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Collaborative partnerships in process improvement of import / export supply chains in retail and wholesale companies

- Case: Inex Partners and the Customs

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ABSTRACT

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The objective for this thesis is to find out how collaborative partnership with Customs can benefit the import/export processes of the case company. The research gap was that the Customs were seen as third party in collaboration. Additionally, this research examined the elements, barriers, and benefits of collaboration as well as how collaboration is connected with supply chain improvement. In order to achieve these goals, previous studies on these matters were researched and qualitative study was conducted. Qualitative study was conducted as structured interview and the forwarding manager of the case company was the one interviewed. He was chosen due to his knowledge about collaboration with the Customs as well as about AEO authorization.

The results of the study imply that collaboration with the Customs can be really beneficial for company's import/export processes, especially when combined with authorization such as AEOC authorization. The study had two main categories, benefits and impacts of AEOC authorization on the process improvement of import/export and collaboration with the Customs in order to achieve AEOC status.

According to the findings, the case company has seen some of the effects of the collaboration on their process, which were also suggested by the previous studies. However, there was one benefit that was clearly highlighted by the case company and rose over the other benefits, which was mutual trust. When there is high level of mutual trust in a collaborative relationship, the impacts of collaboration on the processes will be substantially bigger.

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Tämän tutkielman tavoitteena on selvittää, kuinka yhteistyö Tullin kanssa voi hyödyttää tapausyrityksen tuonti / vienti prosesseja. Tutkimusaukkona oli, että tulli nähtiin yhteistyössä kolmantena osapuolena. Lisäksi tässä tutkimuksessa tarkasteltiin yhteistyön elementtejä, esteitä ja etuja sekä sitä, miten yhteistyö liittyy toimitusketjun parantamiseen. Näiden tavoitteiden saavuttamiseksi tutkittiin aiempia tutkimuksia näistä asioista ja tehtiin laadullinen tutkimus. Laadullinen tutkimus tehtiin jäsenneltyinä haastatteluina ja haastateltavana oli tapausyhtiön huolintapäällikkö. Hänet valittiin, koska hänellä oli eniten, tietoa yhteistyöstä tullin kanssa ja AEO-valtuutuksesta.

Tutkimuksen tulokset viittaavat siihen, että yhteistyö tullin kanssa voi olla todella hyödyllistä yrityksen tuonti- ja vientiprosesseille, varsinkin kun se yhdistetään johonkin valtuutukseen, kuten AEOC-valtuutukseen. Tutkimuksessa oli kaksi pääluokkaa, AEOC-valtuutuksen edut ja vaikutukset tuonnin / viennin prosessin parantamiseen ja yhteistyöhön tullin kanssa AEOC-valtuutuksen saavuttamiseksi.

Havaintojen mukaan tapausyhtiö on kokenut joitain yhteistyön vaikutuksista prosesseissaan, joita myös aiemmat tutkimukset ehdottivat. Oli kuitenkin yksi etu, jota tapausyritys korosti selvästi ja nousi muihin etuihin verrattuna, mikä oli keskinäinen luottamus. Kun yhteistyösuhteessa vallitsee suuri keskinäinen luottamus, yhteistyön vaikutukset prosesseihin ovat huomattavasti suuremmat.

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Finally, my thesis is ready. The process itself was more difficult than I had anticipated, I was wrong by comparing it with my bachelor's thesis, the process required much more. By doing this research, I have found new sides of myself and even in some points found myself enjoying writing this. In my opinion I have grown as a researcher and writer during this master's thesis process.

I want to express my gratitude to people who were helping me during this process. Firstly, I would like to thank my guiding D.Sc. & university lecturer Sirpa Multaharju and Professor Katrina Lintukangas from Lappeenranta University of Technology. You gave me valuable feedback and advice during my writing process, and I could not have done this without your guidance. With your help, the thesis could be better than I could have done by myself alone.

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Aleksi Närhi

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1. INTRODUCTION

1.1 Background of the study

It is common in current days that companies win other companies by winning with their supply chains rather that with winning against the company directly (Drohomeretski et al. 2012). This has caused a need to gain allies on supply chain level and align operationally and strategically with them. Collaboration in the context of the supply chain is quite important matter and it has been studied many times previously. It can best be seen in the supply chain in the form of replenishment and collaborative planning forecasting (CPFR) (Barratt 2004). Collaboration can be also seen in more advanced form such as vendor managed inventory (VMI) and continuous replenishment programs (CRP) (Ireland and Bruce 2000). With e-commerce begin to be more prevailing combined with current economic climate, some authors have suggested that this can be start of and end for supply chain collaboration (Fawcett and Magnan, 2002). Authors have listed some of the reasons for this to be supply chain collaboration is difficult to implement (Sabath and Fontanella 2002), over reliance on technology in the implementing phase (McCarthy and Glocic 2002), failures to identify who to collaborate with in the case of fore example customers or supplier (Sabath and Fontanella 2002) and lack of trust between partners (Ireland and Bruce 2002).

Organizations have for long tried to achieve more efficient internal supply chain activities such as purchasing, manufacturing and logistics (Ellinger 2002; Fawcett and Magnan 2002). Companies have been somewhat successful in these improvement initiatives and the results can be seen as redistribution of costs and inventory along upstream and downstream of the supply chain (Ireland and Bruce 2000). In addition, due to the focus being on function, demand is disconnected from supply in the form of stockpiles of inventory inside the organizations as well as with their trading partners (Ireland and Bruce 2000). When this phenomenon is combined with isolated forecasting and planning the organization is in trouble. The companies that have succeeded managing through collaboration to integrate demand and supply, have delivered highly improved performance in their processes, and have benefitted from more close relationships which can offer even more opportunities for further improvement.

Horvath (2001) has highlighted the importance of supply chain collaboration in supply chain management. The importance of collaboration is increasing all the time due to markets accelerating and changing of business environment. The efficient collaboration between key

business partners is the main component for competitive edge. Nix and Zacharia (2014) have stated that uncertainty and competition in business environment has increased, and expertise and know-how are scattered. Companies are focusing on their core competences, and this increases the need for suppliers' resources and capabilities (Sahay 2003). This further increases the need for and importance of collaboration and close relationships between key business partners. Collaboration also increases the flexibility and react time of supply chain which is important in order to react fast to business environment changes. Collaboration is a key component leading to better supplier performance and can influence company's outcome significally (Kähkönen et al., 2017).

Not all collaboration has to be between suppliers, buyers, and service providers. In import and export business there are other parties that can be useful to be collaborating with. For example, due to the nature of import and export, it can be very useful for a company to be in collaboration with the Customs. This can improve many key processes within the import/export supply chains and make them more efficient and agile. This collaboration can yield many different benefits such as lesser inspections, increased security and safety of the supply chain, more flexible customs procedures, and improved efficiency of clearances. This collaboration with the Customs can be taken even further with authorizations such as AEO (Authorized economic operator), which can provide even further benefits.

1.2 Objectives and limitations of the study

This research is conducted with the case company. The case company wanted to apply and implement AEO authorization, and they want to know how this can affect their import and export processes and if there is any investments that need to be made. Objectives for this study was to find out how the case company could benefit from AEO authorization, especially from the point of collaboration with the Customs. This research tried to find out of third-party members in supply chain collaboration can be helpful for company's import/export processes within the supply chain. This way of viewing Customs as third-party member in collaborative relationship is a research gap, that there is not much research made in the past. The case company wanted to find out what kind of benefits they might get, do they have to make investments and how collaboration with the Customs can be benefitting for the supply chain processes.

Limitations for this study are that only companies who are from same or similar industry will be analyzed as well as in the study only AEO authorization as means of process improvement will be used. AEO authorization as collaborative process improvement method with the Customs will be the main way of process improvement that is analyzed within the research. Main empirical data used is from the case company, which is then backed up with data gathered from other companies as well as articles. Customs is treated as third party collaborative partner and seen as equally or if not more important party in the collaboration as others.

1.3 Research questions

The success of the research can and will be analyzed and one of the main criteria to do so is to look how clearly the main research question is defined and how precisely conclusions from the data collected have been made (Saunders et al. 2016, 40-41). Research question also is part of the study that helps the author to focus on the issue and concentrate on the real problem (Ghauri & Gronhaug 2010,43).

Main research question for this study is:
"What is the role of Customs collaboration in a company's import/export process improvement?"

On top of the main research question, which is the main focus of the study, it is good to have couple of supportive sub-questions in order to get answer to the main. Sometimes it can be hard to get direct answer to the main research question and that is why there are these supporting sub-questions as well.

Supporting sub-questions for this study are:
"*What are the elements of supply chain collaboration?"*
"What are characteristics of partnerships and collaboration?"
"What are the benefits and barriers of collaborative relationships?"

1.4 Research methodology

Theoretical part of this study is based on earlier studies of the subject at hand. The theoretical literature used is aimed to be from wide scope of peer reviewed articles and books from different scholars and from different time periods if possible. However, as supply chains change and its processes really fast due to new inventions and regulations, more recent studies are emphasized over older ones. The import/export processes will be looked at from different perspectives, from the view of whole supply chain and as individual processes.

The empirical part of this study will be conducted as qualitative research. Qualitative approach was selected to be used in this study due to the nature of research issue, which would be hard to be studied with quantitative methods. Qualitative method fit the needs of the study much better. As stated before, part of the qualitative data will be from authors previous study of the AEOC authorization and other part will be collected from the real-life observations of the AEOC application, implementation and sustain process. This way there will be studies of other companies' experiences about the AEOC authorization, and its benefits combined with the real experiences of the case company, and together they will give a larger scope.

Qualitative research is usually used to "how" questions, so it fit the research question better as well (Eriksson & Kovalainen 2008). Part of the primary data was collected in authors previous study was through interviewing many companies with the AEOC authorization that worked in the similar field as the case company. The other part of the primary data came from real life observations how AEOC status has affected the case company's import/export process. This study is qualitative, and the number of process improvement methods is limited as well as is the number of interviews from previous study, this study only covers a limited area on the matter. Qualitative studies in general are aiming to provide some answers and information on the matter in order to make future studies possible and offer more knowledge to those.

1.5 Conceptual framework and key concepts

The conceptual framework for this study is aiming to present all of the necessary key concepts of this study and present connections and links between them. The research questions is the main objective of the study and as it dictates, it is to find out how collaboration can improve processes in import/export companies working in the field of retail and wholesale. As previous studies have uncovered the basic ways of collaboration in supply chains can be summed up with collaborative planning, forecasting and replenishment (CPFR). On top of this common collaboration method, which includes basic ways how companies collaborate between other companies, Lean practices as method of process improvement and collaboration with Customs as a process improvement method will be studied.

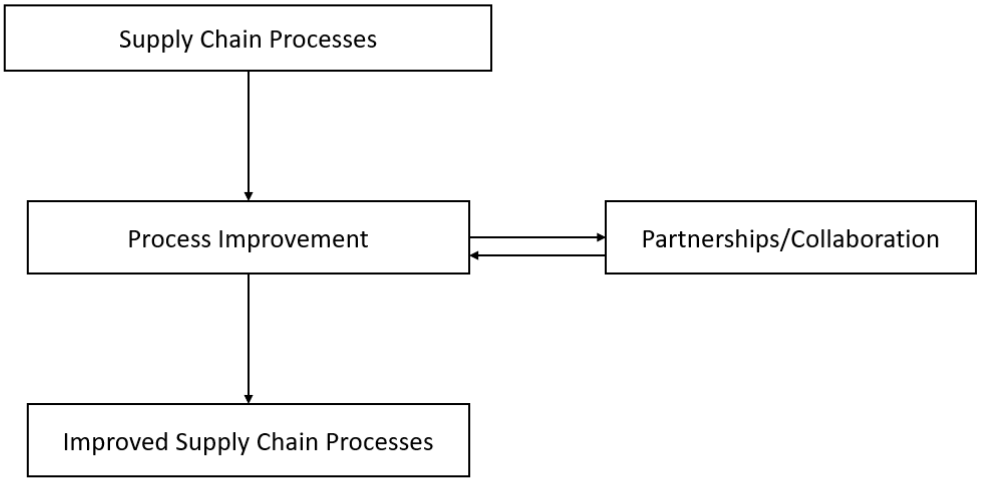

Figure 1 Conceptual framework

The aim of the study is to find out process improvement methods for import/export companies and how collaboration with Customs with AEO authorization can be used as process improvement method. Due to the number of ways to collaborate within the supply chain, the three main ways have been identified and chosen. Collaborative planning forecasting and replenishment programs, vendor managed inventory and continuous replenishment programs have been chosen due to commonly used. For the empirical part, the collaboration with the Customs has been chosen for the case company.

This section will define key concepts that will be used in this study. The concepts are explained and discussed in more depth in the theoretical part of this study.

Supply chain = “Supply chain consists of all stages involved, directly or indirectly, in fulfilling a customer request. The supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves” (Chopra and Meindl 2015).

Supply chain management = “Supply chain management is the coordination of production, inventory, location and transportation among the participants in a supply chain to achieve the best mix of responsiveness and efficiency for the market being served” (Hugos 2018).

Process improvement = Redesigning supply chain processes in order to serve customers better, achieving higher service levels and reduced costs (Hammer 2001).

Collaboration = Supply chain collaboration is usually seen as two or more companies working together, in order to create competitive advantage. Collaboration is when two companies are closely cooperating and engaging in joint efforts (Simatupang and Sridharan 2005).

1.6 Structure of the study

The study is structured as follows. First chapters will be background of the study, objectives and limitations of the study, research questions, methodology, conceptual framework and key concepts and structure of the study. Next part is theoretical background of the study, with concepts such as collaboration in supply chains and supply chain improvement. Third part is research design, which includes methodology, data collection method, data analysis process and reliability and validity. Fourth chapter is empirical research, which is followed by analysis and results from the empirical data. Finally, there is discussions and conclusions.

2 SUPPLY CHAIN IMPROVEMENT AND COLLABORATION

In order to understand the key ideas of the study, collaboration in supply chain and supply chain improvement, it is necessary to make sure that reader is familiar with two important terms related to the study, supply chain and supply chain management. These ideas are briefly introduced.

A supply chain includes all activities related to flow and transformation of products, services, and information, starting from raw material and ends at the end user (Ballou 2009). The development and implementation of supply chains has been ever rising subject amongst researchers and it has resulted in many definitions and phrases about supply chains. Next some of the definitions will be cited in order to gain knowledge, how researchers have defined a supply chain. Beamon B. (1998) has defined supply chain as “a structured manufacturing process wherein raw materials are transformed into finished goods, then delivered to end customers”. Bridgefield Group (2006) defines supply chain as “connected set of resources and processes that starts with raw material sourcing and expands through the delivery of finished goods to the end consumer”. Pieenar W. (2009b) defines supply chain as “a general description of the process integration involving organizations to transform raw materials into finished goods and to transport the to the end-user”.

These definitions are basic core determinants of an effective supply chain. They are highlighting the need for destination within which goods flow and that the overall supply chain starts with resources, combined with of value adding activities and finished with transportation of the goods for the consumers (Janvier-James 2011). Next definitions are more complex and include extended view of the supply chain and include more activities in the supply chain processes. Little, A (1999) defines supply chain as (the combined and coordinated flows of goods from origin to final destination, also the information flows that are linked with it”. Chow, D. and Heaver, T. (1999), Supply chain is group of many parties, including manufacturers, suppliers, distributors, retailers, transportation, information, and other logistics processes that are engaged in providing goods to consumers. Supply chain includes also internal and external parties who are included with supply chain.

Ayers, J.B. (2001) has defined supply chain as “life cycle of processes involving physical goods, information, and financial flows whose objective is to satisfy end consumers requisites with goods and services from diverse, connected suppliers”.

Mentzer, J., Witt, W.D., Keebler, J., Min, s., Nix, N., Smith, D. & Zacharia, Z. (2001) have defined supply chain as “set of entities (including organizations or individuals) directly involved in the supply and distribution flows of goods, services and finances and information from a source to a destination (consumers)”.
It can be seen that there has been used different approaches to definition of supply chain in both of these categories. In the latter category in can be seen that it is very difficult to define supply chains in practice if each of the definitions must apply. The connections in the supply chain are the means of achieving added value for the goods. Any connection in the supply chain that fails to perform well reduces the effectiveness of whole supply chain (Janvier-James 2011). To put bluntly, general definition of the supply chain is a chain of processes in which each process add value to the products.

The need for supply chain process performance has set companies on to quests to look for the best practice of supply chain management (SCM) and practices (Li 2014). This is due businesses recognizing that competition is not between the companies itself, but rather between their supply chains (Botes, Niemann & Kotze 2017). This has led companies to notice the linkage between company performance and supply chain performance, which has caused the need to understand supply chains better (Sibanda 2018). Supply chain management has been defined by Mayaka (2015) as set of activities that company carries out to promote effective management of its supply chain and on the other hand Van der Vaart and Van Donk (2008) define SCM as tangible activities that play a main role in the collaboration among firms, suppliers, and customers. Collaboration is seen as great way of improving supply chain processes, but it is not at its best efficiency if the supply chains are not managed properly.

2.1 Supply chain improvement

Supply chain and supply chain management have played a significant role in corporate efficiency, and it has attracted attention from many researchers over the years. The globalization of the supply chains (SC) has been and is simultaneously an opportunity and an issue for companies (Caniato et al. 2013). When competitive pressure increases, companies are forced to expand operations beyond their own nations boundaries in order to source components, goods, and materials, manufacture the products and then sell them (Caniato et al. 2013). Reduced trade barriers and advantages made in information technology also make it possible. Thus, supply chains are even more complex and difficult to control, which is increased by the errors made in management, which can impact company's performance much (Caniato et al. 2013).

Companies who extend their reach over the boundaries can obtain potential benefits such as lower sourcing costs and access to larger markets (Vereecke & Van Dierdonck 2002). But they do not only gain benefits, but there are also challenges such as longer lead times, more complex networks, and higher risks (Minner 2003). Due to the importance and scale of supply chain, appropriate supply chain management (SCM) is critical for companies, and it impacts their operation performance in terms of inventory and costs reduction, increased customer satisfaction and process efficiency, higher quality, and improved delivery service level (Christopher and Towill 2001). SCM suggests a management change from sole improvement oriented to internal problems to focus of the relationships with other companies both downstream and upstream along supply chain. (Sridharan et al. 2005). Even more, SCM also includes other activities such as planning and management of all activities involved with supply and acquisition, conversion, and all logistics management (LOM) activities. Also, coordination and collaboration with partners is included (Qrunfleh and Tarafdar 2013). However, subject of SCM has been argued to be highly complex activity, and this is justified with the fact that a supply chain is not a sole company but composed by a net of companies or independent business units, whose management become a broad and challenging task (Ellram and Cooper 2014).

Following chapters will include definitions of the supply chain, common collaborative practices that have been used in the supply chain, LEAN practices and partnerships with other companies or institutes.

2.1.1 Needs for improving supply chain activities

As supply chains have become more and more global, issues have arisen amongst companies. As competitive pressure is forcing companies to expand their supply chains outside of their nation's borders in order to source for products, components, and raw materials more efficiently and cheaply as well as selling their products (Caniato, Golini & Kalchschmidt 2012). All of this is made possible by reduction of trade barriers and advancements in technology, most importantly in communications technology. But the main reason to improve supply chain activities is that as the supply chain gets bigger and wider, the supply chain gets more complex and harder to control, which leads to increase in errors, and this leads to decreased performance (Caniato, Golini & Kalchscmidt 2012). In order to avoid these situations, companies must pay extra mind to supply chain improvement as well as global supply chain management (Prasad & Babbar 2000).

Usually, when looking at supply chain management literature, there is always mention about best supply chain management practices, and especially some authors focus on how companies can invest into their supply chain and its processes in order to improve overall operational performance, when looking at factors such as quality, delivery (lead time), flexibility (service level), and costs (Caniato, Golini & Kalchscmidt 2012). In order for companies to gain competitive edge and stay in the competition, one of the best ways is to improve some supply chain activities or supply chain as whole. This is the way that companies are competing at this age, which has the best supply chain rather than best stores etc.

2.1.2 Collaborative Planning, Forecasting and Replenishment

There are many different ways of collaboration in the supply chain. However, there are some methods that are more usual than others. According to Croxton et al. (2001) there is eight key processes in supply chain that include customer relationship management (CRM), supplier relationship management (SRM), manufacturing flow management, demand management, order fulfillment, new product development and commercialization and returns management. Usually when collaborating in the supply chain, it is in one of the three areas: planning, forecasting or replenishment. This is the scheme that offers a map for applying supply chain collaboration. This method is called collaborative planning, forecasting and replenishment (CPFR). CPFR is known for being a collaborative business planning and execution process that is trying to match supply and demand and reduce costs in the supply chain (Simatupang & Sridharan 2005).

Usually in CPFR, the partners who are included are retailer and a supplier that are in agreement of collaborating in key supply chain processes using process and data standards (Simtupang & Sridharan 2005). Figure 2 below illustrates a normal version of CPFR that has nine steps: develop front-end-agreement (1a), create joint business plan (1b), create sales forecast (2a), identify exceptions for sales forecast (2b), resolve on exception items (2c), create order forecast (2d), identify exceptions for order forecast (2e) resolve on exception items (2f) and order generation (3a) (Simatupang & Sridharan 2005).

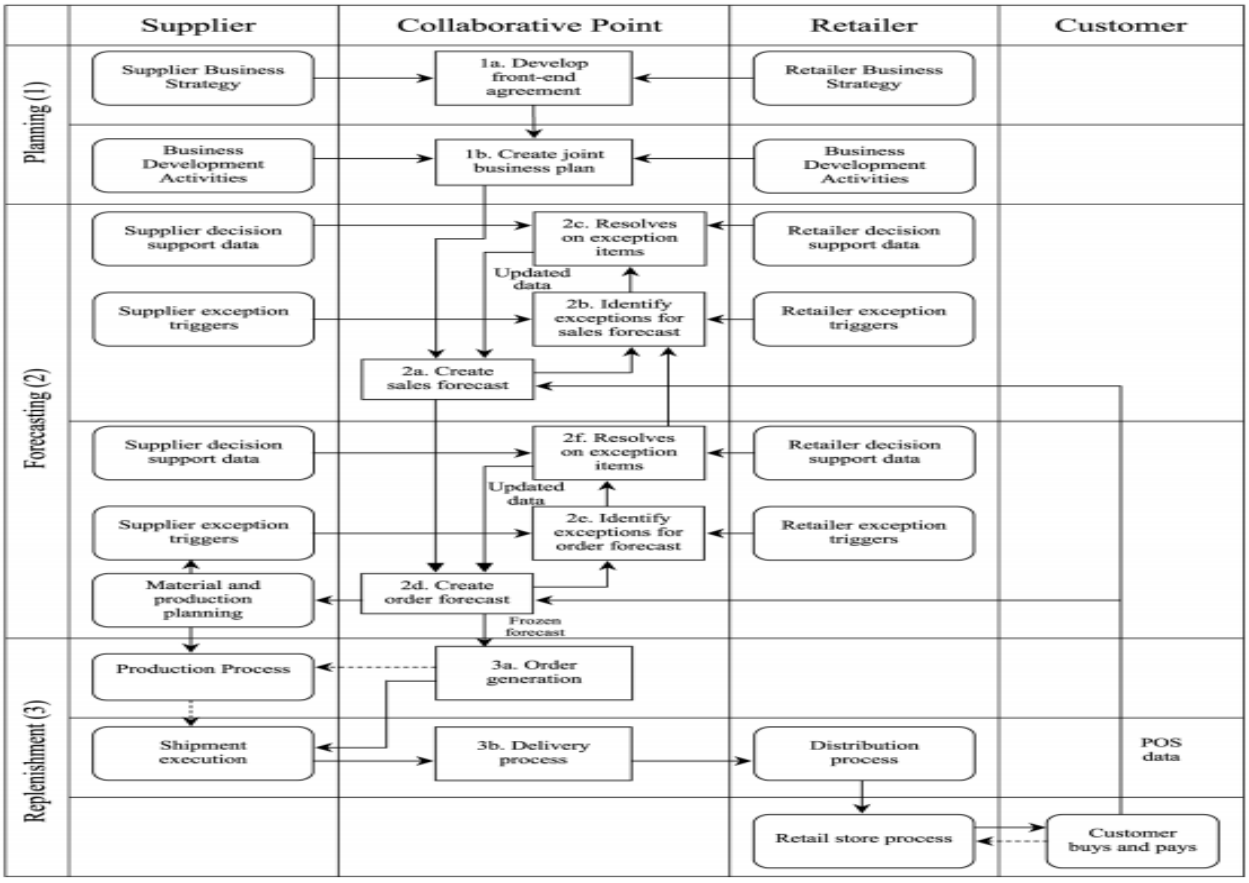

Figure 2 General model for CPFR (Simatupang & Sridharan 2005)

There is a need for big investment done by the parties who are thinking about starting CPFR, including changes that must be done for business processes, technological and organizational changes that is required by this collaboration. Members must be committed to share resources in order to make these changes possible and in order to meet mutual objectives (Simatupang & Sridharan 2005). Both members of the collaboration must also share important information, so confidentiality is required (Simatupang & Sridharan 2005).

There is two different stages of initiating CPFR, first is when CPFR begins with front-end-agreement (a1), which is the forming of the basis for measuring and evaluating performance, accountability, contingencies, and changes (Simatupang & Sridharan 2005). Front-end-agreement is used for defining strategic objectives, common metrics that will be used in the collaboration and assessment of the impacts gotten with the collaboration for each member involved. It is also used to define business functions that would be key executors of the collaboration plan and determines the outline of information to be shared, update frequency and the information technology used (Simatupang & Sridharan 2005). The strategic objective defined for the collaboration is usually something like greater sales and increase mutual efficiencies in terms of lower total costs (Simatupang & Sridharan 2005).

Second, the chain members must share and develop business plan (1b) with cooperation. The business plan is made to clearly describe product profiles to be sold, strategic events and advertisements, market targets and the time frame for the sales (Simatupang & Sridharan 2005). This plan is implemented through operational systems of the partners, which are monitored using communication standards. Any partner in the collaboration can adjust the plans within pre-determined parameters (Simatupang & Sridharan 2005).

CPFR provides a model for reference for the chain members to initiate and implement supply chain collaboration and it exclusively deals with decision synchronization, information sharing and intercompany business processes (Simatupang & Sridharan 2005). However, the model does not give much guidance on the matters of collaborative performance system (CPS) or incentive alignment (Simatupang & Sridharan 2005). Diffusion of CPFR is very slow, especially in Europe (Skjoett-Larsen et al. 2003), due to the gap in understanding CPFR and how to implement it in practice.

There are three different dimensions in the CPFR, which are **collaborative planning** (CP), **collaborative forecasting** (CF), and **collaborative replenishment** (CR). Collaborative planning is fundamental part of supply chain management. Cassivi (2006) summarizes that collaborative planning is the first step in the CPFR process and it has two stages: front-end agreement and join business plans. This part is really important as the partners develop collaboration initiatives and terms in this phase and studies have showed that lack of CP is cause of substantial negative impact on performance of the supply chain (Panafihar et al. 2014). Concepts and benefits of collaborative planning has been explained with the studies, but studies have not found out how collaborative planning can be implemented in order to gain an integrated supply chain (Panafihar et al. 2014). The impact of collaborative planning on the

successful collaboration has been analyzed in the previous studies and it has been argued that there is a connection between collaborative planning with decision making and execution planning, which successful supply chains must adopt to planning, decision making and execution as key elements of collaboration (Panafihar et al. 2014).

Collaborative forecasting has been studied from multiple different aspects, but research has mostly been focusing on the collaborative forecasting process, importance of information sharing (IS) and developing forecasts in the collaborative fashion (Panafihar et al. 2014). The importance of collaborative forecasting in relation to complex communication with different attributes such as reducing bullwhip effects and improving performance of the supply chain (Panafihar et al. 2014). There are many studies that have investigated benefits and objective of collaborative forecasting, but it seems that there are little knowledge how companies can implement this collaborative forecasting into the supply chain (Panafihar et al. 2014).
Studies have found out that collaborative forecasting allows companies to improve accuracy of the forecast and increase the quality of the forecast information based of predictions of order cycles (Panafihar et al. 2014). It has been said that overall goal of collaborative forecasting is “to synchronize service demand forecasts between all customers and suppliers” (Panafihar et al. 2014) and in this case it is believed that collaborative forecasting is a solid foundation to collective planning processes. Collaborative forecasting is the key to overcome problems that are inherited in traditional forecasting, but it is difficult to achieve these benefits without any challenges (Panafihar et al. 2014). It is due to the complexity of collaborative forecasting schemes that are: challenges that are related to human interaction and preconceptions, challenges with traditional behaviors and challenges with communication and defining accountability (Panafihar et al. 2014). ‘

Collaborative replenishment is the third stage in CPFR, and it includes making and fulfilling orders. It has been stated that “in replenishment stage, it is necessary to generate orders according to sales forecast” and this means that replenishment must be directly connected to forecasting process (Panafihar et al. 2014). Collaborative replenishment spreads the replenishment activity to whole level of supply chain and enables collaborative inventory management in operations (Panafihar et al. 2014). The benefits from this has been reported to being improved customer service levels, increased order accuracy and decreased inventory (Panafihar et al. 2014). Before the CPFR was invented, vendor-managed inventory (VMI) and continuous replenishment (CR) were the techniques that were used as collaborative replenishment (Panafihar et al. 2014). Transportation is also one key element in collaborative replenishment schemes (Panafihar et al. 2014). Collaborative transport management (CTM)

has been analyzed and it has been found out that it requires conversion from order forecasting to shipment forecasting, which ensures their accuracy fulfilment (Panafihar et al. 2014). CTM and CPFR can be combined in order to deeply integrate customer procurement forecasts and logistics demands (Panafihar et al. 2014).

Collaborative forecasting and collaborative replenishment have a tight relationship in the CPFR process and the better visibility that the partners have in the retailers' sales and orders forecast, the better suppliers can plan their replenishments (Panafihar et al. 2014).

2.1.3 Lean

Lean in manufacturing is a way how companies seek to improve both of their effectiveness and efficiency (Womack et al. 1990). Companies get more effective when they increase their product quality and value from the perspective of the customer. The efficiency increases when they minimize their internal and external variabilities and reduces all forms of waste in their information and production flows. Succeeding in lean requires the perspective to cover whole enterprise (Jones and Womack 2017), and lean implementations are too often conducted in a piecemeal manner without sufficient integration across all of the functional areas (Marodin and Saurin 2013).

Knowledge sharing can be also important part of lean. Partnerships with suppliers and shared knowledge through organized networks can be a part of sustainable source of competitive advantage. There are two types of knowledge: explicit and tactic. Explicit information is type of information that can easily be codified and transmitted without the risk of leaking. Examples of explicit information can be for example facts and symbols that provide information about size and growth of a market, production schedules etc.… Tactic knowledge on the other hand can be hard to code and is often related to experiential learning. Example about tactic knowledge can be for example know-how. Tactic knowledge is usually complex and hard to imitate; thus, it creates source of competitive advantage. (Dyer & Hatch 2004).

Most of the lean implementations begin with the application of lean practices at the "core value-adding processes" (Marodin and Saurin 2013). For example, in manufacturing industries, most of the value added is on the factory shop floor, where inputs are transformed into outputs according to the demand of markets (Womack et al.,1990. Lean management practices thus enable the production of a larger variety of products at lower costs and higher quality while using fewer resources compared to traditional mass production. (Marodin et al. 2018).

Lean methods were pioneered by Toyota in Japan. Lean can be categorized in five key principles and they can be extended beyond automotive production to any company or organization in any country or sector. The five lean principles are as follows:

Specify: what creates value or does not create value from the perspective of the customers and not from the perspective of an individual firm, function, and department.

Identify: all of the steps necessary to design, order and produce to product across the whole value stream in order to find nonvalue adding waste

Flow: make actions that create flow without interruption, detours, backflows, waiting or scrap.

Pulled: only make what is pulled from the customers side (make what is needed)

Perfection: the main goal is to achieve perfection, so continuously remove waste as it is found (Hines & Taylor 2000)

These principles are fundamental in order to eliminate waste of processes. They are much easier to understand and remember, but they are not always easy to achieve in practice. These principles still are a guide for a company which wants to achieve lean transformation. If the company is serious about going lean, then the employees of the company should achieve lean thinking. (Hines & Taylor 2000).

In order to a company to achieve and implement lean, they need to understand what the customers need and what creates value for them. After this has been done, the company then must be focused on these needs and must define the value streams inside the company (all the activities that are required in order to provide a particular product or service for the customers). Later it is required to also map the value streams of the company's wider supply chain. In order to satisfy the customers, the amount of waste must be eliminated or at least reduced in the company's value streams. (Hines & Taylor 2000). Next step is to find a way of setting direction, fixing targets, and seeing if to change or not is actually happening. Company will need an internal (and later external) framework in order to deliver value for the customers as well as a toolkit to make changes. If the company can do this effectively, they will not have the need to benchmark their competitors to set some subjective data and often unequaled targets; perfection or the complete ridding of waste should always be the company's main goal. It sounds good on paper but is not as simple in the real world. (Hines & Taylor 2000).

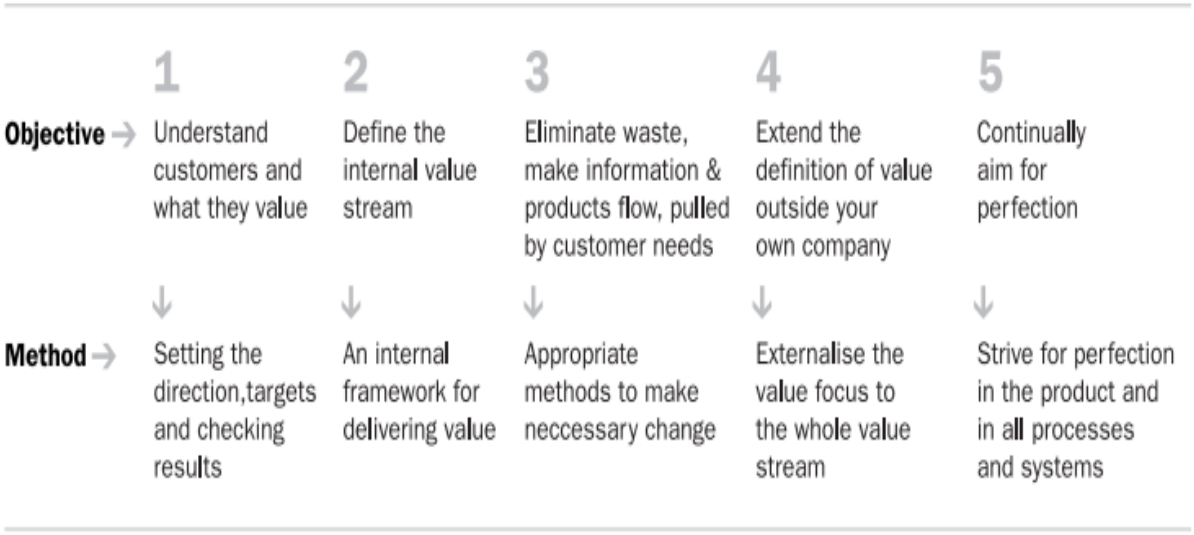

Figure 3 How to go LEAN (Hines & Taylor 2000)

From the figure displayed before, the objectives and methods how to achieve lean is in an easily understandable form. There are objectives that the company needs to achieve and then a method how they can achieve this goal. By following these steps, the company can have guidelines how they can transform their company into a leaner type of company. In order to the company to get to more lean type of company, they must have so called “lean thinking” installed into their company’s thinking. There are six steps to take in order to achieve lean thinking. The first step in the process is the understanding of waste.

The basic principle around lean is to remove waste both inside and between companies. This is a fundamental for lean value stream. When the productivity improves, it leads to leaner operations, which can help to uncover more waste and quality problems in the systems. The constructed pattern how to remove waste from the operations and systems is also a systematic attack on the factors that are affecting poor quality and management problems. (Hines and Taylor 2000). There are seven different kinds of wastes (Muda), which are described as “non-value adding to products or service”. The wastes are as follows, **over production**: producing too much or too soon (results are poor flow of information or goods or excessive inventory), **defects**: Frequent errors in production (e.g., paperwork, quality, delivery performance), **unnecessary inventory**: Too much storage (resulting excessive costs and poor customer service), **inappropriate processing**: Wrong set of tools, systems or procedures used, **excessive transportation**: Excess movement of people, goods or information, **waiting**: Long periods of inactivity and **unnecessary motion**: Poor workplace organization (resulting in poor ergonomics) (Hines & Taylor 2000).

When the companies are thinking about all the activities inside their organization, they should categorize these activities into three types of activities **value adding activities** (activities that add value for the service or product in the eyes of the end customer), **nonvalue adding activities** (activities that do not add value for the product or service in the eyes of the end customer or that are not completely necessary) and **necessary nonvalue adding activities** (activities that do not add value for the end customer but are hard to remove without making huge changes to supply process) (Hines & Taylor 2000).
The second step on the list is setting the direction. One of the main difficulties that companies have when they are trying to apply lean thinking is the lack of direction, planning, and project sequencing. For success in lean, senior management should do the following, **develop critical success factors** (key forces impacting business or wider value streams), **review or define appropriate business measures** (check that top level business measures are compatible with critical success factors), **target improvement requirement over time for each business measure** (set up realistic timelines for the goals, lean changes usually take from 3 to 5 years), **define key business processes** (four to ten key processes must be identified, not too many), **decide which process needs to deliver against each target area** (find out which business processes are likely to yield benefit to each target area if improved) and **understand which process needs detailed mapping** (after finding out which process are likely to yield the greatest gains, identify into which categories these processes belong to) (Hines & Taylor 2000).

The third part in lean thinking is the understanding of big picture. This part must be done before doing any detailed mapping of core processes and is used as an overview of entire process. The big picture can be developed in five steps, that can help to; visualize the flows, see where the waste is, pull together the lean thinking principles, device who should be in the implementation teams, show relationships between information and physical flows and to create buy-in from the senior team undertaking the big picture mapping. (Hines & Taylor 2000). The five things to find in order to develop big picture are as follows, customer requirements, information flows, physical flows, linking physical and information flows and complete map (Hines & Taylor 2000).

The next step in the lean thinking, is detailed mapping. Up to this point the company should have involved only the senior or line managers, and lean change will not happen if the company will not involve wider workforce. By this point the senior management should have a pretty good idea what direction and possible areas could be addressed. But the information has not reached the working level of the company, where the actual manual work will be done.

The bottom level lean implementation should be done by a team of doers, and led by a senior or line manager, who has been part of the earlier activities. There are two main reasons why including those actually who are actually involved in the day-to-day information and physical flows. They are only people likely to know what is actually going on (1) or when you use detailed maps to develop action plans, you will ensure bottom-up buy-in by developing bottom-up plans for the wider team (2) (Hines & Taylor 2000).

In value stream mapping, there are a lot of tools to fill in the gaps left by big picture mapping. There are six most useful tools mentioned by Hines & Taylor (2000). Those tools are process activity mapping, supply chain response matrix, logistics pipeline map, quality filter mapping, demand amplification mapping and value adding time profile.

Next step on the lean thinking list is the getting suppliers & customer involved. Every company that are producing services or products that are attractive to customers require inputs. It has been a tradition that companies tend to control their supply chains with vertical integration (ownership) but nowadays the trend has changed to be more outsourcing type. That is why it can be really beneficial for a company to extend order fulfilment mapping to customers and suppliers.

When mapping external levels for example companies, there is usually two types of waste (or opportunities) involved. **Supply chain co-ordination (1)**: inefficiencies and wastes between companies, such as common quality standards, shared transportation etc... **Supply chain development (2)**: inefficiencies inside certain companies within the supply chain. (Hines & Taylor 2000).

Companies should select the most rewarding methods to use when conducting detailed analysis. The map should highlight problems and opportunities both within the companies and in the linkages along the supply chain. Next will be a table that summarizes the benefits of tools when including wider supply chain.

The last step on the lean thinking is checking the plan fits the direction & ensuring buy-in. This step is done after the detailed mapping is complete. At this point company and the teams should have gathered information and they should turn this information into a workable plan over a realistic time frame. (Hines & Taylor 2000).

Main tools and principles of lean

In this chapter, couple of main tools of lean will be introduced. Lean principles will be illustrated as well. Both of these were already introduced in the “what is lean” chapter, but in this chapter, couple of tools and principles will be looked at more carefully. Lean principles are the basis of how a company can achieve and maintain lean in their company. The 14 lean principles are: Base your management decisions on a long-term philosophy, even at the expense of short-term financial goals, create a continuous process flow to bring problems to surface, use “pull” systems to avoid overproduction, level out the workload (work like the tortoise, not the hare), build a culture of stopping to fix problems, to get quality right the first time, standardized tasks and processes are the foundation for continuous improvement and employee engagement, use visual controls so no problems are hidden, use only reliable, thoroughly tested technology that servers your people and process. grow leaders who thoroughly understand the work, live the philosophy and teach it to others, develop exceptional people and teams who follow your company’s philosophy, respect your extended network of partners and suppliers by challenging them and helping them improve, go and see for yourself to thoroughly understand the situation, make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly and become a learning organization through relentless reflection and continuous improvement (Liker & Meier 2005).

By following lean principles, a company can transform into a leaner kind of company, but as mentioned in the previous chapter, these principles are easy to understand but hard to follow and implement fully. Lean tools were mentioned in the previous chapter, and it introduced six tools of lean. In this chapter, the focus will be on two of the tools that were introduced during the supply chain improvement course. The tools will be value stream mapping and 5S.

Value stream mapping is a tool for identifying where the value is really coming from in the supply chain. Value is defined by customer in terms of product or service. When identifying a value stream, a company should map out all end-to-end linked actions, processes and functions that are necessary for transforming inputs to outputs in order to identify and eliminate all of the waste in the supply chain. When a company decides to conduct a value stream mapping, there are 10 steps to create the value stream map. The steps are defining of customer value and process, looking through the whole process to identify tasks and flows, identifying value-added and waste process steps, creation of “current state” value stream map (VSM), gathering of data on resources, time and quality for each step, analyzing the map to determine opportunities for improvement, identifying bottlenecks and other flow impediments, brainstorming actions to eliminate waste and add value, creation of a “future state” map to

visualize the desired and realistic next state and creation of action plans to move towards the future state (Hallikas 2020).

In value stream mapping, there are also seven different tools for mapping out the seven different kind of wastes that were mentioned in the previous chapter. These tools are process activity mapping, supply chain response matrix, production variety funnel, quality filter mapping, demand amplification mapping, decision point analysis and physical structure mapping (Hines & Rich 1997).

The 5S tool is which is used mostly when a company is transitioning into lean. 5S is a tool for organizing working environment and it helps the company to get rid of useless items and helps to keep necessary items and whole working environment in order, clean and intact. The name 5S comes from 5 different steps that are; Sort, Stabilize, Shine, Standardize and Sustain. The first step, Sort, is about getting rid of all the items that are not necessary for the work itself. This can include tools, folders, equipment, supplies etc.… The next step is stabilizing in which all the items are placed in their own places and they are marked and easy to recognize. When an item is used, it will be placed back to its own marked spot, which makes it faster and easier to find it next time. Third step is to shine, in which the working environment will be cleaned. This includes all the equipment and tools and even computers. Fourth step is standardizing in which a level of cleanliness is standardized in order to keep places clean and sustained. In this step, usually visual guidelines are used. The final step is sustaining, which is basically just that all the employees will be conducting this 5S principle in order to make sure that it is continuous and will not just stop in couple of weeks. (Väisänen 2013). The benefit of 5S is that process will get more efficient. This means less defects, handling of deadlines, removal of waste and shorter lead times. Also, work safety will increase. 5S gives the employees clean and safe environment to work in, which will increase innovativeness and helps organizing. (Väisänen 2013).

2.1.4 Collaboration in supply chain improvement

Supply chain partnerships are a way to strengthen supply chain integration and proved sustainable competitive advantage in an environment which is characterized by scarce resources, increased competition, higher customer expectations and faster rates of change (Lambert, Emmelhainz & Gardner 1996). Partnering with other company helps the company by providing a method of leveraging the unique skills and expertise of each party involved and it may also help to “lock out” the competitors (Lambert et al. 1996). It has been noted that

“Being a good partner has become a key corporate asset. In nowadays global economy, it is a very valuable asset if a company can create and sustain fruitful collaborations (Lambert et al. 1996). These collaborations within the supply chain have also been described as “win-win” situations where information is exchanged actively and where two parties engage in joint efforts to improve supply chain performance (Monczka et al. 2002).

The word “partnership” has caused confusion in high level executives all around the world and some companies cannot understand the term let alone implement it (Lamber et al. 1996). While partnerships are necessary and beneficial, they are also expensive to upkeep in the terms of time and effort required (Lambert et al. 1996). Companies do not have resources to partner with every company, and they should not even try that. It is important to share the resources of the partnership with only those who are beneficial for the partnership (Lambert et al 1996). Also, not all of the partnerships are similar, and they require different kind of management style and layout. On top of this, partnership model that is most beneficial for both parties can be difficult to choose (Lambert et al. 1996). A partnership should be a tailored business relationship, that is based on trust, shared risks and rewards, openness, and which rewards companies within with competitive advantage, which results in improved business performance that is greater than the company could have achieved ever alone (Lambert et al. 1996). But it has to be also noted, that partnerships are not a requirement for business success, it is just a method to achieve it if implemented properly (Lambert et al. 1996),

There are many different kinds of relationships between companies from the arm length relationship that consist of one-time transactions or multiple transactions, to vertical integration of two different organizations (Lambert et al 1996). The most common relationship between companies has been arm’s length, where to companies do business with each other, often even on long periods of time and with many exchanges (Lambert et al. 1996). These are usually in the cases where there is no reason for joint commitment or joint operations between these companies. In this arm’s length type of relationship, the seller usually has many companies that it has business with and uses standardized terms and conditions (Lambert et al. 1996). When the companies stop doing business with each other, the relationship ends. Arm’s length type of relationships is a good choice in many situations, however there are still situations where more integrated relationship (partnership) would be more suitable and yield much greater benefits for both companies (Lambert et al. 1996). Partnership is tailored to suit just the needs of the companies present in it and it is based on trust, openness, risk, and reward sharing, which yield competitive advantage, which leads to greater business

performance (Lambert et al. 1996). There are also different levels of collaboration in these relationships (Lamming 1994).

Partnership should not be connected with joint ventures, even though it shares some degree of shared ownership with two companies (Lambert et al. 1996). Neither or is it a vertical integration either. But still, well implemented, and managed partnership can provide same kind of benefits that are found with joint ventures and in vertical integration (Lambert et al. 1996).

Usually, partnerships share similar kind of common elements and characteristics, there still should be tailored benchmarks to monitor performance in each single partnership (Lambert et al. 1996). This is due every partnership having its own set of motivating factors that drive its development as well as its own unique environment, duration, breadth, strength, and closeness, which will vary with each partnership (Lambert et al. 1996). The study done by Lambert et al. (1996) has found three types of partnerships that exists:

Type 1: Companies involved in the partnership recognize each other as partners and are coordinating activities and planning on limited basis. These partnerships have usually a short-term focus and involve one division or are within each company.

Type 2: Companies are involved beyond coordination of activities to integration of activities. This partnership is not expected to last forever, but still partnership has long term focus. In type 2 partnership there are many divisions and areas involved in the partnership.

Type 3: Companies share a substantial level of operation integration. Both companies see the other as extension of their own company and this partnership usually has no ending date.

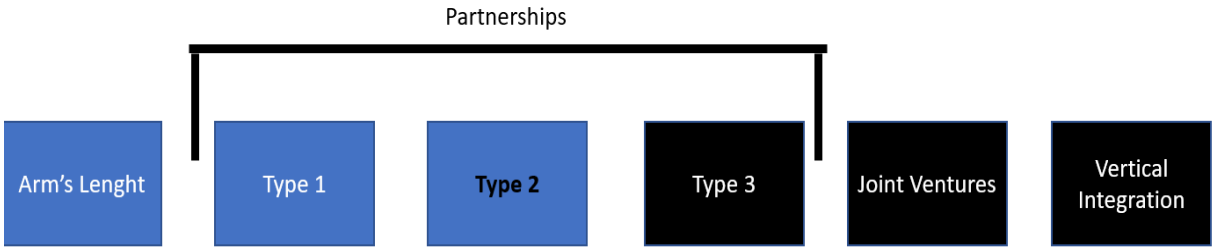

Figure 4 Types of relationships between companies (Lambert et al. 1996)

Usually, companies have wide range of relationships, but of which many will not be partnerships, but usually something associated with arm's-length relationship (Lambert et al. 1996). From the relationships that are partnerships, most will be type 1 relationships and only few will be type 3 (Lambert et al. 1996). Type 3 relationships are usually saved for those companies who are in critical position regarding company's long-term success (Lambert et al. 1996). Lambert et al. (1996) had studied partnerships and they came up with partnership model that consist of three major elements; drivers, facilitators, and components, which will lead to different outcomes.

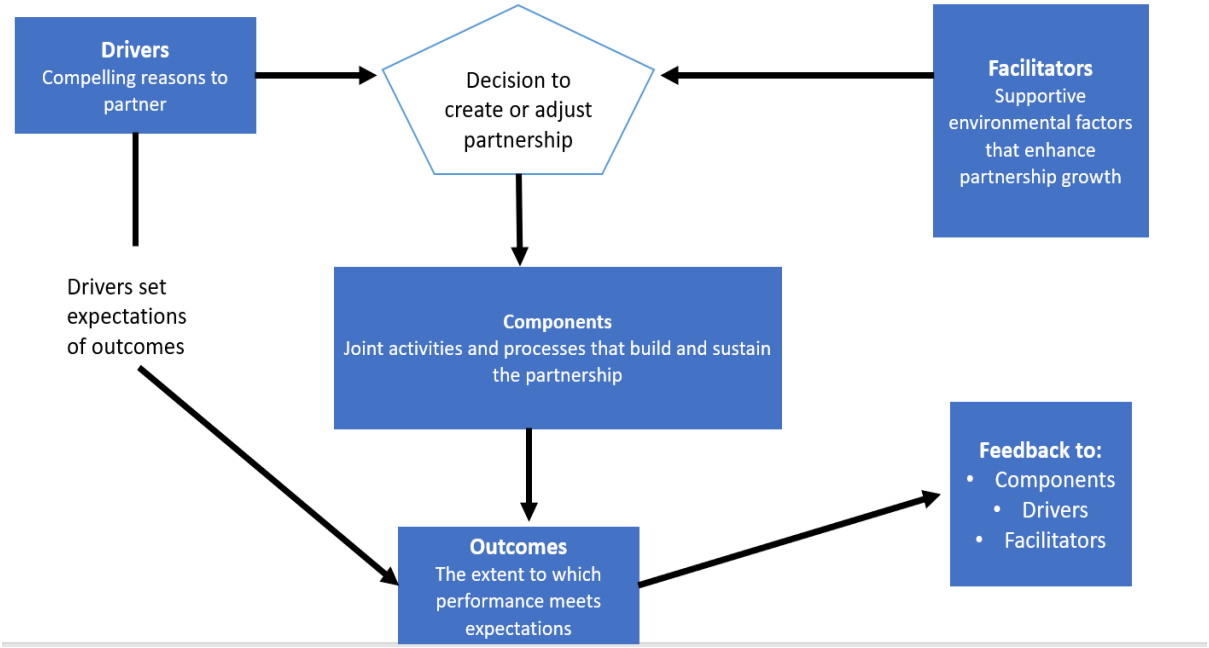

Figure 5 The Partnering Process (Lambert et al. 1996)

Drivers have many different factors, first being that both companies must believe that they will benefit in more than one area that they would not make without the partnership. The main benefits that companies can expect to have from the partner are cost efficiencies, customer service improvements, marketing advantage and profit growth (Lambert et al. 1996). Cost efficiencies mean for example a cost reduction, but it can also include other kinds of efficiencies such as reduced transportation costs, packaging costs, information costs or product costs (Williamson 1975). Customer service improvements are usually gained through integrated activities in the supply chain, which will usually also lead to improved customer service levels, in the form of reduced inventory, shorter cycle times and more precisely timed and given information (Lambert et al. 1996). Marketing advantages could include for example enhancing of marketing mix, easy of entry to new markets, and access to better technology

and innovation improvements (Lambert et al. 1996). Profit growth is the most desired outcome for most companies and strengthening the partnership relationship usually leads to long-term volume commitments, reduced variability of sales, joint use of assets (Lambert et al. 1996). While these drivers are mostly reasons for companies to enter a partnerships and requirement of strong drivers is necessary, but they are not a key to successful partnerships (Lambert et al. 1996). Also, the drivers and benefits driven from them must be maintained long term (Lambert et al. 1996).

Drivers are key for motivation in the partnerships, but facilitators are the elements of corporate environment, that allow companies in the partnerships to grow and strengthen (Lambert et al. 1996). They are described as the foundation of the relationship, and they cannot be developed in short amount of time. The degree of which the facilitators exist usually determine how the partnership will end up as, will it continue or fail (Lambert et al. 1996). Facilitators include factors such as corporate compatibility, similar leading philosophy and techniques, mutuality, and symmetry (Lambert et al. 1996). Corporate compatibility means that if the partnership is to success, the companies must share compatible values. The cultures and business methods of the companies will pretty much combine, but they do not have to be identical. The more similar the culture and methods of the partners are, the better chances they have in success (Lambert et al. 1996). Managerial philosophy and techniques are another important facilitator. This part means basically that the companies must share similar basic values as well as operating styles to succeed (Lambert et al. 1996). Third facilitator is mutuality, which is the skill that management team have to put themselves in the shoes of the partners. The better this ability is, it usually means the more willing the company is to develop joint goals, share sensitive information and take long-term perspective (Lambert et al. 1996).

Symmetry increases probability of success in the way that the companies are more “demographically” symmetrical. Symmetry in the terms of companies usually means that companies are similar in levels of success, size, market share, financial strength, productivity, brand image, company reputation and level of technology, and the more symmetrical the companies are, the stronger the relationship will be (Lambert et al. 1996).

Components are the activities and processes that are established by management and controlled through the life of the partnership (Lambert et al. 1996). Components are the factor that make the relationship operational and help to create the benefits that are listed in partnerships. Every partnership has same basic components but differ in the way how these components are implemented and managed (Lambert et al. 1996). The components include

planning, joint operating controls, communications, risk/reward sharing, trust and commitment, contract style, scope, and financial investment (Lambert et al. 1996). Planning means in this context joint planning, and it is a key component of efficient partnerships, and it can range from sharing of existing plans to join development of new objectives. Effective joint planning adds flexibility while strengthening the partnership (Lambert et al. 1996). Join operational controls is the requirement of the other party to change its operations for the good of the partnership (Lambert et al. 1996). Communications are important factor in the partnership because there are many levels of communication ranging from day-to-day and non-routine basis communications. There are many ways of conducting communications such as integrated e-mail systems, regularly scheduled meetings, and phone calls, sharing of both good and bad news, all contribute to the success of the partnership (Lambert et al. 1996). The more depth and breadth the communication is, the stronger partnership will be. Communications should include all levels of the organizations such as strategic, tactical, operational, interpersonal, and cultural (Lambert et al. 1996). Risk and reward sharing is the core of the partnership, and it must be made sure that there are mechanisms that allow this (Lambert et al. 1996). Trust and commitment are the basis that partnerships exist, because without trust, there cannot be partnerships. Loyalty to each side is important, so the parties do not have to think about being replaced (Lambert et al. 1996). Contract style includes patterns in which the partnership is conducted. Usually, the shorter and non-specific the agreement is, the stronger the partnership will be (Lambert et al. 1996). Scope of the partnership includes how many economic activities are included in the partnership, the number and complexity of the value-added steps covered, and amount of business are key elements of the partnership (Lambert et al. 1996). Financial investments can be used as a way to strengthen the partnership, the sharing of financial resources across the relationship (Lambert et al. 1996). Shared assets, joint investments, exchange of key personnel and knowledge, joint research and development are signs of financial interdependence (Lambert et al. 1996). But this kind of interdependence usually just leads to stronger relationships (Lambert et al. 1996).

Partnerships or collaboration can also be achieved through different kind of programs that companies are involved in. For example, import and export companies in many cases are collaborating with the customs, due to them having to be in relationship with each other anyway. Import and export companies have to deal with the customs really often and partnering up with them can give them many benefits that will make their work faster and smoother. There are international programs that companies can apply for if they want to and if they are eligible. These kinds of programs are for example internationally recognized AEO authorization program, which offer many different kinds of benefits for a company depending

on which authorization in the AEO program they are applying for. This AEO program will give benefits for both the customs and the company, it moves responsibility from the customs side to the company's side, which in return gives more freedom for the company.

2.2 Collaboration in supply chains

Collaboration on supply chain level means that two autonomous companies are working jointly in order to plan and execute supply chain operations (Simatupang and Sridharan 2002). Dyer and Hatch (2004) say that source of competitive advantage of companies (and their business partners) is collaboration, sharing of information and knowledge with their suppliers. In addition, Sahay (2003) emphasizes the role of collaboration in value creation and that collaboration is key component for success for players in the supply chain. Decision making that affect all influencing aspects of supply chain are easier to make through co-operation, interaction, and close relationships. Horvath (2001) says that when optimizing the operations in supply chain, collaboration is the driving force. The collaboration level between parties are influenced by mutual trust, status, development actions and business planning (Kähkönen et al., 2017). Collaboration is very broad term and when put to context of supply chain, it need even more defining clarification (Barret 2004). Many authors have defined it as mutual benefit, rewards and risk sharing together in exchange for information (Shank et al., 1999). In order to understand why and how to collaborate in addition to how to maximize the success of collaboration, there are number of issues that must be more deeply understood (Barret, 2004). These things are why should companies collaborate, barriers for collaboration, where and with whom companies should collaborate with. On top of these, elements of collaboration must be looked through.

2.2.1 Elements of supply chain collaboration

Literature has uncovered many different elements of collaboration that are in and around supply chain management. One of the largest supporting elements for collaboration is the "collaborative" culture (Figure 6), which includes various elements, trust, mutuality, information exchange, openness, and communication. (Barratt 2004).

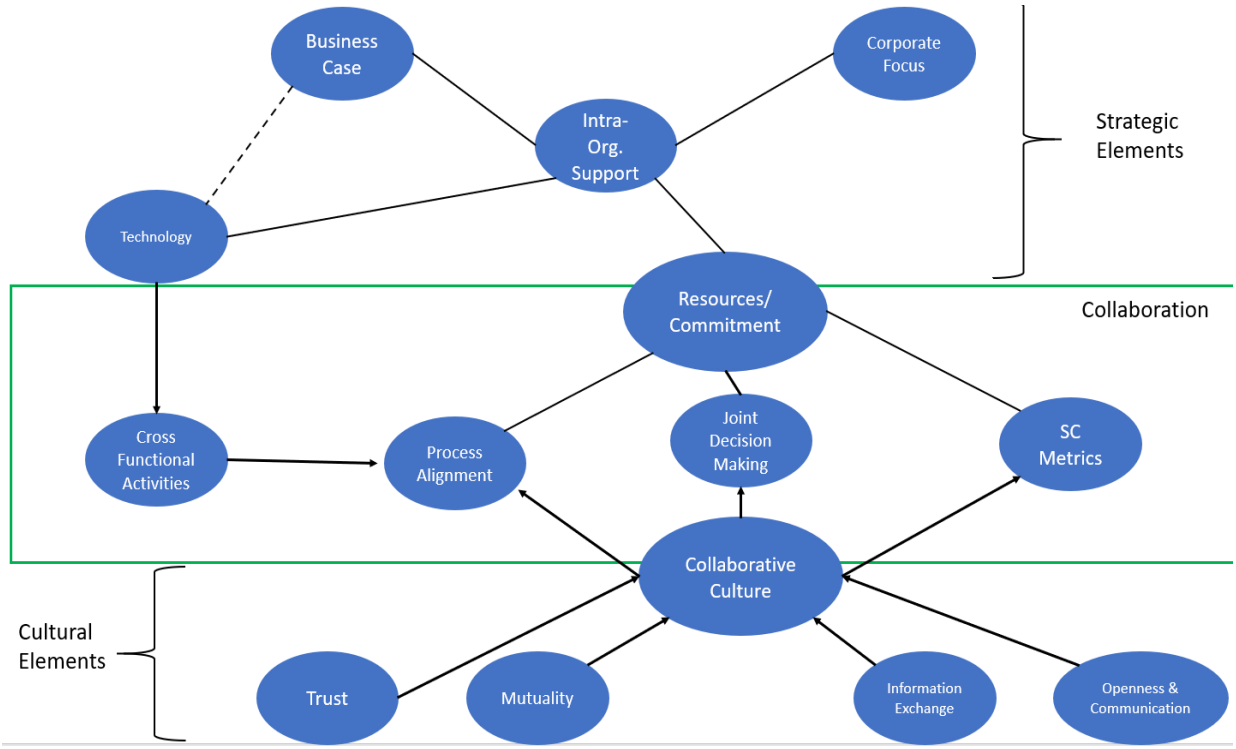

Figure 6 Cultural elements of supply chain collaboration (Barratt 2004)

Next different elements of collaboration will be presented.

Collaborative culture: Many of the cultures within companies nowadays are not capable of supporting collaboration internally nor externally (Barratt and Green 2001). At the moment, functional thinking is prevalent and backed up by organizational structures and performance measuring is also focusing more on functional activities rather than supply chain processes (Barratt and Green 2001).

External and internal trust: Trust can contribute massively to the long-term stability of an organization. Effective coordination of supply chain is built on the foundation made from trust and commitment. (Barratt 2004). But this kind of full view of the supply chain requires trust

between all parties of the supply chain. Internal trust is as important, but it can be harder to develop. (Barratt 2004).

Mutuality: In collaboration, there has to be mutual benefits that all parties can enjoy, and it cannot be a situation where other party wins and other does not (Ireland and Bruce 2000). In collaboration, there also must be mutual risk sharing and respect for other parties within the collaboration (McIvor and McHugh 2000).

Information exchange in the supply chain: Many authors have highlighted the importance and need of information sharing if the supply chains are aiming for performance improvement (Lambert and Cooper 2000). Information, especially transparency and quality of information flow play a critical key role in many roles of supply chain developments and both of these assumptions: first, intermediation is a possible barrier for achieving greater transparency within the supply chain because it is a source of asymmetrical information and impactness; second assumption is that intermediation raises costs and usually leads to non-value adding activity (Popp 2000). It is found in the literature that immediate sharing of marketplace data throughout the chain is not only desirable but mandatory. This must be achieved in process integration, where the goal is “seamless” supply chain (SSC) in which all players think and act as one (Towill 1997). The use of information technology to share data between parties is in a way, creating a virtual supply chain. Virtual supply chain are based on information rather than on inventory. Major problem for supply chain usually is their lack on visibility of real demand (Christopher and Towill 2000). Shared information between supply chain members can be used fully by process integration. This means collaborative work between supply chain parties, join product development, common systems, and shared information (Barratt 2004). This is the form of collaboration that has gained more attractiveness as companies focus more on managing their core competencies and outsource all other activities (Christopher and Towill 2000).

Another thing to consider is **the information decoupling point**, which is the furthest point that the information on real final demand penetrates within the supply chain (Christopher and Towill 2000). Collaboration gives the companies potential to push this as far as possible upstream in the supply chain (Christopher and Towill 2000):

Communication and understanding: When collaborating, it is really critical that companies open and develop clear and broad lines of communication (Frankel et al. 2002), to foster information sharing and to create a shared understanding (Ireland and Bruce 2000). There should be more than one point of contact, because there is a need for development of broad

interfaces between companies that potentially overcome lack of internal communication and create an atmosphere where innovative thinking is both supported and encouraged (Barratt and Green 2001), and situations with only single point of contact should be avoided.

Openness and honesty: If looked from either internal or external viewpoint, culture of honesty and openness is needed. Good example of this is that if the shipment is going to be delayed, the recipient should know it before the delivery date has passed and instead be informed early as possible in order to make plans of contingency. Such honesty and openness may develop into trust, respect, and commitment, which improve certainty and reliability (Popp 2000).

When thinking about collaboration itself, **managing change** is the term used of moving from current state to a collaborative culture. As seen from the figure 8, the key elements in terms of what has to happen if the collaboration is to be successful: cross functional activities, process alignment, join decision-making and true supply chain metrics:

Managing change: In order to develop collaborative relationships, there must be massive changes both internally and externally (Ireland and Bruce 2000). There must be programs that supports collaborative initiatives because otherwise resistance internally could deny collaboration from developing and/or flourishing (Barratt 2004). This means that many employees have to change their way of working and being in collaborative partnership might feel weird for many of them, due to them not being used to share information with colleagues, customers and suppliers or even making joint decision (Ireland and Bruce 2000).

Cross-function activities: The boundaries between supply chain collaboration partners has been noticed to restrict flow of information and development of trust between the parties (Ellinger 2001).

Process alignment: There is much larger need from senior management in collaborative initiatives if they are to succeed (Ireland and Bruce 2000). This is due to the need that supply chain collaboration requires adopting a process focus, which includes crossing functional boundaries (Barratt and Green 2001).

Joint decision making: Example for joint decision making is for example forecasting. Many organizations forecast only by themselves using historical data and orders from customers as the base of the forecasts (McCarthy and Golocic 2002). Forecasts done in this manner usually

are statistical in nature. As the supply chain as whole, when there are many forecasts done in this manner, each having a small error, combined with volatile swing in demand make them less accurate overall (Ireland and Bruce 2000).

Supply chain metrics: Many of the supply chain metrics are measurement of internal logistics performance and thus can be considered not valid for supply chain as a whole (Simatupang and Sridharan 2002). Sharing performance metrics with supply chain partners can help to identify bottlenecks in the supply chain (for example inventory stockpiles and process gaps) and this way overall performance can be improved (Ireland and Bruce 2000). The major barriers to development of such "supply chain" measures are the nature and complexity of overlapping and sharing the information between parties (Barratt 2004). Unless the supply chain collaboration parties cannot come up with real "supply chain" metrics, then the supply chain will continue to operate in different directions without alignment (Barratt 2004).

If the collaboration is planned to be sustainable, then there are many strategic elements, which must be included (f). These elements include resources and commitment, intra-organizational support, corporate focus, demonstrating the business case and role of technology:

Resources and commitment: Parties involved in the collaboration must be willing to commit resources as it is likely that every initiative in sustainability are requires a lot of resources in the early stages of the development and over the longer time as collaboration is expanded to include all relevant suppliers and customers (Ireland and Bruce 2000).

Intra-organizational support: In collaboration there is need for process focus (Ireland and Bruce 2000) and inter-organizational support is needed in two forms. First is in the shape of initial and ongoing senior management support and the second is in the terms of gaining support of the other parts of the organization (for example purchasing and manufacturing) (Ellinger 2002). The degree of intra-organizational support is probable to determine the level of process alignment and in the end how successful the supply chain collaboration is going to be (Ireland and Bruce 2000).

The corporate focus: Many organizations are not focused on their supply chain (Ireland and Bruce 2000). There are distractions such as stakeholders and the supply chain and any collaborative initiative is likely to be seen as needless expenses (Sabath and Fontanella 2002). This can be partially solved with early delivery of promised, with limited benefits (Ireland

and Bruce 2000), as a way of gaining more organizational support, which gives momentum for the cause (Barratt 2004).

Demonstrating the business case: In order to build support and commitment from senior management, a business case for the collaboration must be built and developed (Ireland and Bruce 2000).

The role of technology: Supply chain collaboration is not based on technology, in fact one of the largest barriers for collaboration is obsession with technology (Ireland and Bruce 2000). In the early stages of collaboration, simplistic technologies (for example e-mail) are more effective and cheap solution than some more advantaged collaboration tools which are offered by software vendors (Ireland and Bruce 2000). The key here is to understand what supply chain partners are collaborating over, clearly defined processes and clear understanding of the information that is required in order to manage these processes. Only when information volumes in the collaboration are growing that technology can be used more closely with the collaboration in order to get more closer to real-time based exchange and utilization of shared information (Ireland and Bruce 2000). Technology is easy to use only for technology's sake, with no clear benefits (Sabath and Fontanella 2002). Many companies have gone through the painful and expensive process of implementing the latest enterprise resource planning (ERP) systems and thus are not likely to rush for investing in further tools (Ireland and Bruce 2000).

Next, there will be figure 7 that shows the elements of collaboration in the context of supply chain.

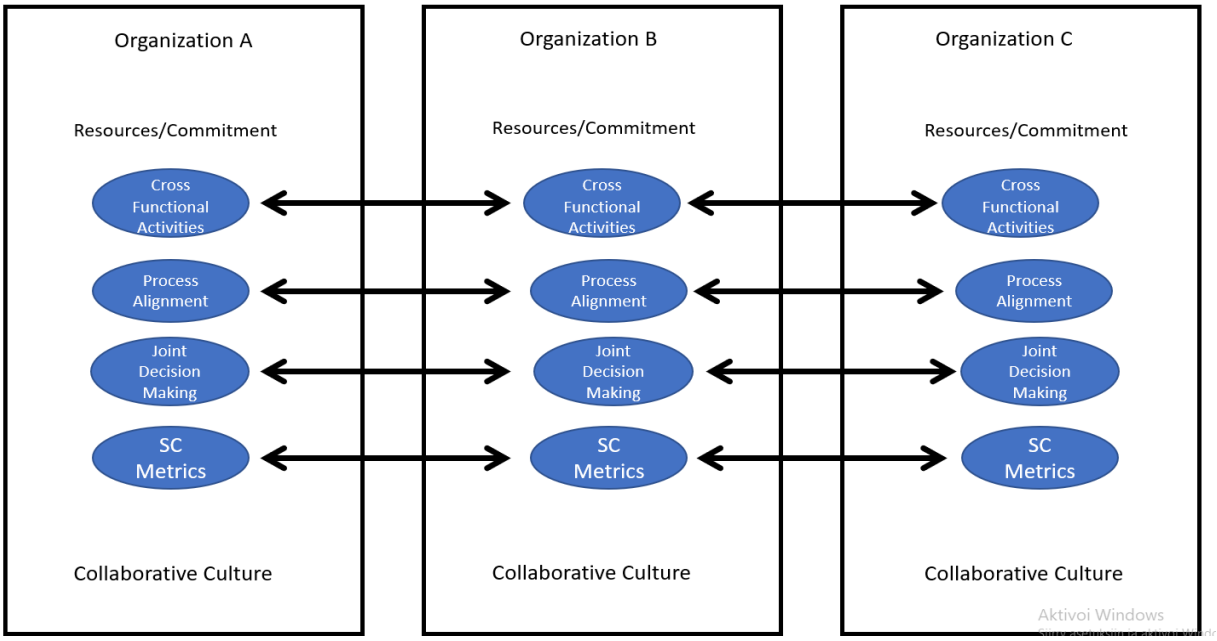

Figure 7 Strategic elements of supply chain collaboration (Barratt 2004)

This kind of collaboration is likely to be difficult, and the task of extending collaboration to all the way to third tier organization (Organization C in the figure 9) is much more difficult. This matter leads to proposed concept of segmented supply chain with an organization, which goal is to collaborate with small number of key partners (Barratt 2004).

2.2.2 Benefits of supply chain collaboration

The general idea is that there is much to be gained from collaborating with supply chain partners and it can be referred as driving force behind effective supply chain management (Ellram and Cooper 1990) and as such can be considered as the ultimate core capability (Sanders and Premus 2005). Soohong et al. (2005) argue that the fundamental idea behind collaboration is that a single company cannot compete by itself. Customers becoming all the time more demanding, and competition is getting tougher (Kotler 1997).

Collaboration helps companies to share risks and rewards between each other and the main objective is to achieve higher performance that the company would achieve by itself (Lambert et al 1999). Collaborative relationships are also a way to companies to get access for complementary resources (Park et al. 2004), reduce transaction costs and increase productivity (Kalwani and Narayandas 1995), and improve profit performance and competitive advantage over time (Mentzer et al. 2000). Examples how companies have benefited for collaboration done well are for example Hewlett-Packard, IBM, Dell, Procter & Gamble which

have achieve long-term collaborative relationships with their customers and this way have reduced transaction costs and achieved stronger position within the competition (Handfield and Bechtel 2002). Transaction costs are costs that come from transactional process, from searching partners, negotiation and enforcing of contracts, monitoring performance, and adjusting to situational conditions (Williamson 2008). Supply chain collaboration also bring out other benefits like higher visibility, flexibility, and reduced lead times (Scholten and Schilder 2015).

Collaboration between supply chain partners enables synergy development between the parties, allows joint planning and encourages to real-time information sharing (Whipple and Russel 2007). These aspects are needed for preparation for example for supply chain disruptions and helps with responding and recovering from said disruptions and at the same time reduces their impact (Scholten and Schilder 2015).

Firm have relied on supply chain collaboration with their partners now for over last two decades in order to seize internal and external opportunities (Cao and Zhang 2011). Liao et al. (2017) argue that collaboration is more than just two parties' working with together with the goal of completing tasks and achieving mutual goals. Companies have recognized the need for and importance of supply chain collaboration (SCC) (Abdi and Aulakh 2017) in order to uncover higher performance in sourcing, planning, producing and distribution (Soosay and Hyland 2015). Supply chain collaboration allows the companies to share gains and losses, increase their resources and capabilities beyond their limits and exchange key information, which eventually leads to higher performance and overall reduced costs (Cao and Zhang 2011). Some big companies have relied strongly on their close collaboration with their partners for sustainable competitive advantage, companies such as Samsung, Sony, Apple and IBM (Um and Kim 2019). Due to the supply chains being affected by more dynamic business environments, which are caused by globalization and competition, rapid technological growth and changes in customer demands, companies must focus more on collaboration (Soosay and Hyland 2015).

Supply chain collaboration is seeming to be in key role of achieving competitive advantage, but there is literature that argue against SCC, arguing that the concept is incomplete in the terms of its conceptualization (Flynn et al. 2010). Many definitions of SCC have offered differentiating results, which suggests that components of collaboration can fall under contextual variables such as relationship lengths, supplier involvement and dependency (Cao

and Lumineau 2015). However, the level of understanding about SCC at the moment offers few frameworks for capturing the extent of SCC and its benefits (Cao and Zheng 2011). There are existing theories that bring support for SCC development.

First, resource-based view (RBV) theory explains that companies can gain sustainable advantages by combining resource (for example core competences, dynamic capabilities, and absorptive capacity) in a unique way (Barney 1991). According to this theory, buying company can increase the strength of its core values by investing into relation-specific asset and using the resources, knowledge, and know-how of its most important suppliers, which all are making it challenging for the competitors to copy or imitate (Cao and Zhang 2011). In this theory, it is explained that the company gains advantage through its incoherence (Cao and Zhang 2011).

Second framework is relational view (RV), and this theory suggests that better performance will be achieved within networks (Dyer and Singh 1998). This view considers firms' networks as the unit of analyze (Dyer and Singh 1998). This view explains that firms can gain superior profit only by exchange relationship and not by the firm alone (Dyer and Singh 1998). The value gained can be detailed when companies in collaboration share and combine unique resources and knowledge through investing into relation-specific assets, knowledge-sharing routines, and creation of efficient governance modes (Fawcett et al. 2015).

Social exchange (SE) theory illustrates that formation of a relationship should be based on trust in the relationship stability (Cao and Lumineau 2015). In this theory, voluntary actions between exchange parties which are motivated by the returns defined by the subject matter cost-benefit analysis and the comparison of alternatives is emphasized (Cao and Lumineau 2015). The key concepts in this theory are non-contractual obligations and mutual benefit. In the context of supply chains, buyers and suppliers are expected to constantly fulfill their duties and invest in the relational-specific assets as an indication of real commitment to a relationship.

These theories provide theoretical background for SCC, but many definitions and components have failed to provide consistent results. Number of factors that have appeared for example collaborative planning (Ramanathan and Gunasekaran 2014), collaborative execution (Ramanathan and Gunasekaran 2014), information sharing (Cao and Zhang 2011), joint activities (Jap 2001), dedicated investment (Jap and Ganesan 2000), goal congruence (Cao and Zhang 2011), communication (Cao and Zhang 2011), incentive alignment (Cao and Zhang 2011), risk sharing, knowledge creation (Hult et al. 2006), decision synchronization

(Simatupang and Sridharan 2002) and resource sharing (Cao and Zhang 2011). These many variables are dependent on the focus of SCC (process focus and relational focus). Process focus emphasizes more business process where two different sides work together towards mutual goal and relational focus is all about forming close partnerships. (Um and Kim 2019). When these two focuses are combined, together they define SCC as shared processes where both parties work closely from the planning level to execution in order to achieve a joint goal (Um and Kim 2019). Um and Kim (2019) have uncovered six sub factors on top of the various dimension uncovered by previous literature. These sub-factors are **information sharing, goal congruence, decision synchronization, incentive alignment, resource sharing** and **collaborative communication** (Um and Kim 2019). Next, the six sub charters will be defined.

Information sharing is the level of information about transactions that is shared between supply chain members in collaboration. Quality of this information is defined by the extent to which appropriate, accurate, complete, confidential, and timely information is exchanged between members (Cao and Zhang 2011). Information sharing about for example sales, inventory, forecasts, and promotion allows members of SCC to jointly plan goals and precisely forecast events in the future.

Goal congruence is the extent of which SCC members have agreed about shared goal (Angeles and Nath 2001). If the members realize how importance supply chain relationship is, they are ready to genuinely commit to the relationship out of which they can achieve desired results.

Decision synchronization is letting both parties' interests in supply chain operations match (Simatupang and Sridharan 2002). It underlines the importance of utilization of relevant information in each process and optimizing benefits of the supply chain (Um and Kim 2019). Supply chain decisions with key importance, which lead to operational performance, may vary from planning to execution such as strategy planning, scheduling, order shipment, production, inventory management and distribution (Um and Kim 2019).

Incentive alignment is referring to "the process of sharing costs, risks and benefits of the relationship" (Um and Kim 2019). This alignment allows supply chain members to distribute gains and benefits equally and fairly as well as share risks and costs corresponding to these gains and benefits (Um and Kim 2019).

Resource sharing means the extent to which resources can be accessed within the supply chain by each party and how they will be utilized between supply chain members (Cao and Zhang 2011). Resource sharing can be either physical resources (equipment, technology, raw material) or intangible resource (knowledge, know-how) beyond the boundary of each company. Parties involved can get advantage from utilizing other parties' resources, which otherwise would have been needed to purchase, which result higher costs. (Um and Kim 2019).

Collaborative communication is the openness and frequency of communication within the collaborative relationship (Cao and Zhang 2011). The effectiveness of communication within collaborations differ from the amount of openness, frequency, and interaction (Goffin et al. 2006).

Process performance has two critical components: effectiveness and efficiency within the process (Neely 1999). Effectiveness in this context means the extent to which expected outcomes are achieved and efficiency means the extent how company's resources are used without loss. In order to generate high performance, companies must create an environment in which (1) resources are available and accessed from "shared resource" pool, (2) losses and risks are shared between parties and (3) joint decision making is available and utilized (Um and Kim 2019). Collaboration where business process between parties is unified as a whole is the primary driver for companies' performance (Chen et al. 2013). It is also said that the ability of the firm in collaboration with its upstream and downstream partners define how successful the company is in achieving better performance (Ramesh, Banwet and Shankar 2009).

In supply chain management and collaboration, the extent to which supply chain members are engaged with the process is measurable with the outcomes (Um and Kim 2019). The performance of buying company can vary depending on the governance mode, level of collaboration and cooperation (Um and Kim 2019). Collaboration in supply chain is aimed to fulfill demand of the future, fulfilling customers' expectations and to reduce costs (Chopra and Meindl 2015). Previous studies provide evidence and support for the relationship between level of collaboration and performance in the supply chain management (Cao and Zhang 2011).

Information- and resource sharing allows members of supply chain to improve their abilities to satisfy their customer' needs, reduce operation costs and delivery time, increase agility and

responsiveness to the markets changing demands and uncertainty (Simatupang and Sridharan 2005). Decision synchronization enables individual resources and important information outside of the company's' boundaries to be utilized efficiently and goal congruence allows the suppliers to make every effort to meet supply chain objectives rather than just trying to fulfill their own needs and interests (Simatupang and Sridharan 2005).

Supply chain collaboration is key important source of a strategy that would enable company and its supply chain partners to ceaselessly coordinate in the complex chain beyond and across organizational boundaries. When collaboration within the supply chain is interactive and effective, collaboration can increase agility of the supply chain as well as responsiveness, which results in better order fulfillment process in the terms of costs, quality, speed, and flexibility (Um and Kim 2019).

Starting and maintaining a collaborative relationship requires both companies to constantly invest into the relation-specific assets and the development of joint practices (Um and Kim 2019). Collaborative efforts allows the members to share key information and resources in a way that create synergic effects and enables seizing of opportunities (Um and Kim 2019). Relation-specific resources are resources that either party or both parties can offer for the usage of the relationship (like specific knowledge, rare resources, or machinery) (Um and Kim 2019). Both collaborative efforts and relation-specific assets can be seen as supporting factors for the relationship and also in order to reduce opportunistic behaviors in the way that the investments made for the relationships and joint goals would be for nothing if the relationship does not continue. The more activities the collaborating parties share and the amount of transactions there is between them, allows both parties to learn from each other's behavior and responsibilities for the relationship and gained knowledge can help companies to evaluate and predict the other party's current and future actions (Jap and Ganesan 2000). Through this knowledge both parties can be convinced that the other party invests real effort into the ongoing relationship, which reduced the need for control and supervising (Um and Kim 2019). The real and genuine collaboration is made of mutual understanding of maintaining current relationship. Both companies understand that working alone and going after own goals will have more to lose (Um and Kim 2019).

Transaction cost theory (TCE) is used to support explaining of supply chain collaboration in theory (Soosay and Hyland 2015). In the theory, transaction costs are costs that arise from selection process of partners, negotiating, crafting contracts, resolving conflicts, and revising old agreements (Um and Kim 2019). Transaction costs can be split in to two categories; ex

ante and ex post which are defined by the beginning of a relationship. Transaction costs resulting from searching partners and writing up a contract are ex ante costs. Ex post transactions occur from for example monitoring and enforcement (Um and Kim 2019).

Governance mechanism in supply chain collaboration means the official and the unofficial principles of ruling an exchange between parties of supply chain (Um and Kim 2019). This governance specifies the manners of in which buying company and its supplier are expected to perform specific tasks in order to fulfill shared goals (Um and Kim 2019). Parties in supply chain collaboration often feel doubt and uncertainty about the possibility of their expectations being unmet or if the other party does not act as promised, and this situation gets increasingly worse when faced with unfavorable circumstances in which bargaining power lowers, uncertainty in the markets increase and/or conflicts rise (Jap and Ganesan 2000). These situations will often lead to the collaboration parties to establish a stable governance to support their relationship and the achievement of joint goals (Um and Kim 2019).

Next there will be a figure (8) that shows connection between SCC, TCA, firms' performance, and governance mechanism.

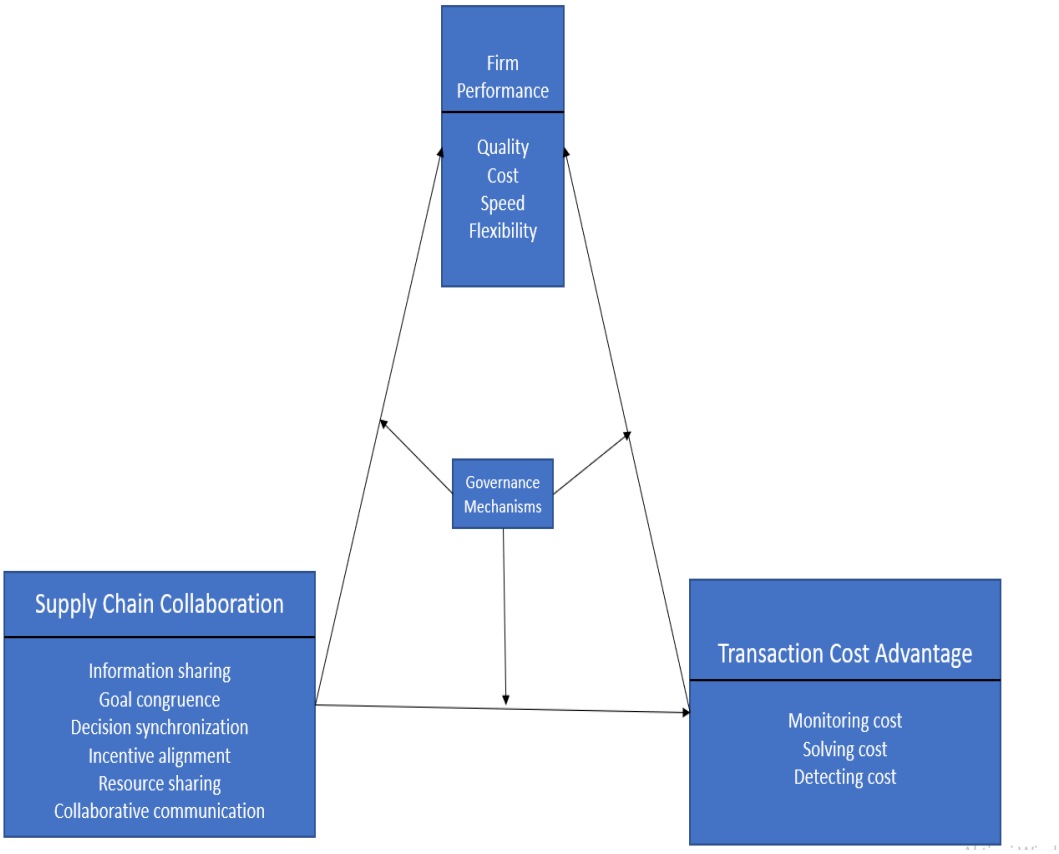

Figure 8 Supply chain collaboration framework (Um and Kim 2019)

From the figure it can be concluded that supply chain collaboration works when information sharing, goal congruence, decision synchronization, incentive alignment, resource sharing and collaborative communication are handled well by all of the sides of the collaboration and that all parties are also committed. If collaboration is done correctly, it can increase firm's performance for example with increased quality, reduced costs, increased speed, and increased flexibility. Transaction costs occur from the beginning of the collaboration until the end of the collaboration. These costs can be for example monitoring costs, solving costs, and detecting costs. Governance mechanisms affect everything that is concerned with supply chain collaboration. Parties choose how tasks should be fulfilled and what is expected from each party. It is important to choose governance mechanism that both parties are happy with because it can help reduce doubt and uncertainty in the relationship. (Um and Kim 2019).

Simatupang and Sridharan (2005) have concluded in their study that supply chain collaboration plays a crucial role in improving overall performance that benefits all processes and members of the supply chain. Next there will be reasons why companies sometimes fail to collaborate.

2.2.3 Barriers to collaboration

Many companies would like to achieve working partnership with their key supply chain partners. Reason for this are the benefits listed in the last chapter. Sometimes supply chain partnerships are not possible due to the barriers for it. Some may even be able to start supply chain partnerships but fail to maintain it for long time. There are 9 possible barriers for successful supply chain collaboration, which are lack of trust among the supply chain partners, lack of training for new mindset and skills, lack of collaborative and strategic planning, lack of top management commitment, lack of supply chain vision, disparity in technological capabilities, insufficient information sharing, unwillingness to share risk and rewards and inconsistent and insufficient performance metrics (Ramesh, Banwet & Shankar 2009).

First barrier is the **lack of trust among supply chain partners**. Trust has been defined as the force that binds buyers and suppliers together in a transaction (Ramesh et al. 2009). Trust between parties exist when a party believes that the partner is reliable (Heikkilä 2002). Many researchers argue that trust is essential for understanding interpersonal behavior and economic exchange. But lack of trust seems to be the most important reason behind difficulties in establishing collaboration. (Centidamar et al. 2005). Thus, trust can be seen as essential factor in establishing relations with supply chain partners. In management literature, trust in different forms for organizational relationships has been underlined as very important and the need for trust between collaborative parties has been identified as an essential element for collaboration. (Sahay 2003).

Next barrier has been identified as **lack of training for new mindset and skills**. Education and training have been identified as prime requirements for successful collaboration and successful company. It has also been identified that lack of education and training about awareness of SCC is main barrier to be deploying SCC. (Ramesh et al. 2009).

Third barrier is the **lack of collaborative and strategic planning**. Strategic planning is used for a company to establish their visions for the future and develop plans and strategies how to achieve those visions. The steps for strategic planning are understanding current environment, establishing the vision for the future, and identifying strategies how to get there. In reality, there can be lack of collaborative and strategic planning between parties of the supply chain collaboration. (Ramesh et al. 2009).

Next is the **top management commitment**. Moorman et al. (1992) define commitment as never-ending desire to maintain important relationship. Top management commitment has been identified as one of the key components for a successful relationship. Through study, it has been recognized that companies have realized the importance of top management commitment in order to achieve desired outcomes of SCC. (Ramesh et al. 2009).

Lack of supply chain vision/understanding means inability to see the bigger picture. Managers can have a limited vision of supply chain because they focus too much on their own functional areas and thus fail to see how collaboration with other both inside and outside of the company will improve the overall performance (Mentzer et al. 2000). This can lead them not to be comfortable when dealing with external organizations in their supply chains. (Ramesh et al. 2009).

Disparity in technological capability among partners. The level of SCC depends on the partners' technological capability. For example, if some supply chain partners were incapable of exchanging information electrically with the partners because of the low IT capability (Kwan 1999). This would require huge investments to fix but would be worth it due to collaboration not being possible without a fix. (Ramesh et al. 2000).

Insufficient information sharing means that partners within the collaboration are not sharing all of the key important information with each other. As information sharing has been recognized as a key requirement for collaborative relationships, its importance cannot be highlighted enough. Successful relationships are associated with high levels of information sharing. And importance of communication in interorganizational relationships and increased levels of communication are associated with commitment. Inadequate information sharing can lead to behaviors that break collaboration down. (Mentzer et al. 2000).

Unwillingness to share risk and reward is bad for collaborative relationships because risk and reward sharing is really important factor for long-term focused supply chain relationships (Ramesh et al. 2009). Key component of SCM is risk sharing and reward sharing between members of supply chain. Many studies have emphasized the importance of risk sharing for collaborative relationships. In SCC it is essential that parties share risks and rewards (Sahay & Maini 2002).

Performance metrics for a basis for integrated work management systems. One of the barriers for supply chain collaboration is **inconsistent and insufficient measurement systems** that can lead to conflicts among collaborative partners, because the partners are focusing on improving their performance metrics instead of the performance metrics of the whole supply chain. (Fawcett & Magnan 2001).

Supply chain visibility means the ability of a company how well they can collect and analyze distributed data and make specific recommendations and match perceptions to strategy. This gets increasingly important as supply chains evolve into linked networks. (Ramesh et al. 2009). Lack of SCC causes **non-aligned operational goals**. They are tried to be aligned in order to get greater value. (Centidamar et al. 2005). Decision making in supply chain is really important and **inflexible supply chain** will lead to higher costs and lower customer service. (Ramesh et al. 2009). Reason why many companies look for collaboration is to gain competitive advantage on supply chain level. In order to remain competitive, companies must work together and collaborate with other companies. This is increasingly common approach for companies to discover and sustain shared competitive advantage. (Ramesh et al. 2009). **Lack of competitive advantage** is not a barrier for collaboration, but more like missing motive for it. Because competitive advantage is the primary driver for supply chain collaboration, if it is missing, there is no willingness to dedicate for collaborative relationship (Xu 2007).

The barriers for SCC hinder the collaboration and poses challenges for managers and policymakers alike. Figure 10 will show how the barriers are linked to each other through ISM-based model for barriers of SCC. ISM helps to identify inter-relationships among variables. (Ramesh et al. 2009).

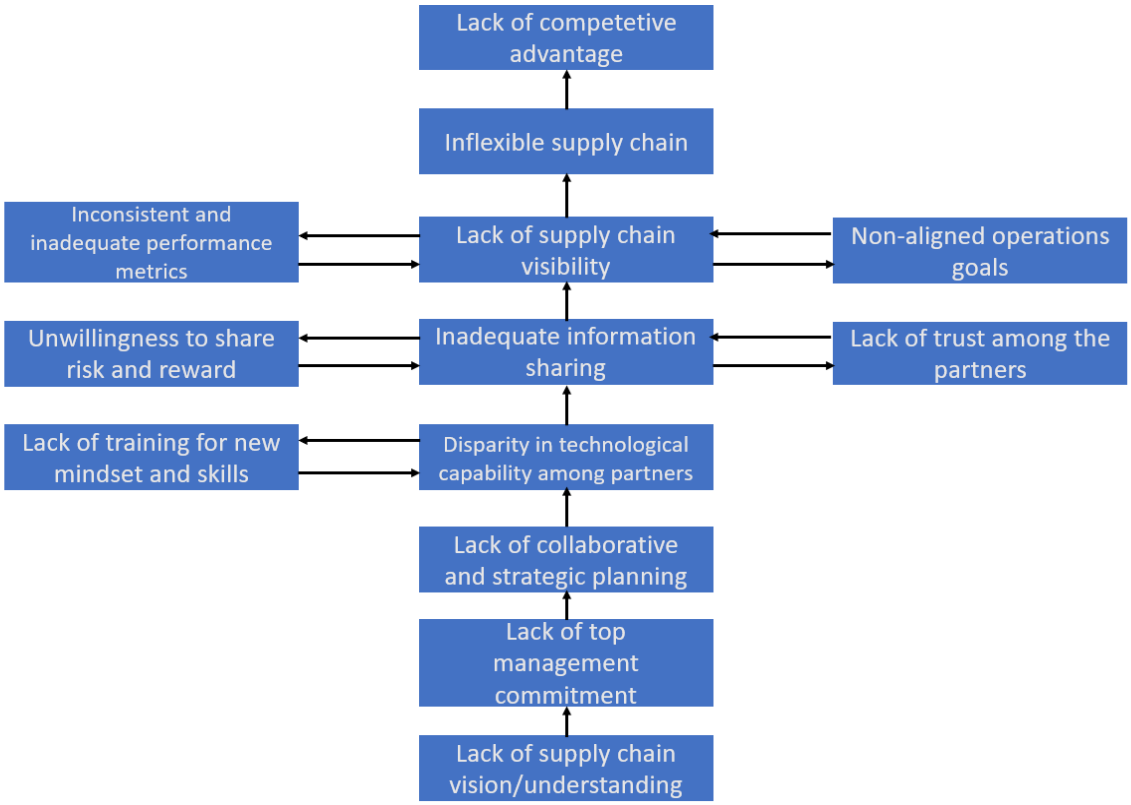

Figure 9 ISM based model for relationships between barriers of SCC (Ramesh et al. 2009)

As can be seen from the figure, lack of supply chain visibility, lack of competitive advantage, inflexible supply chain and non-aligned operations goals are the results of the barriers that exists in SCC. Companies should mitigate these barriers to achieve competitive advantage through supply chain collaboration. (Ramesh et al. 2009).

2.2.4 Where can companies collaborate in the supply chain

There are different ways of conducting potential supply chain collaboration and they can be divided into two main categories (figure 4): first, there is vertical collaboration, in which collaboration could include for example customers, internal collaboration (across functions) and supplier collaboration. Second is horizontal collaboration, which can include for example collaboration with competitors, internal collaboration, and collaboration with other non-competitor companies (like sharing manufacturing capacity). (Barratt 2004).

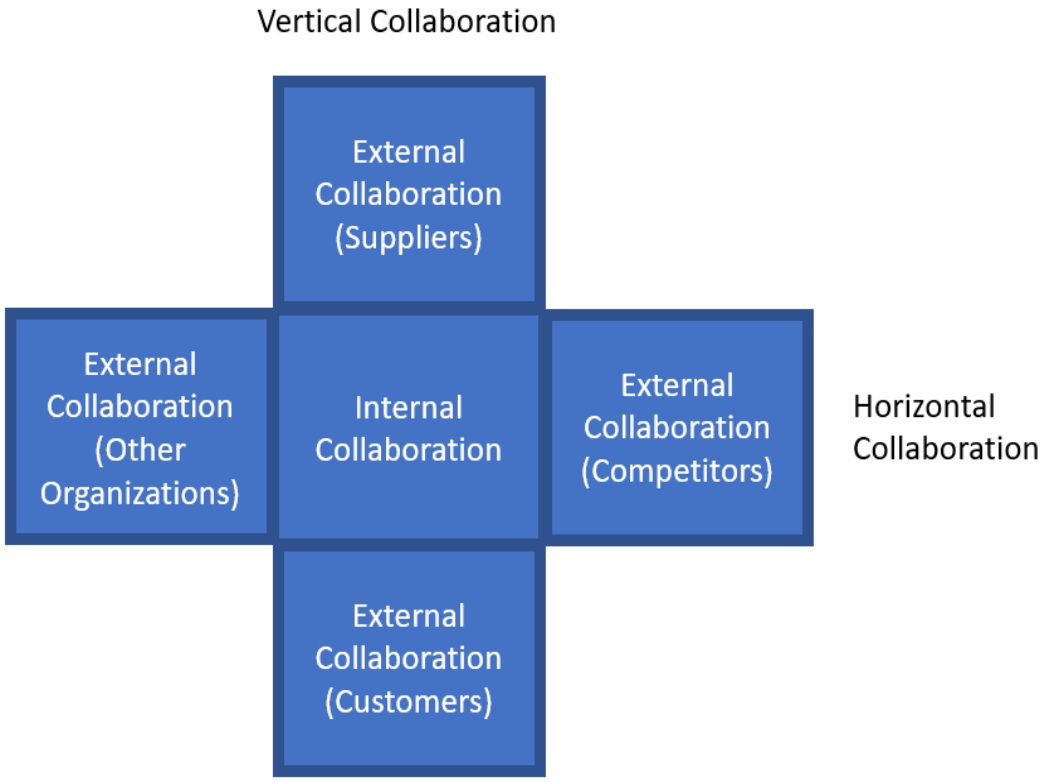

Figure 10 General scope of collaboration (Barratt 2004)

First, and perhaps most important issue is the issue of internal collaboration. Many companies only think and pursue external collaboration, but usually they neglect internal collaboration totally (Barratt and Green 2001). Barratt (2004) argues that external collaboration has been seen as a tempting opportunity and a “fresh battlefield” in which to participate, one that has no longstanding internal disputes, by companies. But companies fail to see that internal collaboration can overcome functional nearsightedness and has the potential to enable internal integration (Stevens 1990).

Many companies have thus far integrated many different internal interfaces like for example marketing, logistics, purchasing and manufacturing, there still are only few companies, if any, that have successfully completed internal integration such as purchasing-manufacturing-logistics-marketing (Barrett 2004). Khan and Mentzer (1996) classify early form of supply chain collaboration integration as predominantly based on interaction in the sense of that functional based areas hold meetings and share information. From these kinds of initiatives, there are missing joint-goals, shared resources and common vision that is supported by the "collaborative" approach, which is suggested by Khan and Mentzer (1996) to be more "attitudinal" in its nature.

There is potential danger associated with internal collaboration, which is that the companies could achieve internal integration and have simply created a larger although organizational silo (Barratt and Green 2001). Internal and external collaboration walk hand in hand, and they must be "married" together in terms of developing closer relationships, integrating processes and information sharing with customers and partners. To put in other words, internal collaboration must be in align with drivers and limitations of rest of the supply chain (Barratt 2004).

In the terms of external collaboration (figure 5), there are many potential opportunities for vertical supply chain collaboration, which includes downstream side of supply chain and processes such as customer relationship management (CRM), collaborative demand planning (including collaborative forecasting CPFR, etc.), demand replenishment and shared distribution. (Barratt 2004).

And for the upstream side of the supply chain, there are operations such as supplier relationship management (also called as supplier development VMI, CRP), supplier planning and production scheduling, collaborative design (this can include also collaborative product introduction) and collaborative transportation. (Barratt 2004).

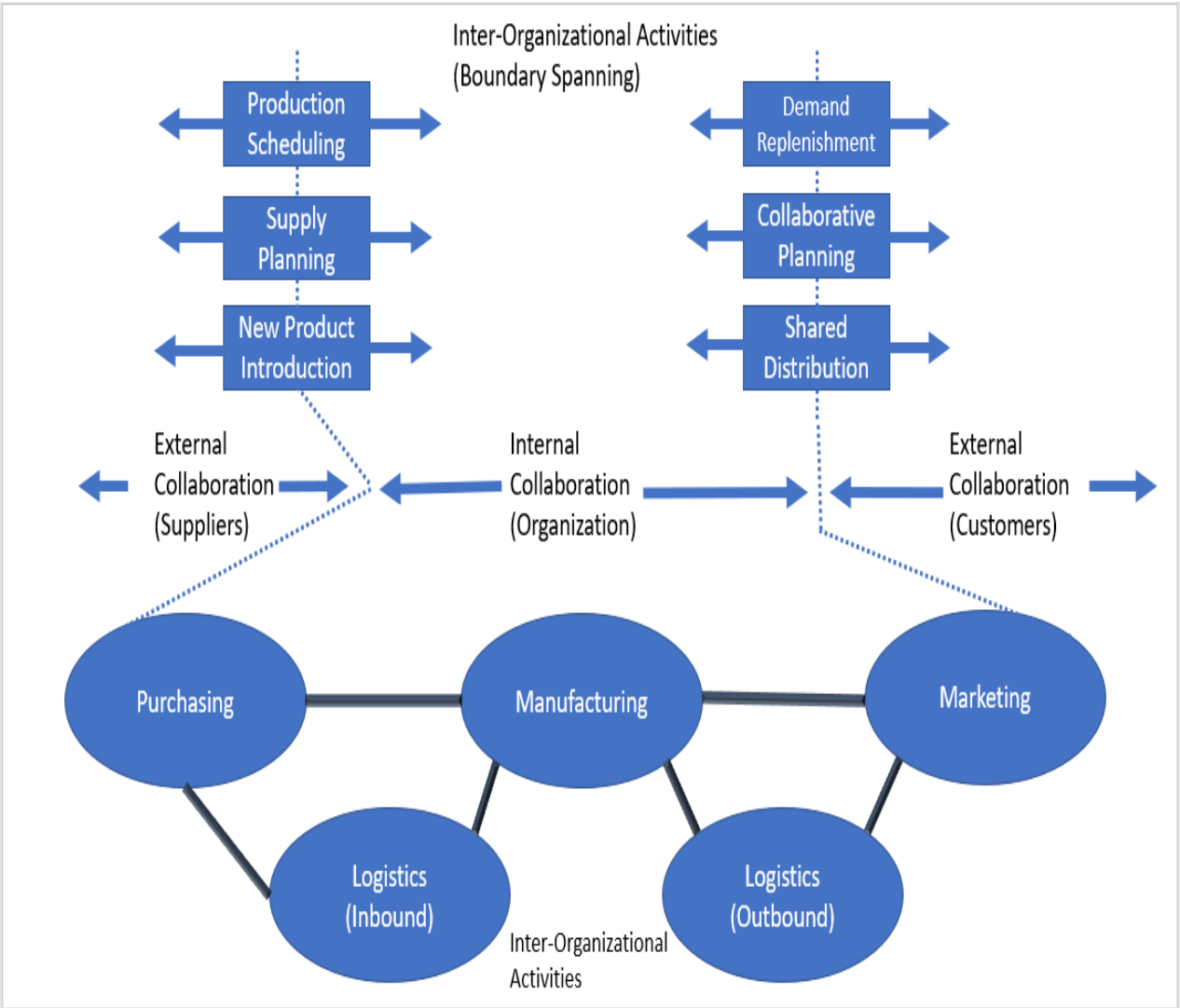

Figure 11 The scope of vertical collaboration (Barratt 2004)

From the figure it can be seen how the scope of vertical collaboration expands and what kind of operations there can be. From the figure it can also be seen which processes are considered as inter-organizational and which are boundary spanning operations that are usually done together with other parties in supply chain collaboration. Next chapter is about how companies can choose when and with who to collaborate with.

2.2.5 Partnerships

Following up from the previous chapter, it is really important to understand that internally collaboration is not only about developing closer relationships, or integration of processes between supply chain-related functions (such as purchasing, manufacturing and logistics) but must also to include marketing-commercial (promotions/new product introductions) and research and development (R&D) processes. (Barratt 2004).

Still, collaboration is not only about developing information sharing relationship with operational level of activity, but there must also be collaboration implemented at tactical and strategic levels in the organizations across the supply chain (Figure 6) (Barratt 2004). Companies can integrate their processes at an operational level, but if processes that are on strategic or tactical level are not also integrated, benefits on performance will be limited (Barratt 2004). Integration done on operational and tactical level simultaneously, can give substantial benefits, but it is not evident as to the impact of disparities in the strategic level of collaboration (Barratt 2004).

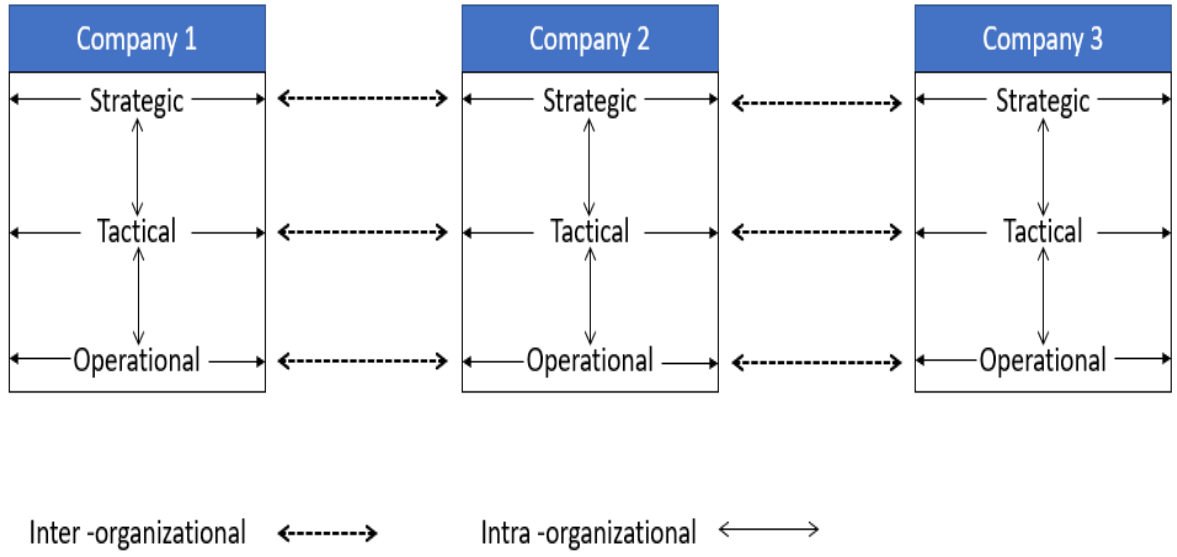

Figure 12 Levels of inter-intra-organizational integration (Barratt 2004)

When thinking about collaboration, there has been many suggestions from authors that there is a need for “scalability” (Sherman 1998). But it is not clear in the literature is whether companies can collaborate with everybody. The answer might be “no”, but it not as bad thing as it sounds (Barratt 2004). It is important for companies to understand that the resource intensive nature of collaboration means that companies should only focus their resources and attention on small number of close relationships with partners rather than trying to collaborate with as many companies as possible (Barratt 2004). Companies should not try to collaborate with everyone, because some business relationships work better without collaboration (Barratt 2004). On this matter Barratt (2004) suggests that companies externally should collaborate with smaller number of strategically important partners. This kind of approach is gaining a lot of support and is likely to be in context for successful collaboration (Barratt 2004). Supply chain segmentation is based on the assumption that customers buy products differently, have expectations of quality of service and are prepared to pay differently based on the requirements of the service they need (Barratt 2004). It is argued that a single supply chain cannot meet all the needs and requirements of the customer in an effective and efficient manner (Barratt 2004). It can be possible that supply chain undercharges customers that have more specialized needs for service and overcharging customers with simpler needs for services (Fuller et al. 1993).

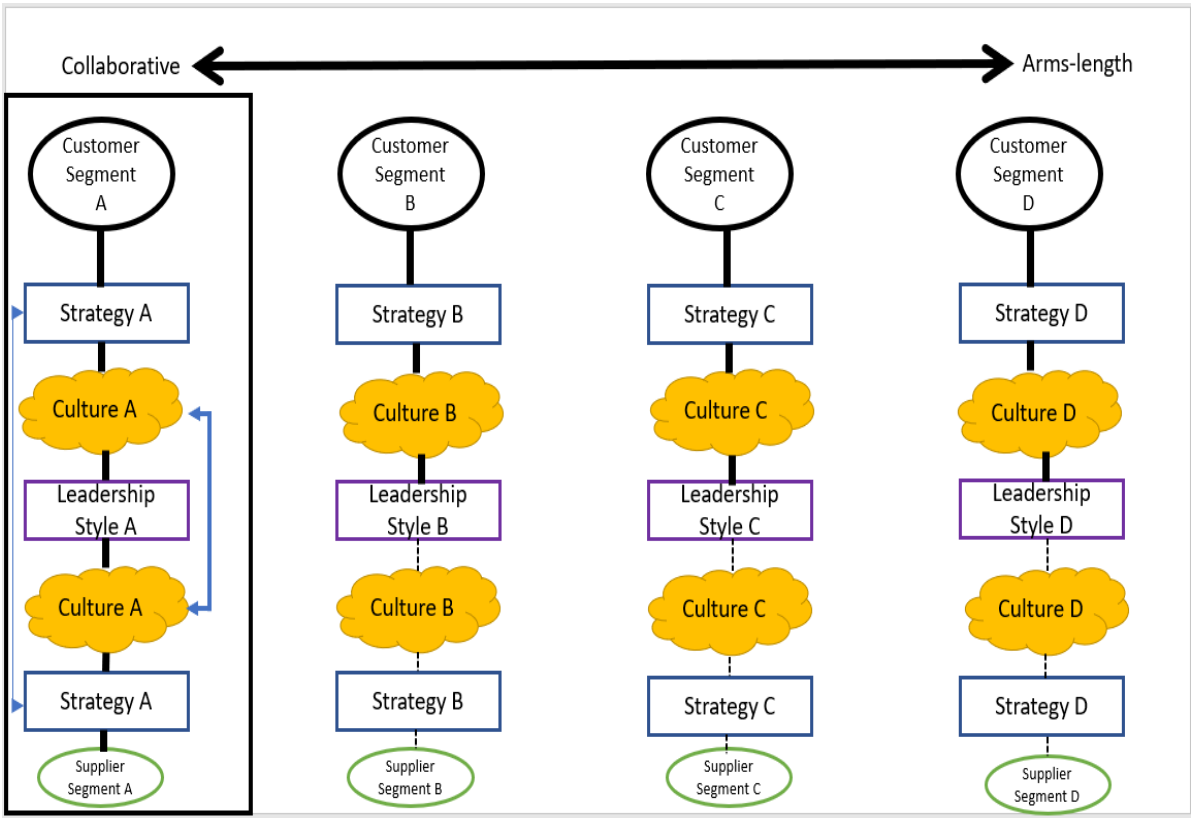

Figure 13 Collaborative relationships based on customer-led supply chain segmentation (Barratt 2004)

Customers can be segmented according to their buying behavior and needs for service, then there should be separate supply chain that are designed to meet the specific needs of each customer segment (figure 7). The principal behind this is to find out which approach is suitable for each customer, for example one of the segments may be appropriate for a more arm's-length approach and for one segment collaborative approach (Barratt 2004). Each different supply chain will require different strategy and culture to support its actions. To drive this, it is necessary to have definite leadership style (Barratt 2004).

It is in theory and logically possible to take this selection process one step further and segment the suppliers according to their abilities and requirements. It should be realized by the companies that not all suppliers and customers are in one segment but appear in many. This means that customer does not buy only in one way and with same expectations. In the same way, suppliers can and will supply products and materials in many different ways and costs (Barratt 2004).

3 RESEARCH DESIGN

In order to find out more about process improvement possibilities of AEO authorization and to gain deeper knowledge on the subject, to respond the research question, empirical research was conducted. This chapter will illustrate the research methodology used and both data and data collection process are described. Finally, reliability and validity of the study will be reviewed.

3.1 Methodology

Qualitative research is usually used for studying complex phenomenon in context of the real world to gain new knowledge about the objective of the study and to understand how the phenomenon works in the real life better (Eriksson & Kovalainen 2008). As mentioned earlier, supply chains are in a key role in order to gain competitive advantage and this can be achieved through collaboration or partnerships. One method of doing this is to collaborate with the Customs. One of the ways to collaborate with Customs is to get AEOC authorization, which gives many benefits for a company that does import or export. In order to get to know what kind of benefits AEOC authorization has for the case company with its processes and how collaboration with the Customs has helped with the application process. Structured interviews are way to gain data to similar kind of problems, due to them driving conversation towards certain subject. The questions are made in such a way that they drive conversation towards the wanted theme, but the questions still can be different depending on the interviewee, if there are multiple interviewees. The purpose of this study was to find out what kind of benefits can collaboration with the Customs yield through programs such as AEO authorization and what kind of problems and benefits it has given/can give to the case company as well as how it has affected their processes and if company has learned something new about their own processes and for this end, structured interviews were the suitable choice. With structured interviews the interview can be conducted in certain way and focused on the wanted topics in order to get relevant answers from the company, which in this way are easier to analyze and compare to relevant data from previous studies.

3.2 Data collection method

As mentioned, primary data was collected through interviewing the case company. The person who was interviewed at the case company was the forwarding manager, who is the one with most knowledge about collaboration with the Customs as well as the AEO authorization. The interview took place on May 2021 and was held on teams. The interview was structured interview, but the questions for the interview were told to the interviewee beforehand so that he would have time for prepared answers for the interview with facts. The line of questions were such that would answer the main questions of the research. Interview was held in Finnish in order to prevent misunderstandings and to allow the interviewee fully to express themselves using their mothers tongue and speak without language barrier. From the interview, author made notes and transcription for the answers to the questions.

The case company was familiar with the key concepts of the study, AEO/AEOC and collaboration/partnership with the Customs, due to them having some form of collaboration with the Customs beforehand and they had started the AEO application process already.

In the interview, there was three main topics for the questions, which were how the company is and have been collaborating with the Customs before the AEO authorization, what benefits can AEOC authorization have on the case company's processes and the last one was how collaboration with the Customs has helped the company in order to achieve the AEOC authorization.

3.3 Data analysis process

Data analysis process for this research was quite simple. First all of the answers got from the interview of the case company were read and the main points for the research were highlighted. After this, the answers were compared to data found on the official Finnish Customs web page in order to find similarities what kind of benefits they might get from the authorization and what Customs argue that companies can gain. From this point on, the answers could be written down in a way that they answer for the research question and elaborate as much of this research problem as possible. The data was analyzed in the way that first there was example answer from the interview presented, after which the reasons why the answer is such were explained.

3.4 Reliability and validity

Reliability and validity are commonly used when evaluating quality of a research. Reliability in this context means to the consistency and replicability of the study, which means that if someone replicates the study, they will get similar results and findings. Validity means the level of success meaning the how well the research met its objectives (Saunders et al. 2016). There are three types of validity: internal, external and construct. Internal validity is about the accuracy of the causal relationships found it the study, whereas external validity is about generalizability of the results to other groups or settings (Farquhar 2012). Construct validity is evaluating of the extent to which the research is investigating the phenomenon. Reliability and validity are usually used in quantitative research and applying them into qualitative research is not that simple. Especially when reliability is often not applicable to qualitative research as it is usually hard or not meant to replicate qualitative research (Saunders et al. 2016).

This research was qualitative in nature and data is collected through structured interview and data from authors previous research, so it is pretty likely that this study is not possible to be repeated. However, in order to give the reader chance to evaluate reliability and validity of this study, detailed descriptions about the results and methods are given. External validity of this study is affected by the number of companies interviewed for the study, which is limited (1). Additionally, the size and main operation model of the company will affect some parts of the results, due to different sized companies getting different kinds of benefits, so repeating the study on same sized companies working in same industry could change the results.

One important aspect on the reliability of this research is the source triangulation. For the research made, there has been data used from many different sources, such as interviewing the case company, interviewing other companies, data from official Finnish Customs web page and research journals. This means that as data has been gathered from multiple different sources, it makes the research and the results there more reliable and trustworthy.

4 EMPIRICAL RESEARCH

This part of the study introduces the case company and the case itself, explains how import and export processes are done in the case company at the moment and what kind of relationship the case company has with the Customs before the research. The information about the case company was gained through interviewing forwarding manager of the company, who is the person who is in contact with the Customs the most.

4.1 Introduction of the case company and background of the case

Inex Partners Oy was founded by the S-group and Tradeka in order to create a company to take care of the logistic operations of these two groups in the years 1996 – 2003. Both groups owned half of the company. Tradeka sold their share of ownership of Inex Partners Oy to S-group in the year 2005 and from that moment till the present times, Inex Partners has been part of the S-group. Inex is providing S-group with multiple different logistical tasks including warehousing, transportation, forwarding and other logistic services. The services are for S-groups daily consumer goods and other goods. Inex has priorities on automation, ergonomics, and work safety. The values of the company are as follows: we are for the customer, we take responsibility for people and the environment, we constantly renewing our operations, and we work effectively. (Inex Partners 2021).

Inex operates in Estonia and Russia in addition to Finland. The main logistic center of Inex Partners is located in Bastukärr, Sipoo. The center is one of the largest building in Finland, if not the largest. The size of the center is 270,000 m2 and 3,500,000 m3 (Inex Partners 2021.) The logistics center is also the newest and most modern logistics center in Finland. Inex has also four regional terminals around Finland. They are located in the south, west, north, and east parts of the Finland in order to cover as much area of Finland as possible. The company has around 1200 employees in total. There is on average 1000 truck deliveries arriving and leaving from Inex on daily basis. Inex Partners have almost all their basic warehousing operations fully automated, and the automation is handled by German company called Witron. Due to this automation, many of the operations have also been updated to fit the new standards that the automation requires. The warehouse is operational every day of the week and all around the clock. (Inex Partners 2021.)

4.1.1 Import/export process

The case company imports goods from all over the world, but the export process is not as major as the import process. Export happens only to Russia and Estonia, so the amount of goods going out of the country is much less than the amount of goods that are coming in. The case company already has some improvements made to these processes via different kinds of authorizations they have received from the Finnish Customs. These authorizations for customs processes include for example two-part customs clearance (the clearance can be done partially beforehand and ten days after the initial customs clearance, the declaration will be filled to be complete). Inex has also been part of customs+ program in the past, but they are not part of it anymore. The most notable improvement that Inex has at the moment is that they are marked as trusted Customs operator in the eyes of Finnish Customs, which makes their customs operations little bit faster and simpler.

Importing is process where products are brought into European Union from outside EU and then they must be declared. When Inex imports goods, some of the forwarder within the company has to declare goods for Customs clearance. Declaring and clearing process can be tricky and needs the forwarder to be careful not to inform wrong information (Närhi 2019). Process starts by informing the customs that there is shipment on its way to Finland and what products are coming, how much (kg), where is it coming, when is it coming, and any necessary document numbers and information is given to the Customs (Närhi 2019). Most important documents that are needed for Customs clearance are commercial invoice, commodity code, specific codes that some commodities need, possible documents related to restrictions, certificate of origin and previous document numbers (Närhi 2019). Customs clearance is maybe the most important part of import process and if the forwarder does not do it properly, it can mean that the products will be delayed, or the company may receive fines. This process is such an important and carefully monitored process because it is regulated by the European Union (Närhi 2019).

Exporting is in reverse compared to import; it means taking goods outside of European Union's borders (Närhi 2019). When Inex exports products, they must first clear the products for export through Customs and the products cannot be taken outside EU before this is done (Närhi 2019). Exporting is done via sending export declaration to the Customs and this is done so Customs can see if there are any export restrictions or prohibitions on the target country, collect data on international trade, prevent crime and terrorism and overall supervise

movement of goods within and out from EU (Närhi 2019). Only physical products need export declaration, immaterial goods and services do not (Närhi 2019).

Exporting is simpler than import, it requires less actions from Customs, because the goods are leaving EU and not coming in (Närhi 2019). This less actions from Customs is due one of their main tasks, which is prevention of harmful substances or products entering EU (Närhi 2019). There are many documents related to export process and they are for example, information about the exporting and importing companies, bill of lading, insurance certificate, detailed description of goods and import license (Närhi 2019).

Import process for Inex starts with SOK's procurement plans and replenishment orders. When purchase order is made, Inex also receives a purchase order to their ERP system (Enterprise Resource Planning). If the purchase is made with incoterms starting with E or F rule, then the purchase order will also be sent to transportation planning tool for import operators to see. Inex uses every transportation method possible or combination, depending on the quality of products and how fast the goods have to brought in. The transportation modes are sea, air, rail and truck or any combination of these. For most purchases SOK uses the incoterm FOB (Free on Board), which means in practice that the supplier is responsible for the delivery and costs until the goods have reached the ocean vessel. For these kinds of shipment, Inex utilizes forwarding agents, who are situated in the country of origin, for example when shipping from far east and most commonly used forwarding agents are from company called Kuehne & Nagel. These forwarding agents in tandem with Inex import operators make sure that supplier makes the booking for shipment and ship space on time and that the goods are sent to Finland within the agreed terms. The shipment will be monitored all of the journey and any anomalies will be reported. When the goods have arrived in Finland, the forwarding company will inform Inex that the goods have arrived. From here on starts the real work at the forwarding department of Inex. The Customs clearance for the products will be prepared much prior of the goods arriving to Finland, in order to get them moving as fast as possible. These preparations include for example inspection of requirements, tariffing, document inspection etc... When the product has received Customs clearance, which is in the form of transfer license or full release, it can be transported to the warehouse of Inex. The form of Customs clearance at this stage depends on the product and if there is need for inspection by the Customs before the product receives the full release, which means that the product is free for use. After this full release, the goods can be released into circulation and be sent forward. Before this, the products will not be touched by anyone expect the agents of Customs.

4.1.2 Customs collaboration

Inex Partners and the Customs have had some form of collaborative relationship for decades already. Inex has previously been a customs+ customer as well as a credit customer of customs. These statuses have helped Inex to develop their own operations over the years with Customs for example creation of EDI (Electric Data Interchange) connections for simplified customs clearances as well as for many other areas. Collaboration with customs means that Inex and Customs have mutual trust in imports and that Inex does not take shortcuts in customs clearances but do them within the rules. Over the years, Inex have become familiar with many contacts within the Customs and the Customs are familiar with products and related activities of Inex, making it easier for Inex to deal with customs and it makes the supply chain smoother. Inex has always worked with in collaboration with the Customs and they have reacted to mistakes as soon as they are spotted. Inex has the largest customs clearance import volumes for consumer goods and groceries sector in Finland, so mistakes sometimes occur and that is where good collaboration is very evident. The Customs also know who to contact at Inex if needed and they know that if there is a mistake, Inex will fix it fast.

The collaboration with the Customs is the basis for import/export processes. Because the volumes are so large, there are thousands of imports a year and there are tens of thousands of products that Inex imports from third countries, so the processes must be in order. Mutual knowledge and trust will help in this matter as well as in the development of new operating models. SOK's sourcing department is actively looking for new sources of supply and, according to that, new operating models for imports. Collaboration with the Customs is very important in order to make the new operating models work for Inex correctly and smoothly. A good example about this is import of exotic fruits from Thailand by plane to Finland. The fruit is picked practically on the same day as it is shipped to Finland. Importing fresh fruit has its own requirements and processes that must be followed. The flight delivery model was also new to Customs, but it has been made to work due to collaborative relationship between Inex and the Customs. Now the fruit can be quickly moved from the airport to the warehouse and then to the markets.

Mutual trust also supports import processes, and this is reflected to Inex as less customs inspections and helps to obtain various authorizations. For example, Inex can bring loads of fresh produce into storage for Customs inspection, rather that bringing the produce first to port inspection, which is at the maritime port. In addition, Inex can independently do for example

disposal of fresh products, which would normally be done under customs supervision. These permissions save time on both sides, streamline the operations, and bring cost benefits.

In applying for the status of authorized economic operator (AEO), the benefit comes from the already existing collaboration and knowledge of Inex Partners Oy, both in terms of industry and operations. This will help Inex to inspect and develop processes to a level equivalent to AEO. Employees of Customs are also partially familiar, and it is easy to do business with the and improve processes when there is mutual knowledge of the industry.

4.2 Analysis and results from the empiric data

Inex always tries to improve their import and export processes by themselves, in order to get products moving faster and this way it will be faster in the usage (shorter lead time). When Inex has the AEO authorization, they would get possibility to gain access to many other licenses, which allows Inex to do many of the processes that require intervention and supervision from the Customs, by themselves and this way reduce the workload off the Customs and improve the process as a whole.

AEO authorization gives Inex the reputation of trusted economic operator, which creates trust towards suppliers. With the AEO authorization, the suppliers can be sure that Inex has processes that are at least on the minimum standardized level set by the EU and its regulations. This will also reward Inex with better service from Customs and in the future in the process of applying and receiving licenses for various different purposes. Many of these licenses are already or will be in the future be under the AEO authorization, which means that in order to gain them, the company must have AEO authorization.

On top of these benefits, AEO bring economic trust in the form of reduced level of Customs collateral (which is some money that will be held in a bank account in order to cover Customs costs). At the moment Inex has maximum collateral held in the bank account, but in the future with AEO, this amount will be reduced by 75%, which means that the money is released back to Inex and they can use it however they like, most likely to process improvement.

When Inex is committed to the status of authorized economic operator, it means that Customs have inspected their processes and that they meet the required level. From the point of

Customs, this increases their trust in to Inex and its operations. This will be mutual benefit, because it means less physical and documentation checkups, which means process improvement for both parties. Inex is also committed to encompassing in-house control, in which most of the errors made in Customs clearance procedures should be caught. Because Customs law is equivalent to level of EU law, it is interpretated differently in each member country. Inex has knowledge from this interpretation and how different countries work and do things even better than Finnish Customs, which can help the Customs, in the way that Inex can give them feedback, if something is done differently in some other country. Good current example about this is Brexit, where there have been many different kinds of interpretations and which has caused headache for Finnish Customs. However, Inex with their broad knowledge about import and export processes could help Finnish Customs to solve this issue. This is a great example how third-party collaboration can be really helpful for companies as well as society. If this situation would not be fixed or it would have taken long, stores would not have gotten their products from Britain on time.

Inex Partners also offer help and have worked with the Customs in many of their improvement projects and have served the Customs with testing of new processes and operating models and have given then feedback to the Customs how things have worked and what has not worked. This way Customs can improve their processes in a way that suits as many companies as possible. This has been mutual benefit as well, because Inex has gotten the chance to be part of the process improvement projects and Customs have received the feedback. On top of this Inex benefits from this in other way as well, when the new operating model or process is implemented for every company, Inex has already used it and is familiar with it, so they do not have to waste too much time learning them.

As authorized economic operator, Inex could be involved more with these projects and in this way help Customs and themselves at the same time to improve their shared processes as well as their own.

Inex agree that collaboration with the Customs through AEO authorization as process improvement method is helpful and when successfully implemented can benefit the company in many ways. There are visible benefits such as less physical and documentation checks, joint process improvement, less mistakes, increased security, better process visibility, quality, and more defined processes. There are some indirect benefits such as priority when applying for licenses, better relationship with Customs and other government authorities and internationally recognized mark of valued and trusted operator by the European Union, which

helps companies to conduct business abroad. AEO operator is also recognized by every Customs unit in the EU, which makes it easier to communicate and receive information from other countries Customs.

Strictly for process improvement the AEO authorization will help the company in many aspects. The main benefits are that Inex can do customs Clearance on products that are not situated within Finnish borders, which is not allowed prior to AEO authorization, and this will be extremely useful. When Inex can do Customs clearances to other EU countries, they do not need any help from local forwarding agents, which will save a lot of money and time. This will also increase value in operation of Inex in the eyes of other companies, mainly SOK. On top of this benefit, AEO makes it easier to plan and improve processes, when there is “one less obstacle” in the way. This is due some of the licenses being restricted for AEO operators only, which are unobtainable for those without AEO authorization, and these licenses would be extremely useful for some parts of the import/export supply chain of Inex. Also, both Inex and the Customs have the will to improve processes jointly, but at this moment, there is still clear lack of trust between the parties on this regard. AEO authorization proves for the Customs that Inex is worth the trust, and they can start do more join process improvement projects.

4.2.1 Benefits and impact of AEOC authorization on the process improvement of import/export

The case company can gain many different kinds of benefits through AEOC authorization on their processes, but mostly the effects will be linked to processes that are linked with Customs and documentation. Within the case company these operations include transportation, warehousing, invoicing, and forwarding. For the case company, the most notable benefits will be in the processes of forwarding.

"Mutual trust and knowledge about each other will help with overall import process as well as developing processes and new operating models"

The increased trust between the case company and the Customs through AEOC authorization will be the base for process improvement. When the case company and the Customs know each other's processes and trust each other, they can develop new and improved processes and operating models jointly. For this the case company gave a good example, there was new process of importing fresh fruits from Thailand, which was new for both the case company and the Customs. This requires extra speed, due to the nature of products and they must be in the stores fast. This situation would have been bad, if there would be no trust between the case company and the Customs. However, the case was that the Customs trusted the actions of the case company and the process went smoothly.

"Mutual trust supports the import process"

The trust between the case company and the Customs can also be seen as fewer physical checks on the products and the company can conduct in-house control on the products as well as the chance to apply for new licenses. These facts support the import process and lessens the lead time of the import process. Company can also dispose fresh products if needed, which will save in costs and time for Customs as well as the case company.

"AEOC authorization creates financial trust"

One benefit of AEOC is that the case company receives 75% discount on their Customs guarantee, which in the case company's case is large amount of money. When this money is released back for the company, they can use it for example new development processes that will further help in the process improvement.

“When company receives AEOC authorization, the processes will be at least on the minimum requirement level set by the EU”

During the application process for the AEOC authorization, the Customs will audit every crucial process from the viewpoint of import, export, and overall security. The company will not receive the authorization before the minimum requirements are met, which on general level means that the processes will be on a good level.

“AEO gives the company trusted trader status, which will create trust towards suppliers”

One major benefit of AEO authorization that the case company will receive is that it will be marked as “trusted trader” in EU’s list of companies. This is especially useful, when company is trading with companies outside EU and when foreign companies are choosing who to do business with. The AEO status will make the company marked as trusted and verified by European Union, which will increase company’s trustworthiness and reliability in the eyes of suppliers quite much.

“Higher level of collaboration with the Customs help us to discuss and plan how to develop our processes”

The Customs is familiar with the processes of the case company and when they have better relationships, more trust and higher level of collaboration with the Customs, they can receive helpful information how the processes could be made better. When the collaboration is better, the Customs can also share what kind of new requirements for the processes will be in the future, thus giving the case company more time to prepare for the future with the help from the Customs.

“*It is easier to plan and improve processes when there is one less “obstacle” in the way”*

There are already some other lesser licenses and authorizations that require the applying company to have some form of AEO authorization. These will further help with development and improvement of processes within the case company.

“Both parties have the drive to improve processes further”

Both case company and the Customs already have the willingness to improve case company’s processes, Customs wants this because it will make their processes better as well at the same time. This is not completely possible however and the case company requires the AEO authorization in order to prove the Customs that they are worth the investment.

“We can focus on our core competence and forget everything else”

The AEOC authorization will give Customs exact information about the processes of the case company, and they will be developed to be on certain level. After the company receives the AEOC authorization, they can just focus on their core competence and do not have to explain their actions for the Customs, because Customs are already familiar with the processes and have accepted how they are conducted. This way the company does not have to spend time explaining for the Customs why they do something in certain way, but the rules have been set and agreed by both sides.

4.2.2 Collaboration with customs to achieve the AEOC authorization

In the application phase of AEO authorization, the collaboration between the Customs and Inex partners is really helpful. Customs knows the processes and practices of Inex pretty well, so they do not have to look them so thoroughly through, and they can give improvement ideas much easier. Good collaborative relationship with the Customs also helps Inex to audit and improve their processes so that they meet the minimum required level of AEO, if they are not on that level already. Also, the people at Customs know people from Inex and vice versa, which makes communication and collaboration much smoother.

“Collaboration with the Customs is the foundation of import”

When Inex starts to improve and implement AEO authorization, collaboration with the Customs will help in many ways. These are for example that Inex is already well-known company for import and export processes at Customs and their processes and practices are familiar to Customs.

“The prior statuses have helped us to develop our processes”

The prior customs+ customership and trusted customer status have helped Inex to improving their processes to be closer what the AEO authorization requires, and some processes are already on at least the minimum required level. In addition to this, good collaborative relationship with the Customs makes it easier for Inex to conversate with the Customs how they should improve their processes, practices, and their actions overall. Customs also know the industry that Inex is working in very well as well as how Inex practices their business, which differs from other companies. Because of this, Inex can focus on the core aspects of their business for example in Customs inspections and they do not have to clarify to Customs how they practice their business.

“Existing collaboration with the Customs will help in AEO application process”

Inex has been collaborating with the Customs for many years and this will be really helpful in the AEOC application process. This will be helpful in the application process in auditing the processes and developing them to meet the level set by the AEO authorization. The people working in the Customs are also familiar to the employees of Inex, which makes it easier to ask for help if needed and the employees of Customs will be more inclined to help due to this long-lasting collaboration and because they know employees of Inex.

5 DISCUSSION AND CONCLUSIONS

The aim of this study was to find out what kind of impact would collaboration with the Customs have on the case company's import and export processes. This was to find out what kind of benefits this could have for the case company and what kind of aspect would this collaboration have. Previous studies have not been focusing to this problem from the point of view that the Customs are "third party" in the collaboration, which in the past has commonly been looked at as relationships between the supplier and buyer. This was a research gap for this study. Additionally, for the study was also included experiences from other companies and how AEO authorization had affected their relationship and collaboration with the Customs and how it has benefitted their processes in order to gain more deep knowledge on the matter. This was done to back up the current literature on the matter to see if the benefits hinted on the official Customs AEO page were actualized in real life. There was done review on current literature on the issue of process improvement and collaboration in order to gain knowledge to support empirical study.

5.1 Discussion of the results and answering to the research question

In this part, the results found in the empirical research are summarized and reflected on the theory of the study. This is done by comparing data gained from interviewing the case company presented in the previous part to theoretical overview of the study and to interviews conducted on other companies.

What is the role of Customs collaboration in a company's import/export process improvement?

The main objective of this study was to find out how Customs collaboration can affect company's import/export process improvement. Prior studies on this issue have shown that there are many direct and indirect benefits that Customs collaboration can have on company's processes such as joint improvement projects, more smooth and straightforward import and export processes through less physical and documentation checkups, trusted trader status, which makes it easier to gain customers and allows companies to gain access to different kind of licenses that allow them to do things in a way that will boost processes. From the theoretical view, the most influential benefit is the less physical and documentation checks, because this one affects the import and export process directly and will reduce the lead time of the

shipments significantly. However, from the study conducted on the case company and the other companies, it seemed that the greatest benefit was really the improved relationship with the Customs that allows the companies to work more closely with the Customs in order to improve processes and even create completely new ones. From the wide range of benefits that AEO authorization can offer for a company through collaborative relationship with the Customs, this was highlighted in every interview, thus it gained the most important status in the context of this research.

The findings of the study also point that the overall importance of collaboration with the Customs is really important in many levels and the companies who were interviewed all had long lasting relationships with the Customs and hope that it will continue to get deeper. This is not however as possible without the AEO authorization as said in the theoretical part of this study “Trust has been defined as the force that binds buyers and suppliers together in a transaction (Ramesh et al. 2009)”, there must be trust between the parties of collaboration in every interaction. AEO authorization helps with this problem, it causes high increase of trust between the company and the Customs. The other companies interviewed gave answers such as “For smooth Customs procedures and improvement of operative systems, collaboration with the Customs is a must (Company A), “Huge importance, getting more personalized service when in need of help of process improvement is massively helpful (Company B), “Really major, projects done with the Customs for process improvement have been substantially beneficial for logistics industry as well as for the society. These things would not have happened if companies do not collaborate with the Customs (Company C)”. Each of the companies interviewed agree that collaboration with the Customs through AEO authorization has been in the past, is currently and will be in the future really helpful and that they recommend it for every company.

The research also found that, the collaboration with the Customs is also quite simple in a way, because if the company is doing some form of collaboration with the Customs already, which they are if they are importing or exporting goods to/from EU, then they already have overcome many barriers to collaboration such as disparity in technological capabilities, unwillingness to share risk and reward and inadequate information sharing.

Disparity in technological capabilities in this context means that for example collaboration partners are incapable to share information with each other through electrical means, because low IT capabilities (Ramesh et al. 2000). This is not a problem because when companies start working with the Customs for the first time, this is a requirement that must be met before the relationship can even start. The company must have IT system that is connected to the IT

system of Customs and be on the same specs in order for the systems to understand each other.

Second barrier that is non-existing in this collaborative partnership is unwillingness to share risk and reward, which is one of the most important factors in long-term focused supply chain relationships and one of the key components in supply chain management (Ramesh et al. 2009). This is not an issue however, because Customs is government facility that does not chase rewards and is sharing the risks with the company. They are there to help the company and it is in the nature of Customs, which makes them basically perfect supply chain partners. The last barrier is inadequate information sharing, which means that partners do not share key information with each other and is one of the key requirements for successful collaboration (Ramesh et al. 2009). This however is also not a problem due to the requirement that the Customs must by law share all of the required important information with the company and vice versa. The company and Customs are both bound by law in most of their exchanges to share all required information correctly.

There is also many other things that will be possible with Customs collaboration through AEO authorization as the authorization will get more recognized globally and as it will be developed further. Experts have said that the importance of AEO authorization will rise in the future and be more emphasized amongst companies (Närhi 2019).

What are elements of supply chain collaboration?

The elements of supply chain from the theory are trust, mutuality, information exchange, openness, and communication (Barratt 2004). When analyzing the results from the empirical research it can be seen that the most important elements of supply chain collaboration with the Customs are trust and communication. The results shown that the one of the benefits of AEO through Customs collaboration is that it increase trust between the company and Customs, which makes it easier to them to work together. This was the process improvement becomes smoother and the interactions with the Customs become less strict, which increase the import/export processes even further. The elements of collaboration are little bit different when it is looked at from the perspective of the research question, collaboration with the Customs is little bit different from common supplier – buyer collaborative relationship. Actions of the Customs are governed by law, which means that they must always share the correct information when it is necessary and this works both ways, companies must also share every crucial information with the Customs. The most beneficial element of collaboration is trust,

which makes companies import and export processes freer and reduces the amount of work that Customs need to do.

What are characteristics of partnership and collaboration?

The main characteristics of partnership and collaboration found it the study are mutual trust, win-win orientation, open communication, shared information, joint problem-solving efforts and maybe the most important commitment and long-term orientation (Duffy & Fearne 2004). These are the most important characteristics that make up partnership and collaboration, without these, there cannot really ever exist true partnership and collaboration with parties. These are as true with the type of collaboration in the research question, parties must be committed, and long term oriented in order to create long lasting collaboration, which will have positive impacts on each party's processes. Basic characteristics of each partnership and collaboration are the same, but each partnership and collaboration are different from each other, there is no mold that describes each partnership and collaboration, but the basic characteristics or some of them can found with each.

What are the benefits and barriers of collaborative relationships?

The benefits and barriers of collaborative relationship, that have been identified, are numerous both in earlier studies as well as in empiric research. Barriers of collaborative relationships are mostly covered by previous studies and has identified 9 most critical ones. These barriers include lack of trust, training, collaborative and strategic planning, top management commitment, supply chain vision, disparity in technological capability, inadequate information sharing, unwillingness to share risks and rewards and inconsistent performance metrics. The most notable barriers are lack of trust, lack of top management commitment and inadequate information sharing (Barratt 2004). For the benefits of collaborative relationships previous research has shown that collaboration is key for achieving competitive advantage as companies are now competing with supply chains instead of products. Other benefits that previous studies have uncovered are categorized as **information sharing, goal congruence, decision synchronization, incentive alignment, resource sharing** and **collaborative communication** (Um and Kim 2019). The empiric research identified that through collaboration companies can achieve things that they could not have achieved by themselves, thus increasing their performance of processes over their normal capability, which increases the overall performance of the company.

5.2 Conclusion, limitations of the research and suggestions for future research

To conclude, the successful collaborative relationship with the Customs can improve the processes of import/export supply chains if implemented properly. The way how the processes will be improved varies company by company, but the case company for this study would get access to better licenses to gain advantages, faster process times, less physical and documentation check-ups, joint process improvement projects with the Customs and possibility to do Customs clearance on products that are not situated in Finland. When considering the import supply chain of the case company for example, from the overall lead time of the products, Customs procedures can take up to 30% of total time spent. For example, with the collaboration with the Customs, the time that Customs procedures take can be reduced significantly.

This study addresses the research gap between the basic viewpoint of collaborative relationship, where supplier and buying companies are working together, but focused on the collaborative relationship between the Customs and a company. This study managed to shed light on this matter, but still there is need for more study on the matter due to the limitations set for the study. The study for this research was conducted as qualitative research and had small sample of 4 different companies, 1 of which was the case company. Due to this, results cannot be generalized outside of this study. The aim of the study was not to gain generalized results, but how the case company would be affected by this situation and what kind of benefits they could get for their processes. Also, the studies were limited to one industry, therefore specific notions about situations on other industries cannot be given.

Due to the limitations of the study, the next study should conduct a larger study with larger pool of samples in order to confirm the results. It is suggested that any further studies would also use qualitative study, due to the nature of the issue. Further study could also include wider scope to maybe include different kinds of companies for the study.

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