remain on the presented five dimensions.

Sub-constructs	Definitions
Strategic supplier partnership	The long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits.
Customer relationship	The entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction.
Level of information sharing	The extent to which critical and proprietary information is communicated to one's supply chain partner.
Quality of information sharing	Refers to the accuracy, timeliness, adequacy, and credibility of information exchanged.
Postponement	The practice of moving forward one or more operations or activities (making, sourcing and delivering) to a much later point in the supply chain.

Table 3. List of sub-constructs for SCM practice (Li et al, 2006).

The first sub-construct, strategic supplier partnership, will be discussed further as a larger topic in the following chapters when supplier relationships and partnerships are looked at in more detail. Naturally, with some suppliers the relationships will be more strategic than with others, and that can have an effect on the selected SCM practices of an organization. Similarly, in the downstream side of the supply chain, customer relationships can have an equally large effect as supplier partnerships in the upstream side. Long-term relationships, common goals, added mutual investment are all factors in the forming of the organization's SCM practices.

The level and quality of information sharing between an organization and its supply chain partner is also a key factor. The nature of the relationship already dictates what type of information is shared and how. Common system interfaces can greatly enhance the quality of information shared – data flows without delays and is easily accessible for both partners. This can be achieved for example through a common ERP system or a common order handling interface that relays information from the partners' own ERP systems. An integrated supply chain such where information is shared as above, can also be hard to emulate for competitors, especially through that particular partner that is already invested in the partnership and information sharing system with one organization. Postponement can be in practice producing and delivering a standardized product for as

long as possible in the supply chain – which can bring more flexibility and for example benefits in inventory costs. Postponement strategy not only increases the flexibility in the supply chain, but also balances global efficiency and customer responsiveness (Li et al, 2006).

Competitive advantage is the extent to which an organization is able to create a defensible position over its competitors (Li et al, 2006). The five dimensions of competitive advantage in Figure 3 were defined from empirical literature. Competitive advantage derived from cost efficiency is usually short-lived, as other companies could quite easily imitate similar tools and techniques to gain similar performance. Therefore, sustained competitive advantage needs to be the goal – a firm will only outperform competitors if it can establish a preservable difference (Stank et al, 2001). A strategic supplier partnership with a key supplier, or a long-term historical customer relationship are sources of competitive advantage that will be very difficult for competitors to copy and emulate. In addition, the level and quality of information shared can be difficult to gauge from the outside, thus making it more difficult for competitors to copy or steal those practices. These critical management decisions can differentiate an organization from its competitors and provide a sustained source of competitive advantage.

Organizational performance refers to how well an organization achieves its market-oriented goals as well as its financial goals (Li et al, 2006). All organizational initiatives, also including SCM practices and decisions, should always lead to improving a company's organizational performance. SCM practices impact not only overall organizational performance, but also competitive advantage of an organization. They are expected to improve an organization's competitive advantage through price/cost, quality, delivery dependability, time to market, and product innovation. (Li et al, 2006.)

Having a competitive advantage generally suggests that an organization can have one or more of the following capabilities when compared to its competitors: lower prices, higher quality, higher dependability, and shorter delivery time (Li et al, 2006). These

capabilities will most likely lead to a better organizational performance, for example measured through financial criteria. Competitive advantage can lead to high levels of economic performance, customer satisfaction and loyalty, and relationship effectiveness. Brands with higher consumer loyalty face less competitive switching in their target segments thereby increasing sales and profitability. (Li et al, 2006.) A simple example of competitive advantage leading to a better organizational performance can be seen with premium quality products – premium quality means a premium price can be charged, which can lead to higher profit margins. Although, from the purchaser’s perspective - whether that be in B2B context or the final customer – it’s important to acknowledge that if the price is higher it also does not always mean that the quality is higher too (Krishnan, 2006).

Based on what was presented above, the three hypotheses mentioned in Figure 3 of Li et al’s (2006) study were: H1 - Firms with high levels of SCM practices will have high levels of organizational performance; H2 - Firms with high levels of SCM practices will have high levels of competitive advantage; and H3 - The higher the level of competitive advantage, the higher the level of organizational performance.

The three hypotheses support the framework presented in Figure 3. All three hypotheses were confirmed by their study, which validates the SCM practice construct. Firstly, the implementation of SCM may directly improve an organization’s financial and marketing performances in the long run. Secondly, the implementation of various SCM practices, such as strategic supplier partnership, customer relationship building, and postponement, may provide the organization a competitive advantage on cost, quality, dependability, flexibility, and time-to-market dimensions. And thirdly, the results also indicated that higher levels of competitive advantage may lead to improved organizational performance. (Li et al, 2006.)

Although the study does not provide a complete picture of all factors that influence a firm’s performance, which is also acknowledged in the study, the results clearly show

that SCM practices and decisions are very significant and important for organizations. As today's competition is moving from "among organizations" to "between supply chains", more and more organizations are increasingly adopting SCM practice in the hope of reducing supply chain costs and securing competitive advantage (Li et al, 2006). In conclusion, as Li et al (2006) noted, the findings of their research support the view that SCM practices can have discernible impact on competitive advantage and organizational performance.

In a similar study to Li et al's (2006), Al-Shboul et al (2017) formed three very similar hypotheses. They studied the supply chain management practices' (SCMP) causal relationship with the conceptualized constructs of supply chain performance (SCP) and manufacturing firms' performance (MFP). Al-Shboul et al (2017) also presented three hypotheses: H1 – there is a significant relationship between SCMPs and SCP; H2 – there is a significant relationship between SCMPs and MFP; and H3 – there is a significant relationship between SCP and MFP. In their study, all three hypotheses were confirmed, indicating that higher levels of SCMPs can lead to enhanced supply chain and firms' performance (Al-Shboul et al, 2017). The findings of their study demonstrate that firms should not only focus on traditional SCM activities such as purchasing and supplier management or transportation and logistics management, but also consider the importance of more contemporary SCMPs, including building SSP, leveraging the LIS with trading partners, and implementing an effective internal lean system (Al-Shboul et al, 2017).

So not only the one organization's performance can be improved, but also the entire supply chain's. This will be discussed further in later chapters with supply chain integration and learning in partnerships. Competitive advantages gained through an integrated supply chain will be very difficult to copy and imitate, thus making the competitive advantage a sustained one. As William Copacino concluded in the Harvard Business Review discussion (Scott et al, 2003):

A supply chain done right is a value chain. It's an integrated supply and demand chain or an integrated value chain. When you think about it that way, you use it to drive revenues and innovation and create value— not just to reduce cost. And that's where you start to get strategic advantage. (p.73)

2.4 Supply chain integration and collaboration

The supply chain management philosophy stresses that maximizing service to customers of choice at the lowest total cost requires a strong commitment to close relationships among trading partners. The philosophy requires a movement away from arms-length interactions toward longer term, partnership-type arrangements to create highly competitive supply chains. It is generally believed that increased collaboration among supply chain participants leads to lower total cost and enhanced service performance. Ideally, collaboration begins with customers and extends back through the firm from finished goods distribution to manufacturing and raw material procurement, as well as to material and service suppliers. Thus, integration is needed both internally (intra-organizationally) and externally (inter-organizationally). (Stank et al, 2001.) Supply chain integration is generally defined as strategic collaboration among supply chain partners through information sharing and coordination of decisions (Yu et al, 2019).

The ever-present pressure for speed and cost containment is making it even more important to break down stubbornly high internal barriers and establish more effective cross-functional relationships (Scott et al, 2003). As discussed in previous chapters, this integration is not always easy to achieve, but still vital in order to have a functioning organization and successful business. Supplier integration, strategic integration and customer integration across the supply chain determine customer responsiveness (Roethlein & Ackerson, 2004).

The concept of world-class logistics has expanded outside the boundaries of the firm to include customer and supplier integration. Top firms are developing extremely close relationships with selected clients and are placing significantly more emphasis on

improved working arrangements with suppliers. The motivation is the desire to extend the effective control of the enterprise. The needs and capabilities of material suppliers, service suppliers, and especially customers are incorporated into strategic planning as firms view operations in terms of supply chain interactions and strategies. (Stank et al, 2001.) These different kinds of partnerships, with varying levels of cooperation, are discussed in more detail later in this paper.

Managers identify operational tradeoffs with customers and suppliers in order to reduce supply chain duplication and eliminate non-value-adding work. Thus, leading logistical practice has shifted from an exclusively internal focus to collaboration across the full range of supply chain participants. (Stank et al, 2001.) Supply chain integration can facilitate information processing by coordinating strategic supply chain activities (such as forecasting and planning) with trading partners (Yu et al, 2019). Growth of information technology and communication capabilities such as the Internet and e-commerce enhance the ability to integrate the chain. With these tools, firms can forge relationships that yield dramatic performance benefits in terms of end-customer satisfaction and reduced cost due to the elimination of operational duplication and resource waste. (Stank et al, 2001.)

Within a supply chain setting, integration extends beyond the firm to encompass channel participants (Stank et al, 2001). Organizations need to be willing to cooperate together, but in order to fully integrate, that will alone is not enough. Integration might require investments to mutual projects, and resource sharing to complete those projects. Effective integration involves mutual understanding, a common vision, shared resources, and achievement of collective goals (Stank et al, 2001). As concluded by Yu et al (2019), supply chain integration helps align the external operations and leverage the resources and knowledge of suppliers and customers.

Simply stated, integration focuses efforts, whether from a corporate wide or functional perspective (Stank et al, 2001). As Li et al (2006) found in their survey that SCM practices

have an effect on competitive advantage, Stank et al (2001) have a similar view on supply chain integration: “More integrated firms perform better than less integrated firms” (p. 31).

Over the last decade, businesses, policymakers, and researchers alike have advocated the need for (and potential of) value creation through inter-organizational collaboration. Researchers have widely argued that organizations that are engaged in collaborative processes create value. (Pennec & Raufflet, 2018.) Collaboration is a process of decision making among interdependent parties. It involves joint ownership of decisions and collective responsibility for outcomes. Key dimensions are a cross-department (or organization) scope, a commitment to working together, and some common bond or goal. (Stank et al, 2001). To have successful collaboration, for example between organizations, managers need to build meaningful relationships between them, be able to cooperate together towards a common goal even if their backgrounds might be different and trust each other. A company that seeks to attain a competitive edge through external collaboration also must become more focused internally, so that it may better respond to customer expectations and accommodate customer needs (Stank et al, 2001).

Both management practitioners and researchers stress that one of the main reasons for the rise of inter-organizational collaboration has to do with its potential for allowing organizations to combine resources, skills, and knowledge from a wide range of stakeholders in order to address various challenges (Pennec & Raufflet, 2018). To summarize: Benefits emerge when partners are: 1) willing to work together, 2) understand other view- points, 3) share information and resources, and 4) achieve collective goals. The benefits are reduced resource duplication, greater relevance to customer needs, and flexibility in responding to unique customer requests and accommodating change. (Stank et al, 2001.)

Stank et al (2001) studied the relationship between internal and external collaboration and logistical service performance. They hypothesized that both internal (H1) and external collaboration (H2) has a positive influence on logistical service performance outcomes, and that internal and external collaboration are positively related (H3). Their study resulted in expected confirmations for the first and third hypotheses, but surprisingly the first results indicated that external collaboration does not lead directly to better outcomes in logistical service. That lead to further analysis, after which, it was concluded that also external collaboration is needed, but in itself not sufficient.

The findings reveal that internal collaboration significantly influences logistical service performance, which implies that firms should promote cooperation and collaboration across internal processes to achieve logistical effectiveness. The lack of support for a direct link between external collaboration and service performance is interesting and, on the surface, suggests that collaboration with customers and suppliers will not improve performance. Further investigation revealed, however, that collaboration with external supply chain entities influences increased internal collaboration, which in turn improves logistical service. Therefore, best practice firms focus on both. (Stank et al, 2001.)

Collaboration is needed both within and beyond the firm's boundaries. The benefits are synergistic. Collaborating and information sharing focuses more resources (human and financial) on business operations, which allows more informed decisions and reduces risks. The result is a win/win situation that should improve service performance. (Stank et al, 2001.) In addition, a firm needs to consider several tiers of a supply chain and ensure integration of those values throughout the chain. This can be more concentrated on for example environmental values or ethical values, but if those values are not integrated throughout the chain, the synergistic benefits are not gained.

2.5 Supply chain relationships and partnerships

Recent trends toward outsourcing and global sourcing have created longer, more complex and more fragmented supply chains (Mena et al, 2013). As supply chains become more extended, the incentives of the various players can become misaligned: what is good for one partner may not be good for the others, or even for the entire supply chain. However, the presence of strategic partnerships paves the way for coordination among independent players in extended supply chains. (Aydin et al, 2014.) The increasing trend towards outsourcing of logistics activities has contributed to the growth of third-party logistics service providers (LSPs) (Panayides, 2007). Outsourcing services to companies that have more expertise on a particular area can bring cost savings, shorter lead times and greater efficiency in the entire supply chain. With the increasing collaboration between the third-party logistical service providers and manufacturers, many executives of manufacturing firms are interested in building an effective relationship with their logistics providers to ensure the best quality supply chain performance possible (Li et al, 2012). In this context, the definitions from Li et al (2012) will suffice: manufacturers are the buyers who outsource their logistical functions or purchase logistical services, and LSPs are the suppliers who provide logistical services.

Ford et al (2003) indicated a need for variety in supplier relationships: there are good reasons for a customer to develop various types of relationships with its vendors, either short- or long-term and either high- or low-involvement. The varied aspects and their attributes are briefly presented in Figure 4. Different types of supplier relationships are needed for different circumstances and for example different types of products. When products are of strategic importance, the relationship with the supplier is naturally more long-term and intense. Whereas if the products are not as complex and the source could be easily changed just due to lower prices, the level of involvement and intensity will be lower.

	LOW INVOLVEMENT	HIGH INVOLVEMENT
HIGH CONTINUITY	1. LONG-TERM, ARM'S-LENGTH RELATIONSHIPS CONTINUITY ALLOWS ROUTINISATION. LOW INVOLVEMENT MAKES CHANGE OF SUPPLIER EASY	2. LONG-TERM, INTENSE RELATIONSHIPS EFFICIENCY IMPROVEMENT THROUGH ADAPTATIONS LEADS TO COST AND REVENUE BENEFITS OVER TIME
LOW CONTINUITY	3. SHORT-TERM, ARM'S-LENGTH RELATIONSHIPS INCREASING EFFICIENCY FROM PRICE PRESSURE, REQUIRING LOW CONTINUITY AND LOW INVOLVEMENT	4. SHORT-TERM, INTENSE RELATIONSHIPS APPROPRIATE FOR BUYING COMPLEX SYSTEMS AND EQUIPMENT BOUGHT INFREQUENTLY

Figure 4. Involvement and continuity of supplier relationships (Ford et al, 2003).

The results of Li et al's study (2012) indicate that the building of a long-term relationship is mediated by trust and commitment from manufacturers. When manufacturers believe that the logistics service provider is honest and passionate, and care about their business, they will make a commitment toward a long-term business relationship. Furthermore, when the relationship is mutually beneficial, it can be a source of competitive advantage, as discussed in previous chapters.

A beneficial partnership has implications for the 3PL providers as well. By developing strong, long-term partnerships, across several functions, providers should be able to improve relationships with customers and place themselves in a position to be of greater value to the customer. By doing so, the provider may also be able to achieve some of the desired outcomes from investing in a partnership. In particular, obtaining referrals, higher degrees of customer retention, and an increased perceived ability to recover from service failures are shown to be associated with stronger partnerships. In order to strengthen the partnership, the customer should perceive that the provider is focusing on the interaction between the companies and is concerned with winning and keeping the customer by maintaining links between marketing, quality, and customer service. (Knemeyer et al, 2003.)

However, the intra-organizational coordination that was referenced in earlier chapters, is important to keep in mind. For example, purchasing managers are rewarded for wringing the best possible price out of suppliers—a practice that's not conducive to nurturing long-standing partnerships (Scott et al, 2003). Therefore, organizational silos should not only look out for their own interests, but keep in mind the whole organization, and furthermore, the partnerships and networks with external organizations.

In order to integrate externally, an organization must be integrated internally. But sometimes the other way around might become easier for practitioners. As discussed by Scott et al (2003), for some reason, alliance professionals typically find it easier to create alliances with their major competitors than with other divisions in their own companies. Organizational silos can in such instances become barriers and complicate taking full advantages of the relationships with external partners.

Business relationships with distributors can turn into social relationships. Firms even foster social relationships because they value distributors' and customers' knowledge and resources. Thus, social relationships help create closer business relationships. As firms gain more experience and acquire more knowledge from these relationships, risk and uncertainty is reduced. (Agndal & Chetty, 2007.)

External relationships can vary in nature, with different types of suppliers or logistics service providers. Successful organizations manage these relationships differently - they'll separate vendors that provide commodities from preferred suppliers that they have good relationships with from strategic suppliers that they create alliances with. They manage the supply base through those three different elements in very different ways, using different metrics, different processes, different people, and different mentalities. (Scott et al, 2003.) Although Stank et al (2001) mentioned the need to move away from arms-length interactions toward long-term partnerships, that is not the complete picture. In the example of supplier relationships, some vendors indeed should

be handled differently, not all supplier relationships can or need to become partnerships. Reserving partnerships for situations where they're justified is one way to ensure they deliver value. What's needed, then, for supply chain partnerships to succeed is a way of targeting high-potential relationships and aligning expectations around them. (Lambert & Knemeyer, 2011.) It is the mark of successful supplier base management when an organization knows how to identify key relationships where they will focus the most efforts and resources.

Lambert et al (1996) devised a Partnership Model, illustrated in Figure 5, to help determine the partnership type and the needed resources and managerial components.

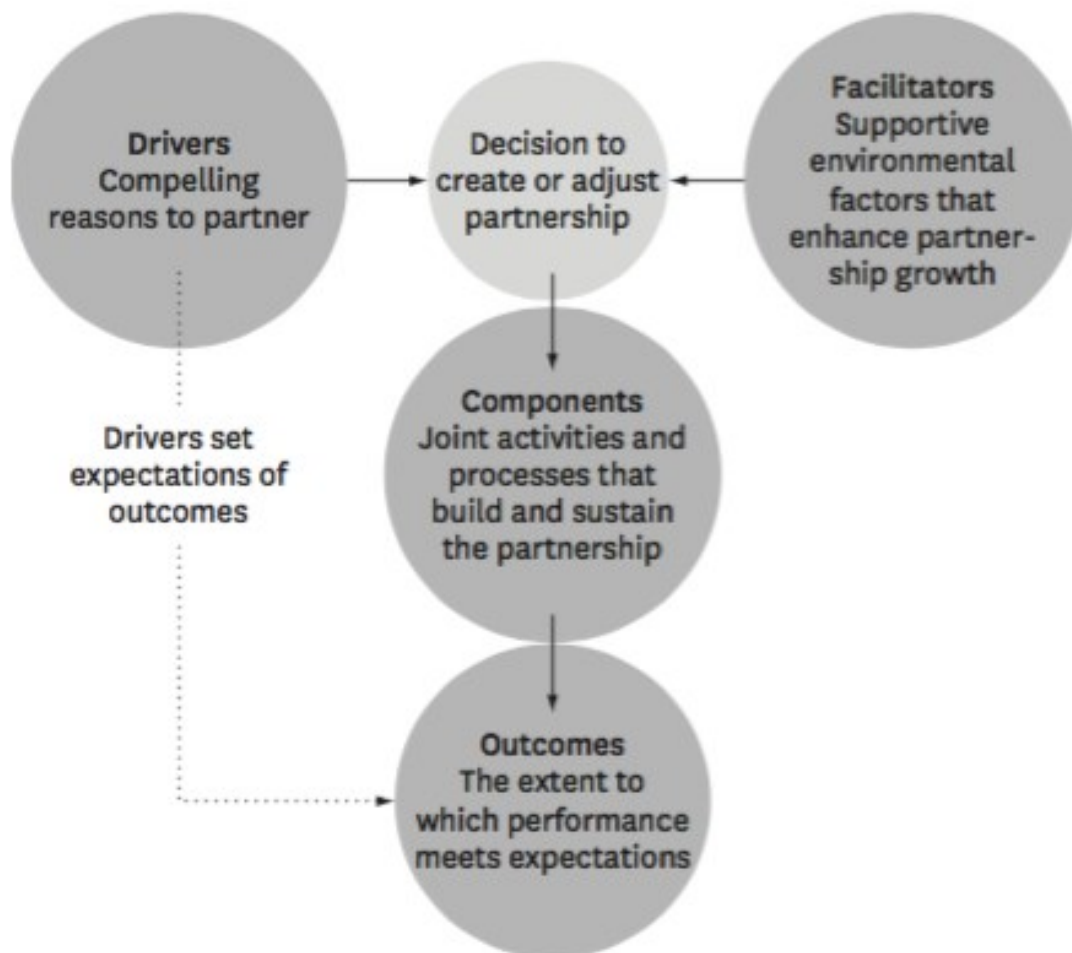


Figure 5. The Partnership Model (Lambert et al, 1996.)

The partnership model is a practical tool on how to evaluate different kinds of relationships. Managers state the drivers behind their desire to partner and examine the conditions that would facilitate cooperation. The model helps them decide on a partnership type and boost the needed managerial components. (Lambert & Knemeyer, 2011.) In practice the model could be used to determine whether to engage in new partnership, but also to gauge the current status of existing partnerships. Needs for developments can be pinpointed through a thorough analysis of the drivers, facilitators, components and outcomes of the partnership.

2.6 Business networks

A firm is embedded in a network of ongoing business and nonbusiness relationships, which both enable and constrain its performance (Ritter et al, 2004). These relationships with other actors can be seen as resources for the company. They provide direct benefits in terms of the many valued functions they perform and the resources they help create and provide access to, including knowledge and markets (Ritter et al, 2004).

The firm itself is nothing more than a complex network of internal relationships among people, departments, and functional units that form the basis of its ability to develop and implement its strategies. Consequently, firms are confronted with the management and integration of these internal and external relationships. (Ritter et al, 2004.) How the different roles are defined, how boundaries of responsibilities are defined, how this is communicated, all determine how the network of relationships are formed and how effective those are from a process standpoint. The term business networking has been used to refer to conscious managerial interventions and responses within the interactive process that have the aim of changing network structure or process. This conceptualization of business networking sees all interacting actors in assessing the trade-offs between costs and benefits for themselves and for others in both the short and long terms. (Ford & Håkansson, 2013.)

The different types of business relationships combined together form a network of relationships. Ritter et al (2004) composed a value net which identifies four types of firms and organizations that affect a firm's ability to produce and deliver value to an intermediate or final customer: suppliers, other customers, competitors, and complementors. This value net is shown in Figure 6.

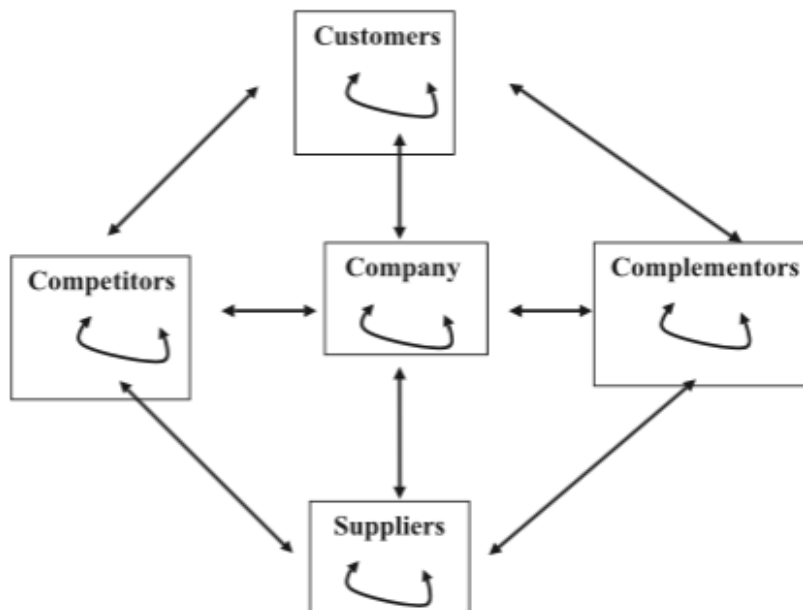


Figure 6. A firm's value net (Ritter et al, 2004).

This paper has already discussed the relationships a firm has with its suppliers and for example LSP's, but in the wider network context, all types of relationships need to be considered. The range of relationships can vary greatly, and depending on the markets and the industry, the role of complementor and competitor relationships can vary in importance.

Firms confront different types of relationship and network management situations, including those when they are in a powerful and controlling position, those when they are the subject of others control, and those in which multiple parties have strong influence over each other. All these situations require relationship and network management and draw on the skills and competencies of a firm or individual to handle

the kinds of interactions taking place in the best interests of their firms and themselves. (Ritter et al, 2004.)

Depending on the complexity of the relationships and/or networks, the level of management changes. These different levels of management are depicted in figure 7, where each dot represents an individual actor, which could be a person, business unit, firm, or other type of organization. Moving from individual actors, to dyadic relationships to complex networks, is described in the figure in the same order as the discussion in this paper is moving from partnerships to business networks.

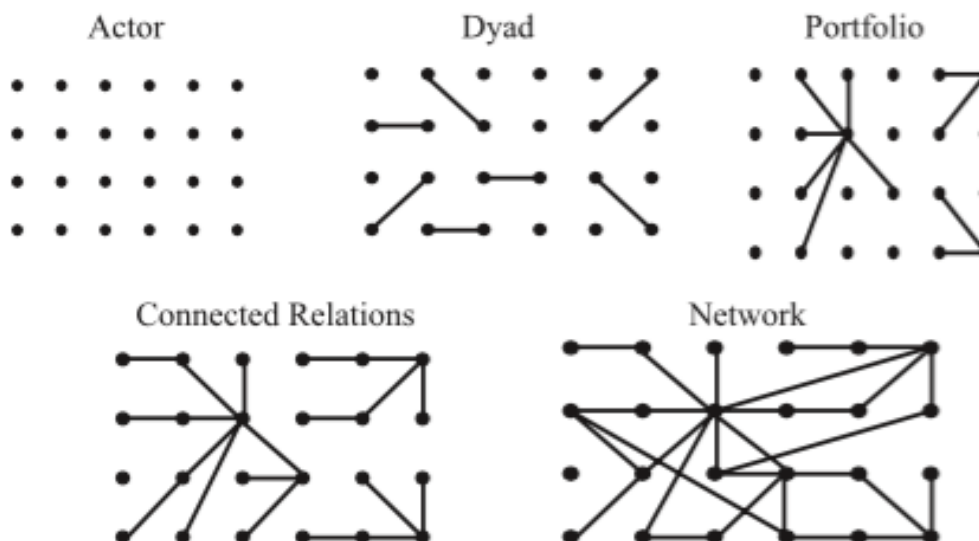


Figure 7. Levels of relationship and network management (Ritter et al, 2004).

Firms don't exist in vacuums, so the first level of individual actors separated from each other is a very rare in real life. And as earlier mentioned, the firm's must manage their internal relationships as well. From there, the complexity of the network and the number of individual relationships grows – from dyads to a complex and inter-related network. Business networking is not simply the implementation of the independent company strategies of one or more actors, but a part of the continuing interaction between interdependent actors, activities and resources (Ford & Håkansson, 2013). Therefore, in

a complex network, as depicted in Figure 7, the decisions the companies make do not happen independently, but in cooperation with other partners in the network.

Möller & Rajala (2007) called intentionally created business networks as nets - nets are extensively being used to achieve a variety of benefits over those of a single firm or market transaction. They also proposed that the underlying value creation logic defines how each types of nets need to be managed effectively. Möller & Rajala (2007) suggested there are three generic types of nets: “current business nets”, “business renewal nets”, and “emerging new business nets”. The different types of nets and their underlying characteristics are shown in a framework in Figure 8.

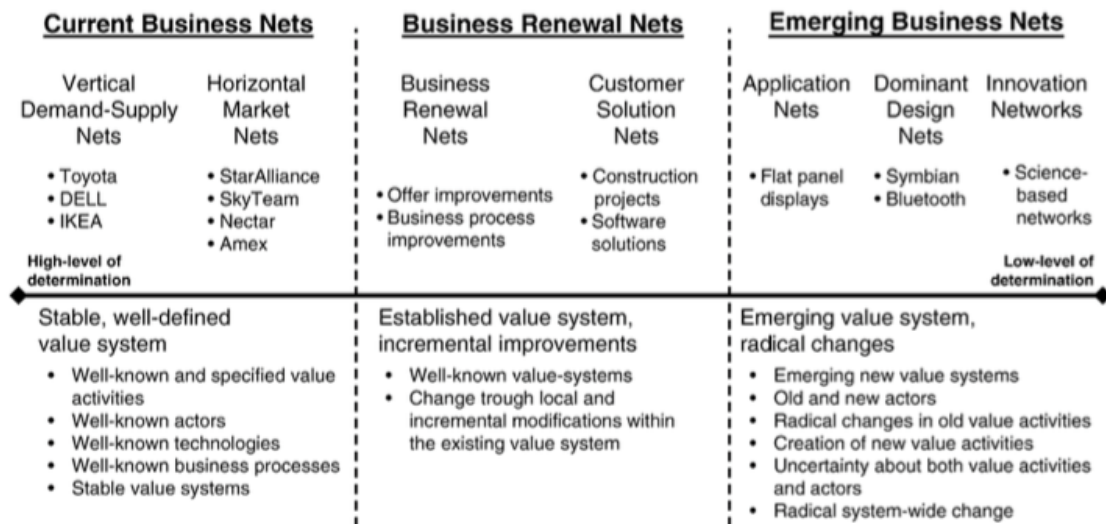


Figure 8. Business net classification framework (Möller & Rajala, 2007).

In short, current business nets are trying primarily to achieve efficiency gains through demand–supply coordination, business renewal nets are looking for local business process improvements by incremental innovation and change, and emerging new business nets are seeking to create more effective technological applications and business concepts by means of radical innovation and business system change (Möller & Rajala, 2007). In practice, different types of nets are not necessarily mutually exclusive, and nets can have different aspects in certain parts of the networks or processes. For

example, the processes in the supplier network can resemble the defined current business nets -scenario very much, but incremental modifications and improvements in other networks, in another part of the supply chain can be very clearly defined as the business renewal nets.

2.7 Learning in networks

Previously the decision on forming a business network was often based on opting between manufacturing a component or purchasing it from a supplier – the resolution was typically based on simple calculation of expenses. Building a modern business network is based more on the question “how can we, as a group of companies, create more value for the customer?”. (Ahokangas et al, 2015.) Ongoing inter-firm network relationships are increasing in importance among suppliers and their customers and have become an integral part of business-to-business operating strategies (Batonda & Berry, 2003). Establishing effective interorganizational knowledge-sharing processes with suppliers and partners can be crucial for any company trying to stay ahead of its competitors (Dyer & Hatch, 2004). Panayides (2007) investigated the effect of organizational learning on relationship orientation, logistics service quality and performance in third-party logistics (3PL). He proposed a conceptual model, shown in Figure 9.

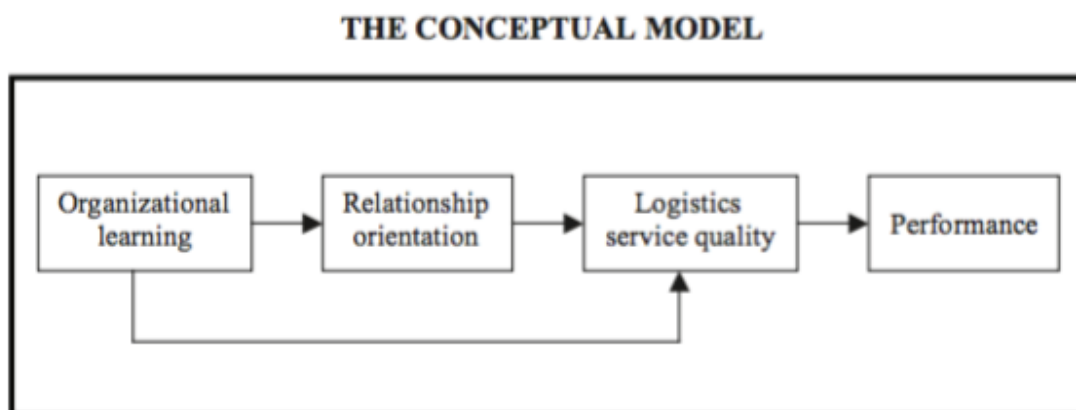


Figure 9. Conceptual model (Panayides, 2007).

The model echoes the view earlier presented by Li et al (2006), where a connection between SCM practices, competitive advantage and organizational performance was observed. Panayides (2007) proposed that organizational learning within the LSP organization will positively influence relationship orientation and logistics service quality on behalf of the LSP. In addition, that relationship orientation will also influence positively logistics service quality, and this will have a positive effect on organizational performance of the LSP.

In order to reap the benefits from partnerships and learn from them, a certain level of trust needs to be established. A lack of trust causes companies to duplicate activities between its own operations and its outsourced partners. Too often, we outsource an activity and then keep a lot of the management systems for that activity in place to verify that certain things are being done. (Scott et al, 2003.) This in turn, wastes resources that could be focused elsewhere, and the partnership does not bring full benefits for either party.

An important opportunity that partnerships brings to an organization, is external innovation. If partnerships are not effectively managed, there's an avenue of innovation that's just being completely missed, which is innovations that come from suppliers (Scott et al, 2003). When organizations outsource responsibilities to for example LSP's, it's reasonable to assume that as they have more expertise on that area, they have more capabilities for process development and new innovations. In addition to more avenues for innovation, networks are able to respond to demand more efficiently and more flexibly than traditional static organizations (Ahokangas et al, 2015). Also, different types of innovation require certain types and strength of relationships (Partanen et al 2014).

Dyer & Hatch (2004) discussed the evolution of a knowledge-sharing network in their case study of Toyota. They identified the ways in which network learning has become a competitive advantage for the company. How the company facilitates network learning

and the transfer of knowledge, is depicted in detail in Figure 10. The figures 10 and 11 are first presented, and then discussed further.

How Toyota Facilitates Network Learning

Toyota relies on three interorganizational processes — supplier associations, consulting groups and learning teams — to facilitate the transfer of knowledge within its supplier network.

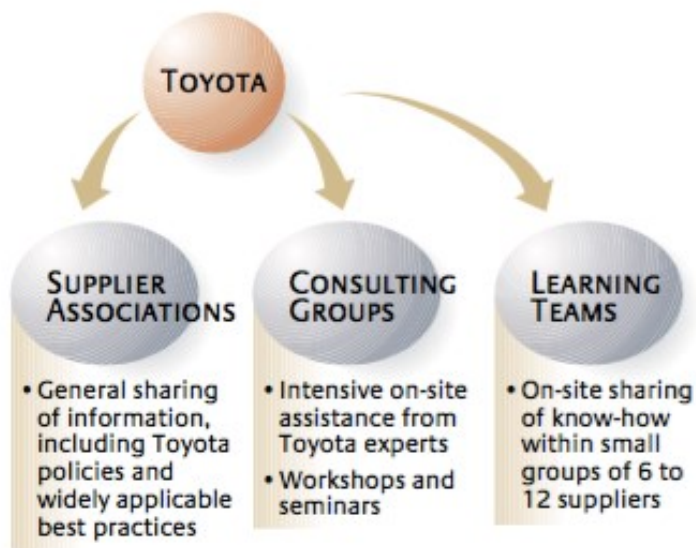


Figure 10. How Toyota facilitates network learning (Dyer & Hatch, 2004).

The network is an evolving concept. In the early stage of implementation, be it at any organization, connections are weaker, and transfer of knowledge is bound to be slower. But the network is constantly developing and becoming more and more integrated, which in turn increases the benefits organizations can gain from the network learning.

An example of this evolution is again provided by Dyer & Hatch (2004), in Figure 11.

Evolution of Toyota Network

In the early stages of a knowledge-sharing network, Toyota establishes bilateral relationships with suppliers (left). At this point, the supplier network resembles a hub (Toyota) with many spokes. Later, the suppliers begin to form ties with each other in nested subnetworks (right). These multilateral relationships greatly facilitate the flow of knowledge so that members are able to learn much faster than rival, nonparticipating suppliers.

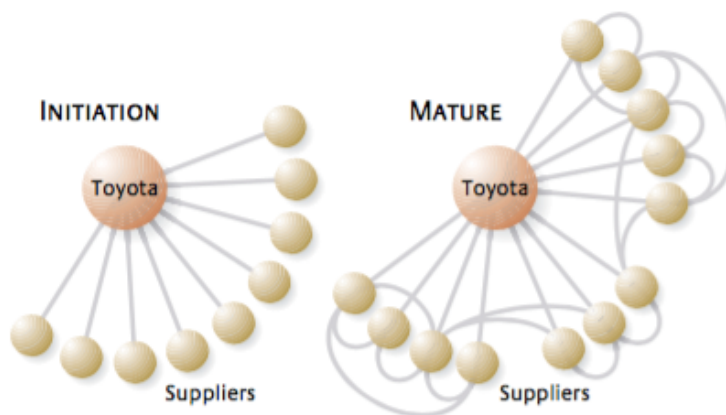


Figure 11. Evolution of Toyota network (Dyer & Hatch, 2004).

Although the networks evolve with time, it's important to keep in mind, as Batonda & Berry noted in 2003:

“Findings of this research make it clear that the network relationship development process is not an orderly progression of phases over time, but is essentially an evolution of unpredictable states”.

The evolution of network is real, but one organization cannot necessarily accurately predict and plan the different phases of network's evolution.

In their study of Toyota, Dyer & Hatch (2004) concluded that by transferring its know-how to suppliers, Toyota has helped those firms greatly improve their performance, and this in turn has generated tremendous competitive advantages for Toyota. This form of

knowledge-sharing and partnering up is of course easier said than done. Taking know-how learned from one customer and applying it to another can be extremely difficult, mainly because knowledge is so context-dependent (Dyer & Hatch, 2004). Just the manufacturing processes themselves can be rigid, unique and highly optimized and automated. A change in that process might become very expensive, which increases change resistance at the partnering companies. But, once successfully implemented, competitive advantages can be created and sustained through superior knowledge-sharing processes within a network of suppliers (Dyer & Hatch, 2004).

Sharing knowledge to a supplier for example, can help improve the efficiency of their operations which can bring cost savings. This in turn incentivizes collaboration and long-term partnerships. The more an organization engages in knowledge sharing with its partners, the more tangled and integrated the web of that particular network becomes (see figure 11), which makes it increasingly difficult to imitate by the competitors. In this way, the strategic decision of facilitating network learning, can become a source of not only competitive advantage, but most importantly, *sustained* competitive advantage.

Managers should pay attention to joint learning processes, such as knowledge sharing, joint sense-making, and relationship-specific memory. In the absence of joint learning, a relationship may end up in a relational learning trap, where relational resources are only being exploited, rather than being explored for their innovative potential. (Huikkola et al, 2013.) These lost resources hinder process development rather than facilitate more possibilities for innovation.

Managers must also decide whether to facilitate relational learning at the team or individual level. Whereas team-level collaboration is more risk averse and promotes knowledge sharing with the various parties to the relationship, for example, individual-level collaboration facilitates strong communication between individuals within the relationship, making the firm-to-firm relationship more dependent on individuals. (Huikkola et al, 2013.) The risk with individual-level collaboration is naturally that

individual roles can change, people change jobs, or the fact that individual relationships can be more volatile – entire teams' joint learning capabilities can be at risk when individual from partnering organizations don't collaborate effectively, come along with each other, or don't understand each other.

2.8 Supply chain risk management

Due to demanding customers and competitive pressures, businesses today are restructuring themselves to operate on a global basis to take advantage of the international product, factor, and capital markets. There are several concerns in operating globally, including economic, political, logistical, competitive, cultural, and infrastructure. (Manuj & Mentzer, 2008.) Although there are concerns and risks, many organizations operate on such markets that having only local supply chains is not feasible, therefore global supply chains are often required. One response to counter the increased complexity of global supply chains has been movement from arms-length sourcing decisions to a strategic management of sourcing (Aydin et al, 2014).

Managing risk has become a critical component of supply chain management. The implications of supply chain failures can be costly and lead to significant customer delivery delays. (Wu et al, 2006.) Many recent events demonstrate that an event affecting one supply chain entity or process may interrupt the operations of other supply chain members. Hence, it is important to look at the entire supply chain, across all countries, when selecting and implementing risk management strategies. (Manuj & Mentzer, 2008.) The more diverse the supply chain is, the more there are various types of risks involved. The focus on partnerships combined with a just-in-time approach to inventory management has led to tightly coupled supply chains, without a lot of slack capacity or buffer inventory to manage variability in any aspect of the supply chain. Additionally, the variability, or uncertainty, in a global supply chain tends to be higher than in a domestic supply chain because of increased distances and lead time, heightened political risk, and amplified exposure to natural disasters due to multiple locations. (Aydin et al, 2014.) This study will not delve too deep in various types of risks,

rather shortly indicating different types of risks and the sources that Manuj & Mentzer (2008) identified in their study, presented in Table 4.

SUMMARY OF RISKS

Type of risk	Source
Supply Risks	Disruption of supply, inventory, schedules, and technology access; price escalation; quality issues; technology uncertainty; product complexity; frequency of material design changes
Operational Risks	Breakdown of operations; inadequate manufacturing or processing capability; high levels of process variations; changes in technology; changes in operating exposure
Demand Risks	New product introductions; variations in demand (fads, seasonality, and new product introductions by competitors); chaos in the system (the Bullwhip Effect on demand distortion and amplification)
Security Risks	Information systems security; infrastructure security; freight breaches from terrorism, vandalism, crime, and sabotage
Macro Risks	Economic shifts in wage rates, interest rates, exchange rates, and prices
Policy Risks	Actions of national governments like quota restrictions or sanctions
Competitive Risks	Lack of history about competitor activities and moves
Resource Risks	Unanticipated resource requirements

Table 4. Summary of risks (Manuj & Mentzer, 2008).

Several challenges, though common in both domestic and global supply chains, are more significant and critical in global operations (Manuj & Mentzer, 2008). A good example is the recent COVID-19 pandemic, for which organizations should have started to prepare for as soon as the first signs of global spreading were noticed. Even though the virus could've taken a longer time to have a tangible impact at one organization's home economy and daily life, other partners in the supply chain might have become affected a lot sooner and a lot harder. Another recent example of a supply risk is the vulnerability of global supply chains and especially bottlenecks in the supply lanes, such as the Suez Canal, and the recent example of the vessel Ever Given blocking the canal and causing disruptions to global supply chains to and from Asia. Also, the economic effects, for example on the global financial markets will have affected all partners in the supply chain.

Global supply chains have potentially more delay points, greater uncertainties, and hence the need for greater coordination, communication, and monitoring (Manuj & Mentzer, 2008). The increasing vulnerability of global supply chains to large-scale

disruptions has led to an understanding that the tightly coupled supply chain is only as strong as its weakest link. Hence, identifying the sources of supply risks and mitigating those risks assumes a larger role in a global supply chain. (Aydin et al, 2014.) Risk management strategies need to be considered on a much larger scale with international partnerships. Greater uncertainties mean that not all possibilities can be anticipated, and quick reactions are needed when new challenges arise. This requires flexible management capabilities and close cooperation with the partners in the supply chain.

Managing risk in inbound supply chain operations has become increasingly important in today's competitive and globally dispersed environment. Supply chain managers spend a significant amount of time and resources to manage inbound supply risk. (Wu et al, 2006.) Another recent example, Brexit, has required plenty of attention from supply chain managers to firstly prepare for the possible Brexit scenarios, then with the changing status of a possible no-deal Brexit and finally the actual dealing with the new reality starting in January 2021. The result may have led to sourcing managers in Europe to trying to find alternative suppliers for current suppliers in the UK and for example logistics managers preparing for longer lead-times within the supply chains with origins in the UK. Also, the previously mentioned bottlenecks in supply lanes are risks in inbound supply chains, so multiple sources for strategically critical products need to be considered as an alternative.

In their study, Wu et al (2006), noted that the implementation of risk management in the inbound supply chain is often disjointed and inconsistent within organizations. They concluded that in fact, in many cases it is up to the manager's experience to assess and evaluate the risk. Therefore, companies should adopt a more integrated approach with their partners, and coordinate risk management strategies more systematically to better evaluate and prepare the whole supply chain for different scenarios. When it comes to networks, there can be also positive aspects in terms of risks: in a network the risk is usually divided between participating companies, this is a positive issue especially for SMEs (Ahokangas et al, 2015).

2.9 Conclusion

The theory chapter of this paper discussed various topics in the existing academic literature. Supply chain management was first defined and then observed from different perspectives. This analysis of perspectives will continue after the empirical findings are presented, and the case study will be analyzed in terms of perspectives on the supply chain management vs. logistics discussion. Supply chain management as a source of competitive advantage was examined. The theory chapter then moved on to supply chain integration and collaboration, to deepen the focus on intra and inter-organizational cooperation. This focus will continue in the empirical findings chapter. Relationships, partnerships and networks were then discussed in the supply chain context. Learning within those networks was also discussed, and that topic is also in focus in the interviews of this study. Finally, risk management was discussed to provide context for examining the topic in the interviews and analyzing the empirical findings. Further discussion related to the theory chapter will continue in chapter 5 of this study, where the empirical findings are discussed and compared to the contents of this literature review.

3 Research design and methodology

This chapter presents the research design and methodology used in the study. First, the selected methodology is introduced and justified, followed by the presenting of the research method. The data collection and analysis methods are justified, and finally the validity and reliability of the study are discussed.

3.1 Research methodology

Qualitative research was the chosen methodology for this study. Qualitative business research gives a researcher an opportunity to focus on the complexity of business-related phenomena in their contexts. It produces new knowledge about how things work in real-life business contexts, why they work in a specific way, and how we can make sense of them in a way that they might be changed. (Eriksson & Kovalainen, 2008.) Since the purpose of the study is to research complex processes and their functionality in a network environment, selection of the qualitative methodology is justified.

3.2 Research method

The chosen research method, or research strategy, for this study was a single case study. Intensive, or classic, case study research draws on the qualitative and ethnographic research traditions, emphasizing interpretation and understanding of the case as well as elaboration of cultural meanings and sense-making processes in specific contexts. The main aim is to understand and explore the case from 'the inside' and develop understanding from the perspectives of the people involved in the case. (Eriksson & Kovalainen, 2008.) The research method chosen for this study can therefore be classified as intensive case study.

3.3 Data collection and analysis

This thesis concentrates on the company Metso Outotec Oyj, where the writer of the thesis is also currently working at the Tampere, Finland offices. Metso Outotec was created through the combination of Metso Minerals and Outotec on June 30, 2020. The company is a frontrunner in sustainable technologies, end-to-end solutions and services for the minerals processing, aggregates and metals refining industries globally. (Metso:Outotec, 2021.)

Data was collected through a series of semi-structured interviews during February 2021. Interviewees were different stakeholders at Metso Outotec and also at their external warehouse partner. The list of interview questions is presented in Appendix 1. The interviews included many how-questions in order to gain in-depth answers from multiple perspectives, in general the interviews were conducted in a fairly conversational tone to discuss the topics. The criteria for selecting the interviewees was based on collecting a broad range of perspectives from representatives of different parts in the supply chain, namely in the inbound process. Each interviewee has several years of experience working for their current company, so each interviewee was able to provide perspective from a prolonged period of time. Purchasing, logistics and warehouse teams were represented from Metso Outotec's side, and different stakeholders from an external 3PL warehouse were also interviewed to gauge their views on the same topics. Nine persons were interviewed overall, the interviews lasted between 60 and 90 minutes each. Interviews were conducted via Microsoft Teams, due to ongoing Covid-19 restrictions which prevented face-to-face interviews, especially given that the 3PL Warehouse representatives are located in the Netherlands. The interviews were recorded and then transcribed word for word. The researcher studied that data in detail. Data was analyzed, recurring themes, differing opinions and interesting quotes were highlighted.

Role of the interviewee	Company	Experience at current employer
Senior Manager; Logistics, Warehousing and Quality	Metso Outotec	Two years
Senior Manager, Operative Purchasing	Metso Outotec	Four years
Operative Purchasing Manager	Metso Outotec	Three years
Logistics Manager	Metso Outotec	Ten years
Manager, Control Tower EMEA	Metso Outotec	Six years
Manager, Warehouse and Quality	Metso Outotec	Three and a half years
Operations Manager	Ceva Logistics	Two and a half years
Inbound Supervisor	Ceva Logistics	Three years
Office Supervisor	Ceva Logistics	Five years

Table 5. List of interviewees.

3.4 Reliability and validity

Reliability tells you the extent to which a measure, procedure or instrument yields the same result on repeated trials. Therefore, the question of reliability is related to the establishment of a degree of consistency in research in the sense that another researcher can replicate your study and come up with similar findings. (Eriksson & Kovalainen, 2008.) In terms of reliability, there is a risk that interviewees understand different questions in different ways. In this study, the purpose of the research was explained to the interviewees in advance, and also the interview questions were provided to interviewees in advance. In addition, if interviewee had further questions

or something was unclear about the interview questions, those were discussed and explained by the researcher.

In all research, quantitative as well as qualitative, we have to deal with our presuppositions in order to remain open throughout the whole process of inquiry. Prejudices stand in the way of complete openness. It is important to be aware of this in order to recognize and bracket prejudices, and the researcher must recognize prejudices and their influence upon the interpretations made. If we are not aware of these presuppositions or neglect the problems associated with them, then we risk obtaining results that are primarily a reflected image of something already existing in our understanding. (Nyström & Dalhberg, 2001.) In this study, the researcher has ample pre-understanding regarding the topics discussed in the interviews as he is working for Metso Outotec and has been part of the developing the inbound process for several years. During the interviews, the attempt was to remain objective and avoid interpretations of answers to fit existing understanding on the matter. During the whole process of inquiry, the researcher has to be reflective about the method that is used, and the meaning found in data. By a course of action including critical reflections and courage to challenge one's knowledge about oneself, the relationship between pre-understanding and openness can be more successful. (Nyström & Dahlberg, 2001.)

Pre-understanding has also its benefits, in this study it has enabled the researcher to select suitable interviewees and ask probing questions on the subjects being studied. Also, as the interviewer had experience on the matters that were being discussed in the interviews, the discussion could be quite informal and conversational, and interviewees did not have a high barrier to ask clarifying questions if some points were unclear for them. In order to prove the reliability of this study, the procedures of the study are documented, and multiple quotes are presented to justify the conclusions that have been made based on the data.

Validity is another classic evaluation criterion. It refers to the extent to which conclusions drawn in research give an accurate description or explanation of what happened. (Eriksson & Kovalainen, 2008.) Triangulation of data means that evidence from multiple empirical sources is used to cross-check information (Eriksson & Kovalainen, 2008). In terms of the validity of the empirical study, the interviewees were selected from multiple teams, from different points of the supply chain. This was done to provide a holistic picture of the current processes and possible development needs. All interviewees had plenty of experience of working at Metso Outotec, or working with Metso Outotec, and all interviewees have been a part of developing the inbound process in different parts of the supply chain, so each interviewee was able to provide different perspectives and draw examples from personal experience. For the theory part, multiple scientific sources that were often cited were used, and multiple theories were presented. Many of the sources that are mentioned were published some years ago, but in those instances the selected sources and theories can still be applied to contemporary cases, and the particular sources were cited by other authors multiple times. Therefore, it can be concluded that triangulation of data and theory have increased the validity of this research.

4 Empirical findings

The purpose of this research is to study how the inbound process part of a supply chain can be developed through cooperation between internal and external stakeholders and what are the effecting factors in this cooperation. In this chapter the empirical findings and their relation to the theoretical framework are discussed. The quotes are based on the interviews conducted in February 2021.

The case study for this research is Metso Outotec, and more specifically, from the legacy Metso side, the Customer Logistics organization of their spare parts and consumables business area, EMEA region (Europe, Middle East and Africa). Metso Outotec manufactures mobile and stationary crushers for customers in several fields of industry, and the spare parts and consumables business is a big part of their revenue stream. At the time of writing, Metso Outotec has their main warehouse for spare parts and consumables located in Born, Netherlands, where an external company is operating the 3PL warehouse. Metso Outotec also has smaller warehouses in Finland – at Tampere (legacy Metso) and at Vantaa (legacy Outotec) – which will be centralized during Q1 and Q2 of 2021 to be operated by another 3PL warehouse operation in Helsinki.

At legacy Metso side, the largest flow of goods moves through the main warehouse in the Netherlands. The Netherlands main warehouse is also the largest of all the main warehouses globally for Metso Outotec. In this study, the focus will be on the inbound process of spare parts and consumables, from internal or external vendors, transported via different LSP's, arriving to the main warehouse and handled by the 3PL warehouse. The different teams responsible for different parts of that process are all represented among the interviewees. The study focuses entirely on legacy Metso side of the company, so in many cases the interviewees have referenced the company as just "Metso".

4.1 Inbound process at Metso Outotec

The ever-increasing trend towards more product variety and short response times has placed a tremendous emphasis on the ability to establish smooth and efficient logistic operations. These operations even play a vital role in determining a company's competitiveness, since logistic costs constitute an important part of the overall production costs. The efficiency and effectiveness in any distribution network in turn is largely determined by the operation of the nodes in such a network, i.e. the warehouses. (Rouwenhorst et al, 2000.) The importance of the warehouse operations in the inbound process was also a major factor in the interviewee selection, and therefore the external warehouse partner is represented among the interviewees. The inbound process and the findings of the interviews are discussed in the sequence in which the goods actually flow: from suppliers, managed by a purchasing team, moving via a carrier, managed by a logistics team, arriving to the warehouse, managed by a warehouse team and operated by an external warehouse partner. The inbound process at Metso Outotec is briefly described in the following table, including the different teams that will be presented next, and each team's main responsibilities that affect the inbound process.

External Supplier	- Following the agreed operative processes (booking shipments, packing and labeling the goods)
M:O Operative Purchasing Team	- Purchase order creation and order expediting - Supplier management
M:O Logistics Team	- LSP management
M:O Warehouse Team	- Warehouse partner management: • Process development and troubleshooting
External Warehouse Partner	- Warehouse operating: • Goods receipt and putaway • Deviation reporting

Table 6. Inbound process at Metso Outotec

At Metso Outotec, the responsibility of managing external suppliers is on the operative purchasing team. Operative purchasers handle the day to day contacts to the suppliers, the purchase orders, the expedition requests and also the issues in the operative

processes, such as problems with the suppliers' booking of shipments or process errors that affect the physical receiving of the goods at the warehouse, like labeling or packing of the goods. In escalation cases, the sourcing engineers will be involved. Metso Outotec is also using an EDI connection for purchase order handling with some suppliers, in order to have as much of the repetitive processes automatized. There are several hundreds of external suppliers, and the managing of the suppliers varies greatly based on among others the volumes of purchase order lines, financial volume or proximity of the supplier. The purchasing team consists of fourteen operative purchasers, a manager and a senior manager. As presented in chapter two, the different types of supplier relationships, divided by the levels of involvement and continuity (Ford et al, 2003), are very much in line with Metso Outotec's supplier base.

The inbound process is one of the aspects that work better than most. There are quite a few problems on our table from other aspects now that affect our daily work. No big issues that come to mind, and the level of the 3PL warehouse operations has been on a very high level, high quality work in the past few years.
(Operative Purchasing Manager)

When it comes to inbound process development, purchasing team is responsible of making sure that suppliers are adhering to the agreed processes. When the warehouse team communicated deviations in the process, the purchasers are the ones who communicate those issues to the suppliers, instruct the correct processes and if needed, claim costs from the suppliers. The purchasing team's success in instructing and following that correct processes are followed by the suppliers has a direct effect to the external warehouses processes and especially the inbound team's performance – the less deviations there are, the smoother the whole warehouse process can flow. The reactive way of fixing issues reported by the warehouse seems to be working well, in cooperation with the warehouse team, but the proactive way of preventing the issues from happening does not seem to work as well.

The inbound process is heavily affected by the supplier quality as in the product quality, but also the process quality. I think we receive a lot of stuff from lots of suppliers when they are not ready to be our supplier yet. Majority of the cases would be really clear at the warehouse if the overall supplier development in terms of the practicalities (correct types of pallets, identifying the goods, correct packing lists, etc.) had been done earlier. (Senior Manager; Logistics, Warehouse and Quality)

Logistics team's responsibility is to manage the LSPs, meaning the carriers. Most of the logistics coordinators' tasks are on the outbound side of the process, but there is also a specified inbound logistics coordinator in the team. Logistics team's responsibility is to handle the day to day contacts with the LSPs and on the outbound side the team works closely with the warehouse and sales teams. On the inbound side, purchasing team and the warehouse team are close contacts for the inbound logistics coordinator. Logistics team consists of four senior logistics coordinators (includes the inbound coordinator), eight logistics coordinators, currently five trainees and the logistics manager. Warehouse team can report issues that arise from process deviations by the LSPs, and in those cases the inbound logistics coordinator will handle the process development responsibilities regarding those carriers.

Warehouse team's responsibility is to manage both the internal warehouse at Tampere and the main warehouse in Netherlands that is operated by the 3PL partner. Warehouse team acts as the point of contact, and most of the communication between the 3PL warehouse and Metso Outotec goes through the warehouse team. Warehouse team consist of an inbound process specialist, two warehouse process specialists, two quality engineers and a warehouse manager. The quality engineers' responsibilities are on the product quality side, whereas the process specialists are responsible more for the process quality. As mentioned with the responsibilities of the purchasing and logistics teams, the input often comes from the warehouse team. Metso Outotec's warehouse team therefore is in very close contact with the 3PL warehouse, to monitor and

coordinate any deviations in the inbound process, in order to be able to communicate those to the correct teams for corrective actions. In addition to the deviation reporting, several development projects are handled in cooperation with the 3PL warehouse, to ensure for example efficient storing of the goods, packaging developments or other various projects.

The external warehouse organization is responsible for managing the actual warehouse operations in the Netherlands site. Warehouses are an essential component of any supply chain. Their major roles include: buffering the material flow along the supply chain to accommodate variability caused by factors such as product seasonality and/or batching in production and transportation; consolidation of products from various suppliers for combined delivery to customers; and value-added-processing such as kitting, pricing, labeling, and product customization. (Gu et al, 2006.) The relative importance of a particular criterion varies with the types of warehouses. Two types can be distinguished: the distribution warehouse and the production warehouse. The function of a distribution warehouse is to store products and to fulfill external customer orders typically composed of a large number of order lines (where each order line specifies a quantity of one particular product). The number of different products in a distribution warehouse may be large, while the quantities per order line may be small, which often results in a complex and relatively costly order-picking process. Therefore, distribution warehouses are often optimized for cost-efficient order-picking. The prominent design criterion is the maximum throughput, to be reached at minimum investment and operational costs. (Rouwenhorst et al, 2000.) The warehouse operation in question in this study, is by this definition a distribution warehouse.

The company operating Metso Outotec's main warehouse is Ceva Logistics. The organization consists of the contract manager, operations manager, office supervisor leading the customer service and inventory control teams, inbound supervisor leading the inbound teams and outbound supervisor leading the outbound teams. The operations are divided to two separate facilities, in practice two sites less that one

kilometer apart. At both sites, there are inside and yard operations. From the product perspective, mainly the consumables are stored and handled on the yard, and spare parts are stored and handled inside. The main focus of this study, the inbound process, ends when the separate processes on the inbound side are finished and goods are put to storage, ready to be picked for outbound orders.

At the warehouse, the inbound process consists of truck/container unloading, sorting, receiving and putaway of the goods. The inbound team at the warehouse works in close contact with their Metso counterparts, and also internally with the inventory control team. The internal cooperation is needed for example in solving inbound process deviations and customer request handling. The deviations in the process are handled through the Operational Discrepancy Report (ODR) process. In short, whenever the inbound operators face a problem, they bring the case to the ODR coordinator. If the ODR coordinator can't solve it himself, he reports the case to Metso Outotec, where one of the specialists from the warehouse team coordinates the problem solving. Either the specialist then provides a solution to the warehouse, or then a purchaser is required to assist in certain cases. As the Ceva warehouse operators are the practical eyes and hands on the floor, accurate reporting from their side is required in order for the correct teams at Metso Outotec's side being able to follow-up with the corrective actions. Developing the suppliers' processes most often begins from ODR reporting from the warehouse. The most common process errors are incorrect documentation, unclear labeling of the goods, or some piece of information is missing that the operator requires in order to receive the goods to the SAP system. As previously mentioned, Ceva inbound team is the place where the process development, or lack of it, is felt in practice. If suppliers keep making the same errors, for example not marking the goods clearly, it is the inbound team at the warehouse who cannot proceed in their process.

I think most often the development initiatives come from the warehouse, as we don't see what is actually sent from suppliers. When we receive something to Tampere or Born, then the warehouse reports for example that this is packed

wrong, or items are damaged, etc. Then I think it's the purchasing team's responsibility to communicate with the supplier that this needs to be fixed. (Senior Manager, Operative Purchasing)

In terms of deviation handling, the biggest responsibility from my team would be to alarm and log the cases accurately, so the follow-up can be efficient. When we are logging the right things clearly, that makes Metso's part of the job also easier. Then Metso's responsibility would be to act and fix the suppliers based on Ceva's reported topics. That's the biggest responsibility with the information that we are giving, to instruct the suppliers so that they know what influences and consequences their work is having on Ceva's side. The faster Metso can pick up those points, and look for a solution, the better it is for the flow inbound of course. Information from our side is critical for Metso, and the handling and passing through the information to the suppliers from Metso's side is critical for us. (Inbound supervisor, Ceva)

In conclusion, the inbound process is clearly described, and different responsibilities and boundaries seem to be clearly defined at Metso Outotec. Different teams know what their responsibilities are and how those affect other parts of the supply chain. As mentioned, one area of development would be to proactively fix the operational issues at suppliers instead of fixing them reactively. That would mean in practice better guidance and onboarding for new suppliers when they start the first time to deliver goods to Metso Outotec's warehouse.

4.2 Intra and inter-organizational cooperation

At Metso Outotec, the teams located in Finland, handling the spare parts business were previously under the umbrella of Distribution Center Europe (DCE). This DCE setup included the purchasing, logistics, warehouse, customer care and technical parts support teams. All these teams were located in the same offices, so people were working in close proximity to their nearest colleagues in other teams. The same teams mostly exist

nowadays as well, but after some organizational changes in the last two years, the name DCE is no longer used and some responsibilities have changed as well. But the history of this DCE setup still lingers and has an obvious effect on the intra-organizational cooperation.

Simply put, the closer you are, the easier the cooperation is. With the nearest teams, at least before Covid, there was physical presence as well. You could reach your team mates within minutes. You could ask purchasing, or customer service, or anyone within the same facility, that's always more convenient. I see that this is not happening with all the other (global) teams. Especially now that we really have new teams introduced in the broader organization. But the closer the teams are, cooperation is very good, and when we go further, there are always some problems. (Senior Manager; Logistics, Warehousing and Quality)

The further the team is from the daily operations the harder the cooperation is, mostly due to the silo effect, when people are territorial on what they do and maybe not fully aware of the implications for other teams. On the flip side, the closer you get the better the cooperation is. For example, at "DCE" our cooperation with the order handling and warehouse teams is pretty good. When it comes to for example data management (global team), the team's role is not the day to day problem solving as such in customer point of view, rather than making sure our data is what it's supposed to be, and maybe in functions like that the understanding of the operative implications is not on the level it could or should be. (Operative Purchasing Manager)

I would say the cooperation is working pretty well. We are working together, we have had shared resources, people have moved between the different teams, so we have good knowledge about other teams and good cooperation between the teams in different levels and in different forums. So, I'd say it's working pretty well, of course there is always room to improve. Generally, we're aware of the "pain

points” of other teams and we can also consider those when making changes or we can help out other teams. (Manager, Warehouse and Quality)

There is a quite clear agreement from all of the teams that are near to each other that the cooperation works well, and teams are aligned together. But when broadening the scope, looking at global teams that are not so involved in the day to day, operative work, then clear patterns emerge regarding the unclarity of roles and boundaries between teams. For example, when asking the Senior Manager, Logistics, Warehousing and Quality about the clarity of roles and boundaries, the answer began quite emphatically with “No, they are not clear”.

If you consider teams like outbound logistics and pricing team, or quotation management, or whatever team that is not in direct contact with us all the time then that communication is pretty much non-existent. And also, in case there is some sort of problems coming from these teams then there is really no effective feedback channel to these teams. So, I do think that we are quite focused in working with just the nearby teams and maybe the rest are a little bit in the dark at the moment. Same goes with the external partners really. (Logistics Manager)

We have differences in different areas as well. In different countries we have different practices and maybe different boundaries, so trying to synchronize these is really hard. The knowledge of the work of your team mates is also valuable. So the further you go, if you are not experienced in purchasing, logistics, warehousing or something like that and you sit in order management, or data management or availability management - luckily there we have guys have been here - but if you haven't, then you have a hard time figuring out what these guys actually want when they try to reach you. (Senior Manager; Logistics, Warehousing and Quality)

Especially now in my new role, I can see more globally – as in previous role I saw things from a more local perspective – there is still a lot to improve in intra-organizational cooperation. (Manager, Control Tower EMEA)

Sometimes the unclear responsibilities and issues in internal cooperation are also visible to the external partners. All three interviewees from Ceva Logistics raised the same topic that sometimes at Metso's side the warehouse and logistics teams are not fully aligned, or some issues are not clearly communicated between the two teams – for example if something new is agreed with the Metso warehouse team, the logistics team is not always informed sufficiently. Interestingly, this internal cooperation issue between warehouse and logistics was not highlighted in the interviews by either the Logistics Manager or the Warehouse Manager from Metso, but all three interviewees from Ceva brought up the same topic from their perspective.

In general, what I see is that at Metso, logistics and warehousing can be sometimes against each other, not in a negative way, but more that decisions from one side can have direct influence on the other team. I think often that is not completely clear which directions both want to go. What I then see in practice is that we get a request from one department, we handle it some way, and from the other department we get a complaint or a phone call that why did we do it like that. (Operations Manager, Ceva)

Sometimes if we discuss something with the warehouse team then logistics are not aware, and the same from outbound team. So, I think there is a clear line, after the warehouse team – so after packing the responsibility for one person stops and it starts for another person from another team for the transport. (Office Supervisor, Ceva)

Main thing that I noticed, internally between logistics department and warehouse team there could be more cooperation within Metso, that would also help in

getting things done together with Ceva. Often the warehouse team agrees something with us, then it needs to be discussed with logistics team about transportation perspective and things go round and round without being able to solve the issue what was really planned to be solved. That internal communication between departments would really help Metso to get a better flow and overall perspective of the logistics part. (Inbound Supervisor, Ceva)

The cooperation between Metso Outotec and Ceva Logistics is very close. Both companies are relying on each other in many different processes, so efficient cooperation is required in order to make the partnership flourish. Different processes are handled together, with counterparts responsible for the process on both sides communicating continuously with each other. From Metso's side, the inbound process specialist in the warehouse team and the operative purchasers are in close contact with the Ceva's inbound team. Logistics coordinators are mostly contacting the outbound team at Ceva. In terms of warehouse process development, the different warehouse process specialists at Metso warehouse team have shared responsibilities, and they work together with corresponding teams from Ceva's side.

I think we have done a really good job with the inbound process development, no question about that. Maybe we are now not on such a good level on inbound ODR's due to the warehouse transfers and onboarding of new suppliers. But all in all, it has been a really good development with the inbound process. For example, there are not many delays to do the goods receipt when goods arrive to the 3PL warehouse. The ODR process is working better than it used to work in my opinion. And I think our team has done a really good job on the development side. (Senior Manager, Operative Purchasing)

I think we improved quite a lot at inbound side over the last years. I think we are receiving lots of goods packed in a better way upfront, which brings down the number of prepacking hours and special sorting hours. We managed that by

working at the main ODR topics with suppliers, sharing the best practices with Metso and discussing what is causing the most impacts on the actual hours that we reported. Then if I look at especially on my side, it helps to create a stable team at inbound, as you are seeing warehouse mistakes from my team are mainly caused by inexperienced operators with unclear cases. If I have a stable team, it already brings that percentage down. I think we have made a lot of big changes within inbound together with Metso and our side; the layout changed since I started, we have good strict agreements with the operators, and we have tweaked the internal working instructions. In our weekly OPS meetings, we're seeing where the hiccups are and what we need to improve on our side or together with Metso, to make sure everything goes as smooth as possible. (Inbound Supervisor, Ceva)

Internally at Ceva Logistics, the different teams also need to work together in order to keep the flow of the warehouse process going smoothly. Mistakes at the inbound process will lead to delays also in the outbound process, which can mean delays that are affecting the end customers. Therefore, seamless internal cooperation is vital also in the warehouse operations. The boundaries overall seem to be clear between different teams, which enables smooth process flow. With exceptions and special cases, there could be more clarity who has responsibility on which topic.

Overall, we're doing pretty well with the internal cooperation, we've improved since I've started working at Ceva. If looking in more detail, like cross-training within different departments, we can still win some efficiency there. We have some cross-training, but I think we could enlarge those pools still, so that we have our most experienced operators well trained at other departments and maybe more frequently switching them between operations. (Inbound Supervisor, Ceva)

For me, in the standard processes, it's very clear who has which responsibilities. We have clear inbound department, outbound department, inventory control and customer service. I've also seen other contracts and other warehouses within

Ceva, and with Metso I think it's positive that we have a really close contact with each other. For example, in the other contract in Born, the IVC is sitting in the office, not on the floor, which is not close to the warehouse so there is a big gap between the floor operators and IVC, they might not understand each other really well. I've noticed that on the Metso account, IVC team is on the floor, customer service team is really close to outbound, and they are perhaps 40% of the time on the floor so the gaps between those two departments is not big, it feels better. (Office Supervisor, Ceva)

I would say for 70% of the processes the boundaries and responsibilities are clear, which I call the "happy flow". So, the happy flow is just the normal flow without any special things, like no pictures need to be taken at the warehouse and send to customer, there are no rusty items, no craning is needed or whatever else we can think of. And with the other 30%, the "unhappy flow", there are really lots of exceptions and all those exceptions are not as clear as they should be. And what I see in practice that when someone's been here for example for three years and thinks that that's always an IVC task or it's an outbound task, but in practice it's never completely agreed on why it should be IVC or why it should be outbound. And all those exceptions, they add up every day, and that makes it harder for the happy flow. (Operations Manager, Ceva)

In conclusion, the closer the teams and organizations are to each other, the easier and better functioning the cooperation is. Especially now that Metso has merged with Outotec and that merger process is in its early stages, experiences of what works well and what doesn't need to be put to use. The experience from the old DCE setup can be used to Metso Outotec's advantage, so that also other teams would gain those advantages of working together. Also, similar experiences from Outotec's side need to be gauged, so that the strengths can be strengthened, and weaknesses can be addressed.

Between Metso Outotec and Ceva Logistics, there is good inter-organizational cooperation, and that has led to good improvements in developing the inbound process. Ceva reports the issues and Metso Outotec fixes those issues with the suppliers, to make the whole supply chain go as smooth as possible.

4.3 Intra and inter-organizational communication

In terms of intra-organizational communication, the picture looks very much like with intra-organizational cooperation overall. With the closest teams the communication flows smoothly and teams are having several meetings that cross team borders.

We have inside our unit - with the logistics, purchasing and warehouse teams - shared facilities. We hold monthly info meetings, there are always comments and updates from each participating team. We have also weekly KPI (key performance indicator) meetings, where information is shared, and issues are discussed. We also have management team meetings weekly, where we are sharing information about what is new, what is happening and discuss problems which need input from several teams. (Manager, Warehouse and Quality)

I think that the teams are in the “DCE setup”, like logistics, warehouse and purchasing, the closest teams, communication is really good, and cooperation is really good among those. (Senior Manager, Operative Purchasing)

I think we’ve been lucky to be able to keep hold of that quite open and informal methods of communication where anything goes - Chats, emails, calls, meetings, whatever – with the closest teams. (Logistics Manager)

But when going further away from each team’s own area of expertise, communication isn’t as clear, and the various ways of communicating don’t seem to be working efficiently. The common ways of communicating – email, phone calls, Microsoft Teams chat – are accompanied by several types of ticketing tools. The overall view on internal

communication seems to vary from team to team. The ticketing tools that are being used could be developed and streamlined, and the responsibilities of who is handling which kinds of tickets could be clarified.

I think internal communication needs to be more structured than it is right now. We rely too much on emails. I think especially within the company, the intra-organizational communication should be a lot more about really working together using meetings, even in a short notice whenever for 15 or 30 minutes together to get things solved. That would be way more beneficial than current way of just sending emails back and forth and that communication may continue for a week. Compared to having it more effectively in a Teams call or even by chat. I think that's a bit of a problem that Metso always has had that people find the emailing maybe the easiest and then communication is just too slow. I do appreciate the idea of ticketing tools. One problem I see that there are so many tools, for some teams a Fast Track ticket, some have Salesforce tickets, some use this Order and Data Management ticket and warehouse has another ticket system. So, we could be a little more streamlined in focusing on one single ticketing tool method than multiple different ones. (Logistics Manager)

I think there is room to improve overall in the communication. Maybe when you are communicating through this ticketing tool there can be misunderstandings, because mostly the communication there is short sentences, people are trying to put things in short form. That is not always supporting the clarity of your message, so that leads to misunderstandings. (Manager, Control Tower EMEA)

Whenever you have to use any tools between the teams, there are problems and delays. Maybe you don't know how to use the tools, maybe there's different perspectives of responsibilities and those are not clear, maybe there's even some processes that are not clear at all given that there have been so many organizational changes in the last two years. I see that within the tools as well, so

if there's a ticket it might bounce from team to team and we are trying to figure out whose responsibility is this. This is really something that happens weekly. (Senior Manager; Logistics, Warehousing and Quality)

Inter-organizational communication between Metso Outotec and their partners is handled mostly through the relevant teams. In short, purchasers are the points of contact towards the suppliers, logistics coordinators are in contact with the LSP's, and warehouse team is in contact with the 3PL warehouse. Different teams have different kind of practices in place to ensure communication is flowing.

The purchasing team is responsible for managing hundreds of different external suppliers and each supplier might require a different touch. The team holds a daily meeting where the managers bring up matters that need to be communicated to the purchasers, and purchasers can bring up all types of issues, from practical issues that can be asked from team mates, to escalating issues that require the managers' help. The team also holds a weekly call where the On-Time Delivery (OTD) performance of the suppliers is followed, and the sourcing team attends these meetings as well. Sourcing engineers can communicate bigger issues from suppliers, and purchasers can bring up topics that need to be escalated. Also, different product categories hold their own meetings monthly. Those meetings are attended by the sourcing engineers and purchasers from the relevant product category, that can be for example components, sub-contracting, or consumables.

Communication to external suppliers is handled by the operative purchasers with email, phone calls, and Microsoft Teams meetings. Operative purchasers are handling the day to day contacts, and in escalation cases procurement or global category managers are involved. Operative purchaser is the regular point of contact for the supplier and I think that is the correct set-up, because it can get difficult for the supplier if there are several contacts. If there are quality issues or contract discussions etc. then of course there might be some other people involved.

But the daily contacts about shipments, issues or deviations at warehouse, delays, then I think the purchaser is the correct point of contact. The communication was even better when there was no Covid-19, because we had regular face to face meetings with our suppliers, but I still think it's going quite well. (Senior Manager, Operative Purchasing)

Mostly with the bigger suppliers we are pretty demanding with them, so that they work according to our guidelines and our ways of working. Of course, we pay them a lot of money, so we hope to get good value for that. For smaller suppliers we of course try the same actions but it's not as effective as their revenue being the motivator factor. Also, a big factor is what kind of supplier is in question, volume is not the only factor. Overall the communication to suppliers works well, but there are lots of improvements to be done in how to be more active and motivating for them to follow our guidelines. It requires a bit of creativity from individual purchasers. (Operative Purchasing Manager)

The internal communication issues at suppliers can be very visible for the purchasing team. For instance, when purchasers instruct the suppliers based on deviations reported from the warehouse, the correct processes are not always communicated inside the supplier's organization to all relevant stakeholders, which can result in recurring process issues that also affect Metso Outotec.

At suppliers, there might be some issues between people in sales who say one thing and people from warehouse who do another thing, for example booking transportations and the other person doesn't know how that process works. But I think that the notifications that purchasers send to suppliers, reminding them of the correct processes and corrective actions, are helpful. Usually the process errors are solved through reminders and instructions from operative purchasers. (Senior Manager, Operative Purchasing)

The logistics coordinators are in constant communication with the LSP's. The team has daily meetings to discuss topics and bring forward cases that require escalation, so then the logistics manager can be involved. Such operational topics can be discussed and escalated on a daily basis with the LSP's mainly via email and phone calls. On top of the daily communication, there is also a regular meeting structure in place.

Mostly I handle the communication in our monthly business reviews that I have with each of the major LSPs every month. With the partners that are not so critical, or things are going smoothly, I might have meetings quarterly or only on request. Operational topics are discussed daily, and the development topics are reserved for monthly business reviews. On those calls we discuss both inbound and outbound, system development and all of that. Our inbound logistics coordinator is also always invited, and we will follow-up on those development topics as well. Daily business and communications go through logistics coordinators to control towers of each LSPs, which are the daily operative contacts. And my communication partner of course would be the local Key Account Manager handling the Metso Outotec business there. (Logistics Manager)

From logistics side, also the internal communication at the LSP side can sometimes be an issue. As mentioned above, communication flows well between Metso Outotec and the Key Account Manager, but if something is agreed on a higher level, on a global level with a certain LSP, then that information might not go through to the local level – both at Metso Outotec or at the LSP.

For some reason in the global logistics management they implemented these regional logistics manager roles, and after that I have no longer been invited to those global meetings. For that part, whatever is communicated to the LSPs on a global level is in the dark for me. So, I don't really know what they are communicating on that level anymore. And related to the previous point, when Metso Outotec's global logistics have advised something to LSPs, to the global Key

Account Managers, then there is no follow-up is that information going to local Key Account Managers and local organizations at the LSP side. Sometimes even though we at Metso Outotec think something is communicated clearly, then we still see gaps that the local offices of the LSP have absolutely no idea of this agreement that was done. (Logistics Manager)

The warehouse team is the main contact between Metso Outotec's internal teams and the external 3PL warehouse, and most of the communication is handled by the warehouse team's different process specialists. In some cases, like deviation handling in the inbound process, purchasers are also involved in communication with the 3PL warehouse counterparts. In the outbound side of the process, logistics coordinators are also involved in communication with the warehouse, for example regarding booking shipments, arranging pick-ups and so forth. Each team uses their own shared mailbox for communications. The clarity of responsibilities in some special cases could be improved, to also improve the inter-organizational communication by following the correct escalation avenues.

We have the following meeting structures in place with our warehouse partner: We have quarterly business review, where the director level is involved. These meetings are for strategic topics and bigger issues if there are any. Then we have monthly business review with a different audience, focusing on tactical things, where we should be focusing and how we should be organizing to solve different kinds of projects. Then we have weekly operative calls for focusing on operational topics. So, we have a clear meeting structure, but I have to admit that sometimes those meetings are considering little bit too much the same topics, so that would be something to improve. But generally, there are channels to discuss different issues with correct audiences. Also, we have our key specialists per area of responsibility, like outbound specialist, inbound specialist, then we have logistics coordinators in the logistics team. And in our team, the roles are pretty clear, and communication is working really well between the Metso Outotec specialists and

the 3PL supervisors and also the Operations Manager from 3PL side. I have also weekly meetings with the Operations Manager, so we have, I would say, really good communication overall. (Manager, Warehousing and Quality)

With Metso itself we have pretty good contacts, if we need to escalate something I can call the correct person and we try to solve it right away. When it's through mail we can still improve. If I look at my side, sometimes there are so many emails that in order to have more time on the required tasks I chose to give more responsibility to ASVs (assistant supervisors). In the big picture, I think the communication is going well. (Inbound Supervisor, Ceva)

At Ceva, all teams have daily kickoff meetings. On top of that, the supervisors have a daily "Sunrise" meeting together where they can discuss available resources, workload and other daily topics. On a weekly base, there is a weekly operations call with Metso to discuss the KPI's of the past week from all the different teams. The internal communication at Ceva is handled mainly by email, and sometimes with phone calls, meetings and face-to-face discussions. When teams are close to each other, the email is not always seen as the best method for communication, but other ways have also their pros and cons.

I think maybe sometimes less emailing and more direct communication can help. Sometimes it's better not to send the email and just directly pick up the phone and have call, that's something we already last year started to work on that but there is still room to improve there. (Inbound Supervisor, Ceva)

If I would rank internal communication from a scale of one to ten, I'd put it on six. And the main reason for that is that I see that there is a lot of communication, but often not to the correct persons. So, without going too much into detail, in general the feeling that I have on the intra-organizational communication is that there is a lot of it, but in the end not directly to the correct persons or department.

Sometimes my feeling has to do with questions that are not related to one department, but also that it requires actions from two departments and no one is picking it up correctly. (Operations Manager, Ceva)

It can be concluded that internal communication needs developing at Metso Outotec. When teams are close, people know what the other team is supposed to be doing and what are the other team's responsibilities. But the further we go in the organization, the less people are aware of the roles, responsibilities and boundaries. Those haven't been clearly communicated to other teams, who would need to have that information when decisions made in other teams have a tangible effect to their own work. Organizational changes have been the main reason for this communication issue, and those changes are discussed in more detail in the next section. On a positive note, each team has clear meeting structures in place to accommodate open communication. Inter-organizational communication works well overall, there are defined points of contact towards suppliers, LSPs and the warehouse partner and no major issues came up during the interviews.

4.4 Organizational changes and their impacts

A recurring theme among the interviews was the impact of large organizational changes that have taken place in recent years. The impact to the intra and inter-organizational cooperation, especially on the context of inbound process development, was so defining that it warrants a section of its own in this chapter of empirical findings.

Firstly, starting in 2019, Metso changed their business model to a Principal Company Model (PCM), and the effects of this PCM change were seen in all teams. Many functions transformed from local to global, and the actual flow of orders changed drastically. As a consequence, order handling, purchasing and logistics needed to adapt. Order Management, Data Management and logistics Control Towers are examples of new global teams that were formed as a result of the PCM change.

The forming of Control Towers was decided after the PCM model was created, the gaps for logistics became quite obvious and it was decided that a more operational organization but also at the same time global one is needed. Therefore, Asia, Americas and EMEA Control Towers were created. The idea is to especially concentrate to improve the OTD in the follow-up of shipments, also by taking a better control of cross-trade shipments, which are currently quite heavily relying on information coming from purchasers to the external suppliers. Also, customer facing logistics teams are very much involved with the cross-trade shipments. So that is kind of the key there. Also, Control Towers are currently handling freight costs invoices, so there are many things that are transferred to these Control Towers to have more global view of our logistics. (Manager, Control Tower EMEA)

The next big change that took place, was a logical continuation after the PCM change. It was called the Customer Centric Footprint (CCF), and in the EMEA region, that meant in practice closing several warehouses and Distribution Centers (DC's) and centralizing operations to fewer locations. For example, in Europe, DC's in Sweden and France were closed and those warehouses were centralized to the main warehouse in Netherlands. Also, other operations, like local purchasing, were centralized. Many smaller locations around Europe, and corresponding warehouses, were centralized. For the warehouse operations, this resulted in new requirements for the Metso warehouse team as well as the 3PL warehouse operations. A completely new warehouse facility was opened in the summer 2020, as the existing premises did not have enough capacity and space to store all the centralized warehouses' materials – the size of the main warehouse in Netherlands basically doubled as a consequence. More resources for the warehouse team and the 3PL partner were needed. The effects for the purchasing team were also profound; as local purchasing teams were shut down, some resources moved to the purchasing team operated from Finland, and dozens of external suppliers that were previously managed by local purchasing teams had to be managed now by one centralized purchasing team. On top of that, the benefit of having local contacts were

lost, like for example having French purchasers communicating with French suppliers. From the suppliers' perspective, they needed to adapt to operating with new contacts, sometimes with a new language, and delivering goods to the main warehouse that is operated by an external partner, instead of delivering to Metso's own local warehouses. Local customs differed in many cases from the processes of the main warehouse.

Regarding opening the new warehouse facility, what I saw happening was that we underestimated it a little bit – the idea was to just copy the operation inside four different walls and start running it. That was just not as smooth as we thought. What I think from our side, with the expansion of the second warehouse, the difficulty of managing the communication between the two warehouses is really a big challenge. So not only splitting the time of the supervisors, but also the communication of assistant supervisors. Also, for example, the process control is a lot more than we thought and also the impact is a lot bigger. So, without going in too much detail on the KPIs, but what I see in general, the process on the floor looks really simple to keep the same, but in practice it's really hard. Not only because you have different people, new people in the warehouse, but also because the type of products that we have in the warehouse are slightly different, it's not handled completely in the same way. Also, the volume is not that high, so you expect certain productivity based on the processes that are ongoing in the old warehouse. But in practice it's just not in that way. (Operations Manager, Ceva)

Team stability has been a key factor in enabling the inbound team at Ceva to make great strides in developing the inbound process. In addition, the assistant supervisors have brought help for the inbound supervisor, so there are more resources available for handling exceptions, reporting, monitoring, supervising, guiding and instructing operators, and overall having more focus on process development. Allocating enough resources for process development at each stakeholding organization is key part in managing the inbound process development. As mentioned in the previous comment,

copying operations to a new facility hasn't been easy, but at the inbound side, the team has been quite successful.

I think that one of the strengths of the inbound team is that it's a really close-knit team, they are really stable, so they know what they can do but they also know what they can't do. That gives the assistant supervisor a good overview. And the other part is that from the time that we had the second facility, in my opinion, the inbound department did the best job in getting the same processes in as in the old warehouse. What I mean by that is keeping the work instructions same as much as possible, but also the processes like how to handle unloading, how to handle drivers, all kind of situations like that. So, the deviation between the two facilities is there really the smallest. (Operations Manager, Ceva)

The centralization of warehouses meant a large growth in the warehouse operations at Ceva. Also, for many teams on Metso's side, the changes meant more tasks and responsibilities. When both parties are growing, the communication between the partners needs to be constant and transparency is required. Also, the importance of so-called key players is highlighted in such transitioning times.

In general, we as an account together with Metso are growing quite fast, especially in the last year. That needs some kind of transition in both organizations because we are both doing things in our own way. I think that transition is not always going hand in hand. We have knowledge from our side really on two or three people, that's the same also from Metso's side. So, when we need to add more people on the team, for both sides, it's depending on a few key players in the organization. That makes it for the communication often a little bit harder, because when some person doesn't know how to handle it correctly we go back to the other person who knows it, then at the end he does all the work. So that is not in the correct way to go communication-wise. But that's just something that I

see in general when we are growing so rapidly that the organization needs some time to change in the new overview. (Operations Manager, Ceva)

As one of the reasons for unclarities in roles and boundaries between teams, the Senior Manager, Logistics, Warehousing and Quality, gave the continuous organizational changes: “it’s partly because the organization has been changing all the time. There hasn’t been a period of time that all the teams would know their tasks.” Other interviewees echoed this opinion.

The clarity of boundaries and responsibilities has improved, after PCM there was lots of unclarity on who is responsible for each step. And there were lots of emails, saying you’re supposed to be doing this and other person responds that no this is not our responsibility, turn to this and that person. So, it was quite a mess in the beginning. (Logistics Manager)

After the PCM change, when there was a huge organizational change, then there were lots of unclarities of what belongs to who, mainly because lots of people left but their tasks and duties stayed. There was lots of confusion about the roles and responsibilities during that period. (Manager, Warehouse and Quality)

The organizational changes have had huge impacts on all the teams, affecting the roles and responsibilities, new tasks and processes and resourcing issues. Some teams have been affected more than others, and some teams have been able to cope better than others. Also, the quality of working has taken a hit in some processes due to the changes. All employees have felt the effects of the changes and the effects can be really big on a personal level for individuals.

I think PCM and CCF have brought a lot of additional workload compared to earlier. Due to new processes, global purchasing in PCM, and lots of new suppliers through the warehouse transfer, these have definitely had a big impact on the purchasing

team. Due to the additional workload, we definitely see it on the team performance. Also, the daily things that we used to do, supervising of incoming orders and late order backlog that we used to do, we can't do as effectively nowadays with this increased workload. I would say that before the warehouse transfers our suppliers were quite well managed. After the European transfers, we have got quite many new vendors and new products that used to come to our warehouses through another Metso warehouse earlier. So, we did not have direct contact with those vendors or even those product lines earlier. There are some difficulties still, as some products are handled in so different ways than what we are used to in Tampere. I think it has gone in the right direction but there is still some work to be done definitely. (Senior Manager, Operative Purchasing)

PCM affected us quite a bit. We had to develop new routines, new ways of working, and had to start using new tools daily. Hardest part is to upend all the routines that we have developed or re-learn everything. When it came to the CCF transfers, then there's lots of new suppliers that had been working with the smaller warehouses and the local purchasing teams. They are usually not up to par when talking about Metso processes, like documentation, marking of the items and stuff like that. That has been quite a big problem. So, the onboarding and process development with the new suppliers is still ongoing. And also, one thing to mention, there's sometimes not a common language with the supplier which really complicates the day to day work. (Operative Purchasing Manager)

It's the capacity of course, always building up new organizations. Maybe there's not been enough people in specific teams and that has manifested many, many times. And maybe the morale of course, the pressure, the capacity, the motivation takes a hit when things aren't clear. You don't get to come to work and know what to do exactly. And still the pressure from the customers is the same as always, but now you don't have the tools available to service these customers, and that's a

really, really big mental burden. (Senior Manager; Logistics, Warehouse and Quality)

One of the results of the PCM model, was a change in the way internal purchasing and logistics is handled – meaning flow of goods from one Metso Outotec site to another. The internal supplier can be for example in China or Australia, and goods are then purchased to the main warehouse in Europe to serve customers in that region. Previously, the operative purchasing team was responsible for handling the internal suppliers and those purchase orders, but that changed in the PCM project and the responsibility is currently in Order Management team. That has resulted in lots of unclarities and made process control more difficult.

At the inbound side I know what the weak point is, and that is that after we moved to the PCM model, when goods are coming from Metso Outotec suppliers, the goods flow towards the warehouse is not detected. So that's currently a bit of a grey area and kind of no-one's land, it has been recognized, but still the clear responsibility is not taken. Currently that belongs to Order Management, which cannot handle it really, so there is a gap in that process definitely. (Manager, Control Tower EMEA)

The increased workload has also had a negative impact on many teams. Some of the processes that were handled well, are now left with less attention due to lack of resources. And even though the PCM implementation was done already some time ago, many processes are still not clear for all teams.

I would say before the warehouse transfers our suppliers were quite well managed. After the European warehouse transfers, we have got quite many new vendors and new products that used to come to our warehouses through another Metso warehouse earlier. So, we did not have direct contact with those vendors or even those product lines earlier. There are some difficulties still, as some products are

handled in so different ways than what we are used to in Tampere. I think it has gone in the right direction but there is still some work to be done definitely. For some teams, the PCM processes are still not clear at all, and that has a really big effect on the type of questions, amount of emails and the amount of explanations that are taking place all the time to get things done. (Senior Manager, Operative Purchasing)

The changes within the organization have meant that different processes have come to light in a different way, with different focus. Other processes have become more integral in the new business model, and others, in turn, have faded in importance.

I think that the PCM change has emphasized the meaning of logistics and how important logistics in general is for the company. I believe the importance of logistics is rising in general, because logistics is impacting so heavily on the OTD and also the costs. Of course, when concentrating goods to certain warehouses, it's very important then that logistics works well there as impacts of risks at that particular country or affecting specifically that warehouse are bigger. (Manager, Control Tower EMEA)

As many parts of the organization are still struggling to cope with the effects of the organizational changes, the problems in internal processes can in worst cases have tangible effects for end customers. At DCE, the old Order Desk team was almost completely erased, as many resources were moved to the global Order Management team. This change resulted in lots of new tasks for the logistics team, but resources were not added in the same scale. As a result, logistics team was short of resources for a long period, and this caused an increased workload for the logistics coordinators, and in turn they could not handle all tasks in the same efficiency as before. In practice, this was seen for example in long ticket queues and an increased backlog of customer returns that were handled by logistics team with the warehouse. Also, the effects on other teams can lead to further corrective actions in other teams, and when there is a bottleneck with

resources, that is the place where tasks start gathering up. In practice, such an example at Metso Outotec was when warehouse makes a loading error, then logistics team needs to start investigating where the wrong goods went. When this was added to the beforementioned increase in tasks and workload, also the investigating process became slower and the overall performance of the logistics team due to all these problems suffered.

I'm afraid that as a result, this is directly shown to the customer facing locations and also directly to our end customers. And that is the really tragic part that we might, at worst, be losing business when customers turn to maybe other vendors or local partners to deliver their parts faster or with more reliable supply chain. Even though our product might be best, but our supply chain is just not as good as it used to be. So, I can understand the frustration from customer's perspective.
(Logistics Manager)

The many organizational changes have also meant new opportunities for many employees, so there is also in some sense a positive effect during the period of constant organizational change. As many people have moved to new roles, that has created job opportunities and new, positive challenges.

The positive effect is that people have been given the opportunity to do something more complex, maybe given more responsibilities, maybe given more tasks, maybe given a good position in a different team, so I would say some of the teams have benefitted from this by getting good people onboarded and getting more skills and knowledge that you can then pass on internally. (Senior Manager; Logistics, Warehouse and Quality)

Big organizational changes haven't stopped there at Metso Outotec. The merger of two big companies, Metso and Outotec, during 2020 has started to have more and more operational impacts during 2021, and the full extent of those impacts on different teams

is yet to be seen. The ex-Metso teams have started to integrate with the corresponding ex-Outotec teams, but the end result and sharing of tasks and roles is still continuously evolving. In many processes, it is the ex-Outotec employees who are required to adapt more to the Metso processes, especially system-wise. In spring 2021, warehouses in Finland – Metso warehouse in Tampere and Outotec warehouse in Vantaa – will be centralized and moved under the same roof, to be located in Helsinki and operated by a 3PL partner. The full effects on the warehouse and logistics teams will be visible after this change is finalized by end of Summer 2021. Also, a major change with that new warehouse operation will be that the ERP system for warehouse management will not be Metso Outotec's own SAP system, but for the first time in Europe, the 3PL's own ERP system. In the first months of 2021, these changes have already started to have a burden on some of the teams, as many people require onboarding and training, and the warehouse transfers require plenty of planning and the complete project takes up resources from several teams. The eventual impacts will be seen more as the projects move ahead.

Overall, company-wide, all these changes were the biggest in Metso history, yes. But we can now in hindsight say we could've been quicker to get on our feet and not maybe have these back-to-back-to-back changes in the organization. But now we just have to cope, hopefully we get the resources to do that in the future.
(Senior Manager; Logistics, Warehouse and Quality)

In conclusion, the organizational changes have had a huge impact on the inbound process development at Metso Outotec. When many teams need to allocate all of their resources on just surviving through the necessary daily tasks, less time and resources can be allocated to developing the processes. On the other hand, the processes that were in place before the major organizational changes were deemed as working well – those processes had matured and were developed over time and had become efficient. Therefore, it is not a completely fair comparison to look too closely only the current situation when teams are going through change and comparing that to a situation when

more resources could be allocated to process development. The recent merger with Outotec presents new challenges, but also an opportunity for learning together – gaining the strengths from both organizations and addressing weaknesses. In many cases if new processes or teams are formed, that presents a clean slate and enables process development. Continuous improvement needs to continue through the merger, whether teams are affected by the merger or not.

4.5 Cross-team learning

Intra-organizational learning was a topic that gathered mixed responses in the interviews. Between the teams that are near to each other and communicate often with each other, there is also more constant learning between the teams. Some learning happens through organized meetings, in those instances the meetings act as kind of training sessions which are valuable especially when new team members have started in new roles. Sometimes the learning is more organic, when team members switch teams they bring with them knowledge of different processes and can educate their new team members. Also, individuals share their learnings from their daily interactions with other teams internally to their own teams openly. Sharing of best practices also seems to be a standard practice within teams, and certain parts of the organization actively engage in such activities across team boundaries. Also, personal connections for example on the manager level are an important aspect of cross-team learning.

I would say that maybe there has been a change towards better in this matter. I think warehousing team have been active in organizing trainings, which we have been attending also from control tower. So, kind of making people more aware of what certain teams are doing, in that sense it's then easier to ask for help. Sharing best practices between different control towers is really the purpose of the current setup, we are in close contact, we have weekly meetings between management of control towers, we are sharing best practices, we are attending the same trainings, we are training each other – when one team knows more of a certain topic they

can train the other team. So yes, there is quite a good cooperation between the global teams. (Manager, Control Tower EMEA)

In our team's monthly meetings, we go through what is being done at warehouse team; which projects are ongoing and what is being developed. That has been really helpful for our team to give better understanding of the practical problems and effects that the issues are having. Also, with logistics team we have twice a year a meeting to share current projects to see what is being developed, about the LSP's, customs issues and many topics that we usually don't deal with in the daily tasks at purchasing team. Also, we have had for example VAT trainings from finance, how those issues have impacts on our operations. And different Product Lines have organized good product trainings as well. So internally I think everyone is helping others to improve. (Senior Manager, Operative Purchasing)

Maybe the quickest and biggest gains have been when team members switch internally from team to team, so the knowledge is passed on and shared in a pretty convenient way and naturally. So, you don't have to go and learn, but you have someone coming in to the team who maybe has previously been in purchasing, now in warehousing, so you know more about the supply chain. (Senior Manager, Logistics, Warehousing and Quality)

We have had also this kind of "get to know other person's work", to change the perspective a little for a while and see what the other person is doing and how that impacts me. Also, how we can help the other person with the questions that are raised from his work that are linked with your work. In logistics example, do I really know what the purchaser needs from logistics? O do I just think that I know? That maybe sometimes wrong and that I think can be improved. (Manager, Control Tower EMEA)

Yes, I think that other teams have helped my team to improve. For example, myself and the manager from Order Management team, we still have calls now and then just to figure out what would be the smartest way to do things that affect both our teams. For me personally our warehouse manager has been really helpful with certain topics and I hope he would say the same about my area of expertise. I do think with the closest colleagues the communication is easy and people are really helpful towards each other. (Logistics Manager)

On the other hand, some interviewees felt that the intra-organizational learning could be improved, or even that it did not really exist currently. Some suggested that learning has only taken place through problem-solving, which would indicate a reactive approach rather than a proactive approach to promote intra-organizational learning. Also, the previously discussed communication issues with teams further away reflect that the intra-organizational learning perhaps works better in smaller bubbles, but not holistically inside the organization. When the communication is not working as well as it should, and different teams do not know what other teams' responsibilities are, then opportunities for cross-team learning are wasted and instead issues turn more to blaming others, instead of taking the opportunity to learn and develop processes or communication. In some parts of the organization, best practices are not actively shared across team boundaries.

Maybe the learning has come mainly through problems that needed to be solved together. There aren't many trainings or events where we are really educating each other. Even when new processes are implemented, generally maybe there are no such events or forums where we are really teaching each other. (Manager, Warehouse and Quality)

Outside the team boundaries I don't think there's anything, really, in terms of sharing best practices. Of course, it's constant within our team but other than that,

I don't think there's a lot of sharing of best practices. (Operative Purchasing Manager)

Maybe then if you go again a few more steps further, for example if I'm discussing with the customer facing locations, we do have lot of cooperation between each other, but we are definitely in these silos. Sometimes there's a little negative tone to these conversations when people are pointing fingers, sort of blaming people for single mistakes or delays when really, we should be working together to resolve the problem for the customer's benefit. That is not as good as it should be, we definitely are quite strict on our roles, we expect perfection from others and if that does not happen then the finger pointing will start quite fast, honestly. (Logistics Manager)

At the external warehouse partner, the view on cross-team learning or even inter-organizational learning was more positive. Ceva Logistics has lots of warehouses and contracts in the Benelux countries, and many locations are close to the Born warehouse operations. Best practices are shared between different locations and the interviewees also shared personal examples of different types of coaches that help learning and encourage personal growth. At the Born warehouse, internally teams also share resources and operators are trained in several tasks to create more flexibility in resource planning. Also, the pre-Covid visits of Metso employees on the site were seen as very useful and beneficial for all parties, and enabled learning opportunities. This was also mentioned earlier by the Warehouse Manager from Metso's perspective.

I've been working for three years at Ceva, before Covid Metso was often on site here and that was really helpful. We would look directly to issues in workshops, it was easy to explain things and seeing how to solve it. That was really helpful and it was also nice cooperation between us, we always had those wrap-up meetings at the end of the visit that also helped to summarize what we saw and what we need to work on. So that's really something that we miss. Since I started here we

achieved already a lot, the inbound flow is much better than when I started.
(Inbound Supervisor, Ceva)

As an example, at Eindhoven, with another customer account, they were doing a certain process and before we started to figure out how we could implement this process, we just asked them how they were already doing it. And actually, we found that really useful, instead of figuring it out by ourselves. Most of the time we are busy with new ideas without first checking from other departments if that thing has already been done and others have learned from it. For example, later today I have a call between all IVC departments inside Ceva in Netherlands, so we are sharing best practices internally. (Office Supervisor, Ceva)

I can give a really personal example of this one; I'm attending a program where we are in a group of eight, spread all over the Benelux countries, and we can share details like how to handle behavior from an operator, but it also cases like "how do you handle zero picks" for example, or "I see that your productivity with shelving picks is twice as high as we have, how is that possible?". And also with that team we face other contracts, so for example another industrial customer is in some ways similar to Metso products, but also we have customers like the Dutch equivalent of Amazon, that's completely different how they handle their operations with robots and things like that. But in the end, we as an account can really learn from that, how is the process control going in a warehouse where we are doing ten thousand lines per day and a truck coming in every thirty minutes, how do they handle that, is there something in a way of communication but also in a way of reporting, how do they measure some things, can we utilize that for our account, can we maybe use a split version of it. So, there we do a lot, and also what I do myself is that the operations manager that I had in Eindhoven, now that I'm operations manager for Metso, I can give them a call, just say "this is what I see here on the floor, how do you handle that". I also have a separate coach and separate mentor, most of the time from higher in the organization – with them I

just put down all the challenges that I have, can be on personal level but also how teams are working together or things like that, then they often say for example that “three months ago we had this issue in another account, give this guy a call, he can explain how he approached it”. That’s, I think, a really big benefit of Ceva as LSP, there’s lots of knowledge of different types of customers. And often the best practice for a medical customer can also be deployed for an industrial customer. (Operations Manager, Ceva)

At the time of the interviews, a similar kind of Mentor-program did not exist in Metso Outotec’s organization. But starting in April 2021, Metso Outotec launched a Global Mentoring program 2021, for which a hundred employees can apply. So, although Ceva Logistics is further in their process of utilizing the internal network in order to facilitate personal growth and learning, Metso Outotec is starting to apply similar processes.

In conclusion, there seems to be intra-organizational learning at Metso Outotec between teams that are right next to each other in the supply chain. This is seen mostly in the logistics team and the regional control towers, and the least in the purchasing team. Inter-organizational learning does not happen much within the supplier relationships, or with the LSP’s. With the external warehouse partner, there is more of a partnership where learning takes place over organizational boundaries. And internally at Ceva Logistics, there seems to be the most intra-organizational learning taking place.

4.6 Trust – internally and externally

Trusting your partners, internal or external, is a vital cog of a functioning partnership, or in a wider context, a functioning network. During the interviews, the feeling from all interviewees was that mostly there is trust between different teams and also between different organizations. The organizational culture therefore is healthy, and trust is cultivated from top down. Issues that might sometimes look like not trusting others are more rooted in lack of knowledge of the other person’s responsibilities or for example their current workload, rather than a clear mistrust between people, teams or

organizations. Internally, the constant theme continues: the further away another team is, there is less knowledge, less communication, and it can manifest itself in less trust.

Unfortunately, currently there is such a lack of resources in some teams that we know they can't handle some issues. Ship lanes are too full, customer returns are not handled in a timely manner, and so forth, so we are suffering about that. But the issue is not really about trust, we trust that they would do it if they had time, and the situation is shared honestly. (Manager, Warehouse and Quality)

With the internal partners, here also with the closest teams the trust is there, we understand each other's struggles and we try to help each other out. But then when we're looking at the customer facing locations for example, then I don't know if people are fully confident that people are doing their best in for example clean order handling, or if they sometimes are just noticing mistakes but figuring out that most important thing for them is just pushing the order through as fast as possible and let logistics, warehouse or someone else deal with the problems. So, there I would say the trust is not 100%. But I would say we should all give the persons within our internal organization the benefit of the doubt that everyone is doing their best and you must allow some human mistakes. Otherwise you can't get anything done and would never learn. (Logistics Manager)

Internally the issues are more about not knowing what the other team is doing. A common thing I heard is why is this IT stuff taking so long to solve, are they doing anything there – that's not a fair statement but I hear that all the time. You don't then trust that the team is working as hard as they can to achieve the task. Or there's a specific team has a heavy workload and you don't know that, so then you hear stuff like why this takes two weeks to complete, and then you kind of lose trust. You are reasonable enough to know that this is probably not true, they are working as hard they can, but you kind of lose trust in the process, and then you maybe try to circumvent that somehow and doing something that's not in the

process, trying to get your own agenda forward. Bottom line is that you have to trust everyone. Then if there are issues, go after those issues, the expectation is that you trust the partners. So, it doesn't affect the daily operations with the external partners, it does affect internal affairs somewhat, because people don't know what the other teams are about, how the workload is and why my own issues keep getting stuck and that creates kind of pseudo-trust issues. (Senior Manager; Logistics, Warehouse and Quality)

When working with different cultures, especially in the purchasing team where the suppliers can be from dozens of different countries, it's important to acknowledge cultural differences and not misinterpret differences in a way that might foster mistrust between organizations. In the purchasing side, there can be more examples of mistrust between organizations because the network is so vast, but in logistics and warehouse where the partners are few, they are carefully selected, and the partnership is constantly managed, there is also more trust.

It really depends on the supplier, on the history and the volume money-wise that we are purchasing from the supplier. I think it directly affects the service we are getting – if we are purchasing more, we are getting most of the time better service as well. If there is no trust with the supplier and there are really urgent needs, it takes a lot of extra effort to get things organized the way you want. Then you use a lot more time with that vendor that you can't trust that they will be doing everything they can to help our customers. Conversely, when there is trust, you just call the supplier, explain the situation and they will do everything they can to get the parts delivered in time. (Senior Manager, Operative Purchasing)

I think yes, overall, we can trust our suppliers. Of course, there are some nuances that come when working with different cultures that sometimes can be misinterpreted as mistrust, but it's mainly cultural differences and not about trust as much. With suppliers it's mainly chasing different kinds of documents before

doing further actions, which indicates when we don't trust the supplier that much. When we do trust them, we can go ahead with the actions. Internally, I think there is a healthy amount of trust, mostly. Of course, the further away the team is from our function, there is less trust. For example, with Data Management there is not a lot of trust that everything has been done correctly, or that every angle has been thought of, which then that creates more work for us in purchasing team.
(Operative Purchasing Manager)

Between Metso and Ceva, currently there seems to be a healthy relationship with trust. Both sides commented that the situation has improved through years of partnership, and currently the situation is good on that front. Also, internally at Ceva, the trust between different teams has improved and is on a good level. Several interviewees, both at Metso and at Ceva, mentioned that in the past the trust maybe was not on such a good level, but there has been a clear improvement.

Overall, I always have the feeling that we can discuss everything with Metso, I don't need to worry that I can't raise a certain topic, we have healthy discussions and that helps everyone to improve. Within Ceva, when I started, there was lot of lack of trust between departments - inbound, outbound and IVC were like small islands, we really worked hard and expanded the teams to create one big island. I must say we're doing a really good job at that. We really improved with the outbound team, how they can help inbound and the other way around. So, we're not only looking the productivity of our own department. I'm always, for example, in the mornings checking if I have extra resources available, can I help, can I send someone to outbound or to IVC with cycle counting or some remodeling. So that trust is really widely improved and still improving. (Inbound Supervisor, Ceva)

In the past we have had some trust issues with the 3PL warehouse, but nowadays it's on a better level. We might have different goals in some respects and we need to understand that. The improved trust has come through honest discussions.

When we see something that doesn't look like good partnership, we have demanded more visibility. We have also invested lots of time and money for the on-site visits. Before Covid-19 we were visiting our main warehouse almost bi-weekly. The presence on-site is important and helps to improve our knowledge about the processes, but also it improves team-building and increases trust. (Manager, Warehousing and Quality)

Obviously, the relationship goes back a lot longer time than my experience working for the Metso account. At least my experience is that the contact with Metso is always nice. In general, when I ask a question from someone from Metso, I completely trust that they will do their best to get an answer. And I also have the feeling that when Metso has a request for an urgent breakdown order for example, they really trust us to do it in a correct way. And that they always have the feeling that we try to do our best to make it happen. (Operations Manager, Ceva)

With deviations, when warehouse says one thing and supplier another, of course I understand that then you ask to double check. Maybe not trusting Ceva is also coming from somewhere – if some mistakes happened in the past, then it's more difficult to gain trust with someone again. I think it was in the past with inbound ODR's for example that is it a valid ODR – there were no packing lists or was it thrown away by accident. For that process the trust is always not very good between the sides, but in general I say we do trust each other. (Office supervisor, Ceva)

Overall, lack of trust does not seem to be a factor internally at Metso Outotec. Also, with Metso Outotec's external partners, the trust seems to have developed and is currently on a good level. The issues in communication discussed in the previous section can sometimes be misinterpreted as lack of trust, but the root cause is mainly communication and awareness, rather than a fundamental lack of trust in other teams or organizations.

4.7 Risk Management

Risk management can cover a wide array of topics in terms of intra and inter-organizational cooperation. In the past couple years, the Covid-19 pandemic and for example Brexit have presented various types of risks that organizations have had to adapt to. The interviewees were asked how risks overall have been managed inside their organizations and at their partners. Other types of risks that were brought up were for example risks in resource management during organizational changes.

The Covid-19 pandemic was handled mostly well throughout Metso Outotec's internal and external partners. When it comes to health risks, effective communication is required throughout the organization and its partners. Different regulations in different countries have been communicated well, and the impacts of those regulations on various projects have been discussed with all stakeholders. At Ceva, Covid-19 of course presented unexpected challenges, and especially the decrease of volume in business was not prepared for.

I would say our 3PL warehouse is really good and strict on those regulations and legislations in Netherlands. I think they play it safe quite often, which is good.
(Manager, Warehouse and Quality)

Maybe because Covid is a global pandemic, we just have to make sure everyone in every country follows exactly what the specific country is mandating to be done. At Ceva, in the Netherlands, they are taking measures that if there's a Covid case, then what is going to happen, how are they going to mitigate the impact. This kind of stuff is managed very well, internally and externally. (Senior Manager; Logistics, Warehouse and Quality)

At Ceva, with Covid, we always had planning for increased volumes, but we did not prepare well for decreased volumes. We always had the planning just for increase

because that is what normally happens with steady volumes. We never had experienced the case of suddenly losing the volumes. So now, we have made planning for that for every Ceva site. So, I think now that risk is covered as well. There it was also discussed that some people that have fixed Ceva contracts they can just help other Ceva sites where volumes were staying the same or even getting higher. I think that risk is now covered for the next time. (Office Supervisor, Ceva)

Brexit presented a different type of challenge, especially affecting the logistics teams and the physical flow of goods to and from the UK. Mostly though, external partners prepared well for the challenge.

I think one thing that all our LSPs did a very good job on was that with Brexit they were really prepared. They started sending reminders even a couple years in advance. And I think that preparation went extremely well. Major problems were in the Calais tunnel to UK, where we had huge queues, but that was to be expected because also the partners within UK did not know what to do. But from our partners everything was done as well as anyone could have expected. (Logistics Manager)

Whether through Covid-19, Brexit, or other major events that presented risks for the inbound supply chain, major supply chain failures have been avoided at Metso Outotec. The risk of those failures could be costly and lead to significant customer delivery delays (Wu et al, 2006), but the lack of such failures indicates that risk management has been sufficient. In the purchasing organization, there were some indications of moving to dual sourcing due to the risks posed by the aforementioned Covid-19 and Brexit, in order to prevent the complete supply chain of certain products being too vulnerable. Such an approach would be helpful if, for example, there is a sudden major block in the supply chain from a given country, or region – as happened in the Suez Canal in late March 2021. The eventual effects of that particular incident are still to be observed at Metso Outotec

Another risk observed in this study, is the decision itself to centralize operations at Metso Outotec. Whether that is warehouse operations or purchasing operations, centralizing a large portion of those actions to one location, means that a single location can be more vulnerable from a risk management perspective. For example, the larger the portion of a company's supply chain is centralized to one warehouse, the greater the potential impact would be if that main warehouse is affected through any sort of major obstacle. Also, a less dramatic but more of a risk that affects daily operations, is losing the advantages of having local operations. Ability to do business in the local language and having cultural diversity are lost when too many operations are centralized, which can cause difficulties in operating with suppliers or customers in different countries and cultures.

Another topic in terms of risk management was resource planning during organizational changes. That seems to be a development need at Metso Outotec, as several teams were hit with resource and capacity issues when organizational changes occurred, and teams needed to adapt to new processes, new tasks and new ways of working. These topics were covered in an earlier chapter regarding organizational changes, but these were also brought up during the question about risk management at Metso Outotec. At Ceva, the general opinion on risk management was quite positive, but more detailed plans for particular risks and for particular sites were hoped for. Also, having enough resources during times of organizational change was seen as a risk at Ceva.

The risk when it comes to personal issues and HR issues, that's something that is managed poorly like it is in every company. Meaning, how to replace team members, how to grow up team members in different positions, trying to make them stay in the company, and there should be different paths to different people, that kind of management. And related to that, the capacity management and workload issues, I think that's been a big risk, and it's a risk that materialized, that often times we are not prepared for changes capacity-wise, be it at our external partners at Ceva for example with the warehouse transfers. Or starting up after the big transfers,

internally as well. So, going through organizational changes always with the bare minimum, and not having hands on deck to do the normal stuff but have time to react as well. So that's usually a big risk, it's not seen as risk in the upper management, I think, the only risk for them is having too much people and paying for them. But like I said, this risk has manifested many times already, so it's not a risk but it's a real thing that happens. That's something that many people don't see somehow as a risk of losing customers and losing business, but I for sure know that this happens. (Senior Manager; Logistics, Warehouse and Quality)

What I see in general is that at Ceva Benelux all the high-level plans are there. But what I miss, are the detailed explanations for a specific site. For example, for Born and Eindhoven it's completely different in the size of operations. So that's something that I sometimes miss is the translation of the higher-level plans. And the changes within Metso, what I see there is, I think Metso underestimates the part of resources needed to do these kinds of projects. And that's not only because resources, but also with the new resources that are there, that they are not up to speed like the key persons were before the change. (Operations Manager, Ceva)

In conclusion, external risks seem to be well managed and prepared for at Metso Outotec and also in the network of their partner organizations. Internal risks, such as lack of resources during a major organizational change seem to be more of concern, though. Coping in extremely busy times with scarce resources eventually has an effect on the quality of work, and especially process development will be lacking during such times.

5 Discussion

In this chapter, aspects of the empirical findings are discussed and compared to the theoretical chapter of this study.

In chapter 2.2, different perspectives on supply chain management and logistics were presented. At Metso Outotec, the prevalent perspective on this topic seems to be the unionist view, meaning that logistics is a value-adding part of the supply chain management. As previously described, managing the inbound process includes purchasing functions, logistics functions and warehousing functions. The unionist view is broad and deep, containing strategic importance for the firm. It is interesting to note, however, that the words “supply chain” rarely come up in the job titles inside Metso Outotec, and the different teams studied in this research are all part of the *Customer Logistics* organization. So, looking purely at the titles and names of the organization, one could describe Metso Outotec’s perspective as a traditionalist view. But when considering how the teams are cooperating, what are their responsibilities – especially the responsibilities of the *logistics* team – the analysis confirms that unionist view is the correct description of Metso Outotec’s perspective on supply chain management and logistics.

As presented in chapter 2.2, Larson et al (2007) found that internal resistance is substantially greater resistance than external resistance in terms of SCM implementation. This seems to be in many respects in line with the findings of this study. Interviewees brought up intra-organizational issues in communications, roles and boundaries more than inter-organizational issues. Naturally, the boundaries and roles are often clearer in inter-organizational partnerships, but it is nevertheless interesting to note the difficulties in intra-organizational communication and cooperation. As mentioned by Scott et al (2003), organizational silos can become barriers and complicate taking full advantages of the relationships with external partners – this is very much echoed by the interviewees at Metso Outotec.

In chapter 2.3 of this study, the concept of supply chain management as a source of competitive advantage was discussed. Based on the findings, including the following comment, it seems that in the current state, after and during large organizational changes at Metso Outotec the supply chain is not a source of competitive advantage, but rather a disadvantage. The goal of the organizational changes was to improve the lead times to customer and improve the supply chain management and visibility, but at the time of conducting this study, those benefits are not yet reached.

We might, at worst, be losing business when customers turn to maybe other vendors or local partners to deliver their parts faster or with more reliable supply chain. Even though our product might be best, but our supply chain is just not as good as it used to be. (Logistics Manager)

That indicates that the supply chain is still in a state of change, and that there is a need to develop the current state and strive towards the status before the organizational changes took place, when the supply chain was functioning more efficiently. The full impact and success of the organizational changes can be determined only once they are finished. Metso Outotec needs to critically observe the effects of the change and evaluate were the designed benefits reached or not.

In chapter 2.5 the different types of supplier relationships were discussed. At Metso Outotec, there is a huge variety of supplier relationships, differing in strategic importance, involvement and continuity. Some suppliers are companies that produce goods almost exclusively to Metso Outotec, so they are hugely dependent on Metso Outotec. In those relationships Metso Outotec has considerable amount of leverage, and the level of customer service towards Metso Outotec is naturally high. Conversely, other vendors might see Metso Outotec as very small business in their portfolio of customers, which effects the level of service and flexibility that Metso Outotec's purchasing team experiences. With some suppliers there is a longer history, some have even been previously part of the same company as Metso. For example, the local foundry in

Tampere is nowadays an external vendor for Metso Outotec, but in the past it was part of the same company as Metso. The different types of supplier relationships present different challenges for the operative purchasing team, which were brought up during the interviews. Success in global supply chain management requires organizations to collaborate and communicate across not only geographical boundaries, but also cultural boundaries (Aydin et al, 2014). These challenges were also brought up in the interviews and those have been dealt with reasonably well at Metso Outotec's purchasing team. The effects of the organizational changes have been visible in this perspective as well, where local contacts are lost due to centralization of resources.

There are clear differences in terms of learning from other teams at Metso Outotec. Global logistics control towers have been created with this purpose very much in mind, whereas in purchasing team this has not been noticed as much. Intra-organizational learning varies, with very different outlooks in different parts of the organization. In terms of inter-organizational learning – learning from partnerships, or together as a partnership, the interviewees did not bring up many examples of learning with the suppliers or with the LSPs. Examples like the mature Toyota network (Dyer & Hatch, 2004) do not seem to exist in a similar way in the Metso Outotec supplier base. Overall, the innovations through relationships - by Ahokangas et al (2015), Partanen et al (2014) and also by Scott et al (2003) – that were discussed in chapter 2.7 seem to be quite rare within the network of relationships around the inbound process at Metso Outotec. However, with the warehouse partner, there is a different outlook. Great examples were presented in this study, from Ceva Logistics organization where a large organization's capabilities have been put to great use in order to develop processes and learn from others, as well enabling individuals with opportunities and tools to learn and grow.

In figure 10, presented in chapter 2.7, Dyer & Hatch (2004) presented ways how Toyota had facilitated network learning with their suppliers. One of the key components was "intensive on-site assistance from Toyota experts". A similar approach can be described with the on-site visits by the Metso Outotec warehouse specialists at Ceva Logistics. Both

parties, Metso Outotec and Ceva, regarded these visits as extremely useful for multiple reasons: relationship building, network learning and process development. In conclusion, inter-organizational learning seems to be common between Metso Outotec and their warehouse partner, but not as common in the purchasing or logistics functions. The partnership with Ceva Logistics seems to be a mutually beneficial partnership.

In terms of supply chain risk management, there were a few mentions of potential risks in the inbound process, and specifically, having multiple sources for strategically important components. Supplier diversification - that is, having a few suppliers per part - not only hedges against supply uncertainty, but also allows for flexibility in the case of unexpected demand and creates competition between suppliers. This competition helps to lower price, increase quality and delivery reliability, and creates incentives for investment by the supplier. (Aydin et al, 2014.) Such an approach could be explored even further in the Metso Outotec supplier base. This would also lower the risk of disruptions in a global supply chain.

The connection between purchasing and warehousing teams is an important relationship in terms of inbound process development. At Metso Outotec, it can be concluded that this particular cooperation worked well, and good results were achieved. It is important to note that the recent organizational changes do not erase the development gained in previous years and having a well-functioning framework for cooperation in place enables an organization to cope better with changes.

Developing the inbound process requires both intra and inter-organizational cooperation, and at Metso Outotec (legacy Metso side) that worked well before the major changes in the organization. People from Metso visited the main warehouse frequently, which enhanced learning and fostered a togetherness across organizational borders. That was a conscious decision and investment from Metso, to invest in the partnership with the external warehouse partner. Furthermore, as previously discussed in chapter two,

investing in the partnership can even lead to a competitive advantage (Hertz & Andersson, 2003; Dyer & Hatch, 2004; Li et al, 2006).

The 3PL warehouse partner is a vital piece in the inbound process at Metso Outotec. The first party is the shipper or supplier and the second party is the buyer. The third party is a firm acting as a middleman not taking title to the products but to which logistics activities are outsourced. A strategic alliance between the 3PL provider and the client is often necessary to guarantee the quality of the performance. (Hertz & Andersson, 2003.) Based on the interviews, such an alliance can be described to exist between Metso Outotec and Ceva Logistics, and the quality of performance was described by many interviewees as good. The organizational changes have resulted in a challenging period, but before those changes the performance of the warehouse operations was a strength in Metso Outotec's inbound process. It can be concluded that investing in networking – whether that is a partnership with an external warehouse partner, or supplier relationships – pays off when developing the inbound process as a whole.

A major factor in intra and inter-organizational cooperation is organizational change. Major changes in one organization can have ripple effects across organizational borders. This study has shown that organizational changes can have practical effects throughout the inbound process, affecting externally the suppliers, carriers and the warehouse partner. In their study (2003) of the development of 3PL providers, Hertz & Andersson concluded the following: “Local warehouses in each country were getting too costly. Central warehouse for larger areas like the whole part of Europe could offer better effectiveness and efficiency. Many manufacturing firms wanted to create more centralized, combined with advanced, inventory and warehousing systems.” This is in line with Metso Outotec's decision to move forward with the organizational changes and centralizing several operations and processes. Even though these organizational changes have brought with them many difficulties, the reasoning behind the decision can be seen as valid. The execution of the changes however, could have been better. The benefits of the changes are yet to be completely witnessed as the changes are not yet finalized.

Centralization, while bringing certain benefits, also possesses risks, such as losing possible advantages that local operations had, losing cultural diversity in the organization, and being more vulnerable to risks.

Overall, company-wide, all these changes were the biggest in Metso history, yes. But we can now in hindsight say we could've been quicker to get on our feet and not maybe have these back-to-back-to-back changes in the organization. But now we just have to cope, and hopefully we get the resources to do that in the future.
(Senior Manager; Logistics, Warehouse and Quality)

6 Conclusion

In this chapter, the main findings and conclusions based on those findings are discussed in order to be able to answer the research questions. Managerial and theoretical implications are also discussed, as well as the limitations of the study and suggestions for future research.

The main research question of this study was: How to develop a distribution center's inbound process? Questions that help answering the research question were: (1) How is inbound process development divided to different departments or organizations in the business network? (2) How are different parties of the organizational network (internal and external partners) cooperating in order to develop the inbound process?

In conclusion, to answer the research question in short, the key for successful inbound process development is a successfully integrated supply chain. Inbound process development requires internal cooperation from several teams, and external cooperation between organizations that are part of the same supply chain. On a strategic level, there needs to be an overall view of how the process as a whole – as well as the smaller parts of the process – will be managed and how separate teams and organizations are integrated to work in cooperation. Inbound process development also requires investment from managers to allocate resources to focus on process development on the tactical level, to enable intra and inter-organizational cooperation in practice. This then enables smooth cooperation, increases the knowledge of what other teams or organizations' responsibilities are, and reduces the barriers to cooperate. On an operational level, close cooperation between teams and organizations through specialists is an effective approach to develop the supply chain as a whole. This enables efficient daily communication when the relevant people know who to contact and what their responsibilities are.

Answering the additional research questions: Different departments are handed responsibility to manage sections of the process – for that section they possess the

necessary expertise and resources to develop the process into an effective part of the overall inbound process. Purchasing, logistics and warehouse operations are all required to work together in order to serve the end customer efficiently. Actions done at one end of the chain, for example at a supplier, can have effects on the other end, for example in receiving goods at the warehouse. Therefore, decision making needs to be coordinated and to always have the effects on the related teams and organizations in mind.

Cooperation between warehouse and purchasing teams is an integral part in developing the inbound process. Warehouse operations is the place where deviations in the process really have a tangible impact, and the purchasing team is in the best place to prevent those deviations by instructing correct processes to the external suppliers. As these two operations are basically at different ends of the inbound process, making sure they cooperate seamlessly is an effective strategy to ensure continuous improvement on the inbound process as a whole. Cooperation between purchasing and warehousing teams was found to be a strength in this case study.

A major challenge for supply chain integration that was observed in this research is organizational change. When organizations make major changes that alter their entire operating model, the supply chain is greatly affected. An adaptation period is required, and most importantly, extra resources are needed. Without additional resources, the existing processes can be crippled, lengthening the adaptation period and weakening the efficiency of the entire supply chain.

This study found differing development needs in the case organizations in terms of network learning. Learning in networks can be a source for innovation also in the context of inbound process development. When other teams have already solved the same problems earlier, it is more efficient to put those experiences to use rather than trying to come up with a solution only with internal resources. This approach needs to be encouraged from the management to gain full advantage of the network of relationships.

Furthermore, enabling individuals to learn and grow will benefit the organization in the long run, so it is worth investing in.

6.1 Theoretical and managerial implications

In terms of theoretical implications, this thesis contributes to the body of research on intra and inter-organizational cooperation and communication, as well as networking and learning in networks. This study reinforces the earlier studies and theories formed by Dyer & Hatch (2004), Li et al (2006), Panayides (2007) and Stank et al (2001) among others. The theories around investing in relationships and networking were reinforced in this study. As mentioned by the aforementioned researchers, developing the entire supply chain through strong relationships can even become a source of competitive advantage.

In terms of managerial implications, this study echoes the theories of aforementioned researchers. Managers are encouraged to invest in relationships and networking. Well-functioning relationships ease the burden on individual teams and can in the best scenario even become sources of competitive advantage. Also, allocating resources to process development is advised. Process development requires most often a resource that is allocated and focused on a specific part of the process. When different parts of the supply chain process have their own specialists allocated, communication avenues and roles are clear and process development can be more effective. Communication of said roles and responsibilities needs to be clear throughout the organization, or the network of organizations. Internal integration can even present greater obstacles than external integration, so communication is key. A special mention regarding organizational change; managers should be wary of trying to push through major organizational changes without allocating sufficient resources to carry out the change while keeping the quality of the standard processes on the gained level. Major changes can rarely be carried out without extra resources.

In conclusion of the managerial implications, firstly, allocate proper resources for process development for different parts of the supply chain. Secondly, communicate different teams' roles and responsibilities clearly so that the whole organization, or the network of organizations, are aware of who is responsible for what. Thirdly, major organizational change requires the allocation of additional resources, otherwise the performance of teams will suffer.

6.2 Limitations and future research

As this study was single case study, far reaching conclusions cannot be made just based on one company as all cases are different. However, this study does add to the existing field of research and can be useful for practitioners and researchers alike. A possible limitation for this study is that the researcher is working for the case company that was being studied. Interviewer inclusion can be helpful in understanding or guiding the interviews, but it can also be difficult for the researcher to maintain an objective approach if he or she would have opinions of their own to the topics being discussed. Subjective opinions were being kept to a minimum in order to maintain internal validity of the research. Interviewer inclusion might also mean that some interviewees are afraid to express their true opinions to the interviewer's questions. As it was gauged in the study that there is a good level of trust between the teams and organizations that were represented in the interviews, it can be stated that for the most part interviewees were also able to be honest and did not hide their opinions.

Another possible limitation for the study is the timing of the study. When the study was conducted, the case company was going through a major organizational change, which might show in a disproportionate way in the interviewees' answers. Also, some interviewees did not find time to prepare for the interviews by reading the questions in advance, which might result in that some observations were not brought up during the interview just due to oversight.

A future research possibility would be to perform similar interviews at the same case company after the current organizational changes are over. Furthermore, conducting a study where the case company have mature processes and a settled organization, could lead to the interviewees being better able to gauge and observe the effectiveness of their processes and development needs. As this study focused on the inbound part of the supply chain, a similar study could be researched for the outbound process as well. Also, as the current study focused on the teams on the operational and tactical level of the company, a future research possibility would be to study the higher levels of the organization, how strategic decisions are made and what are the drivers for those strategic decisions.

Recurring topics that came up in the interviews were Brexit and the Covid-19 pandemic and their effects. There isn't much academically published research yet on the effect of either of the topics on supply chain management. Those two topics definitely provide interesting opportunities for future research.

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Appendices

Appendix 1. Interview questions

Interviewee and title (organization):

Date and time:

Introduction: Current role? How long have you worked for the company and how long in the current role?

1. Intra-organizational alignment and cooperation - how well are different teams working together (inside your organization) from your perspective?
2. How is intra-organizational communication handled? Does that work well in your opinion?
3. How are the practicalities working between different teams (meetings, division of tasks, etc.)? Are the boundaries/responsibilities clear?
4. How is communication to external organizations (3PL warehouse, LSPs, suppliers) handled? Does that work well?
5. How do you see your partner organizations have handled their intra-organizational integration?
6. How do you see the different teams' and organizations' responsibilities with regards to inbound process development?
7. How are different LSPs / suppliers / 3PL warehouse managed in practice? Does that set-up work well?
8. How have other teams / organizations helped your team to improve / learn? Or have they?
9. Do you trust your external partners? And how about internal partners? How does that affect daily operations?
10. How are risks managed through your internal/external partners? (Covid, Brexit)

11. How have large-scale organizational changes impacted your team's performance? (PCM, CCF, new warehouse facility, etc.) Do you see the effects on other teams?
12. How well have other teams succeeded in inbound process development from your perspective? And how about your team?
13. What further developments would you like to see in practice, compared to current state?