Critical success factors of potential CPFR implementations

Two manufacturing case studies in Sweden based on a pre-CPFR stage from the perspective of a buyer – seller relationship
Master Thesis in Business Administration

Title: Critical success factors of potential CPFR implementations in Sweden
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Abstract

Background: Higher global competition and more demanding customers force manufacturing companies to develop and adopt new collaborative strategies; the collaborative planning, forecasting and replenishment concept allows stronger supply chain cooperation, cost saving, improved efficiency and performance.

Purpose: Exploratory, to study the criticality of factors that can affect the feasibility of a potential a CPFR implementation in Sweden, from the perspective of a manufacturer in a pre-CPFR implementation stage.

Method: Qualitative research, using a multiple case method of two manufacturing firms operating in Sweden. Using content analysis, it revolves around studying factor criticality, all the while showing differences and commonalities in terms capabilities, and future feasibility of CPFR between the two case studies.

Findings: High degree of interconnectivity between the factors; the critical success factors for Sweden are relationship and trust, goal alignment, KPI’s and costs, with very important factors such as cross-functional communication, top management support, and lower impacting factors such as IT infrastructure and change management. Relationship and trust, cross-functional communication and change management are developed factors that the Swedish manufacturing firms possess.

Implications: The study’s contributions are related to the criticality of factors that can affect CPFR implementations in Sweden’s manufacturing sector, showing the importance of each, contributing academically in attempting to fill in the gap related to CPFR in Sweden, and practically by allowing better strategic decision-making in relation to future implementations. This is even more relevant due to a thorough lack of research in this area.
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Abbreviations

APS – Advanced planning and Scheduling
ASP – Application Service Provider
CPFR – Collaborative Planning Forecasting, and Replenishment
ECR – Efficient Customer Response
EDI – Electronic Data Interchange
ERP – Enterprise Resource Planning (system)
IBP – Integrated Business Planning
MAPE – Mean Absolute Percentage Error
VICS – Voluntary Interindustry Commerce Solutions Association
VMI – Vendor Managed Inventory
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1. Introduction

This first part focuses on discussing the background of the topic, followed by the research purpose, the research question and evidencing the delimitations imposed for studying this topic.

1.1. Background of the research

Today, due to increased global competition and uncertainty, companies need to focus more on collaboration with their supply chain partners than before, to maintain high customer satisfaction, strive for efficiency, and retain their competitive advantages (Cao & Zhang, 2011; Mentzer, et al., 2001). Dyer and Singh (1998), discuss the concept of joint competitive advantage that develops from multiple firms cooperating, sharing and combining resources to gain more benefits together than they would manage on their own.

The supply chain collaboration concept revolves around these aspects, allowing joint governance of the supply chain (Cao & Zhang, 2011), attempting to connect all the business operations along the supply nodes (Saenz, Ubaghs & Cuevas, 2015), to integrate them and create an efficient process (Simchi-Levi, Kaminsky & Simchi-Levi, 2008). It allows companies to share and manage supply chain risk (Pradabwong, Braziotis, Pawar, & Tannock, 2015), reduce costs and allow better prices for the customers (Simchi-Levi et al., 2008), allows better supply chain performance (Cao & Zhang, 2011), and improves demand visibility (Ireland & Crum, 2005, pp. 5-15).

Supply chain collaboration has become an important part in supporting and improving the value proposition promised to customers (Kubde, 2012; Qu & Yang, 2015), since manufacturing companies are dependent on their partners both up-stream and down-stream to maintain accurate demand forecasts for their production planning (Hill, Zhang & Miller, 2018), and keep a balance between inventory and overall costs (Kubde, 2012). This is even more pronounced in today’s digitalized world, with the prevalence of electronic commerce, short lead-times, rapid technological innovations, highly educated, and demanding customers (Keifer, 2010).

As such, the importance of collaboration is related to the fact that added value downstream towards the final consumer requires the input of all the actors involved in the process to be truly effective (T.H. Chang, Fu, Lee, Lin & Hsueh, 2007), to bypass any issues arising from clashes of interest, differences in business processes, or incompatible technologies between partners. It is safe to say that it is no longer just a competition between single, individual companies, but rather, a competition between multiple supply chains and networks (Mentzer et al., 2001).

Subramanian and Rahman (2014, pp. 16-21) discuss various strategies in relation to supply chain collaboration. Among these, they show that based on the relationship between the supply chain partners, there are several strategies firms can employ, such as:
purely transactional-based, intermediate (consultancy-type), and strategic (peer-to-peer type). Ramanathan, Gunasekaran, and Subramanian (2011) add in the fact that the relationships between the firms have the potential to further develop if they manage to successfully collaborate during the first time.

It can also be stated that the supply chain collaboration concept was not only developed by the academia, but also through efforts from the practitioners as well. Some famous examples of pioneers in supply chain collaboration development are Walmart and Procter & Gamble, among others (Ireland & Crum, 2005, p. 19) - (this will be further elaborated in Chapter 2). These companies experimented with strategies to allow better relationships with their supply chain partners, by communicating customer demand through the supply chain to allow better visibility, and sharing supply chain related data, among other (T.H. Chang et al., 2007; Ireland & Crum, 2005, p. 27). Below, in Figure 1, we can observe the development of these strategies throughout the years.

![Figure 1 Evolution of collaborative strategies. Source: Demiray, Akay, Tekin, and Boran (2017)](image)

Among the strategies used by the business world, one stands out in particular: the collaborative planning forecasting and replenishment concept (or “CPFR”), developed during the late 1990’s (Skjoett-Larsen, Thernøe, & Andresen, 2003); a concept that focuses on dealing with issues that could affect supply chain performance, in terms of streamlining operational processes between buyers-sellers, through close collaboration, joint decision planning and forecast alignment (Hill et al., 2018; Skjoett-Larsen et al., 2003).

In terms of academic literature for this concept, there are several studies ranging from CPFR in retailing (Büyüközkan & Vardaloğlu, 2012; Fu, Chu, Lin & Chen, 2010; Fu, 2016; Panahifar, Heavey, Byrne, & Fazlollahtabar, 2015b; Wang, Yuan, Archer, & Guan, 2005), automotive industry (Demiray et al., 2017), heavy industry (Chung & Leung, 2005), to the medical industry (Lin & Ho, 2014; Thomassen, Dreyer, & Jonsson, 2013), among others.

However, the fact is that there is less focus in the literature on the factors that determine successful CPFR implementations in the manufacturing industry, with only a handful of
authors researching the criticality of these factors. Most of this research focusing on the retailing sector (Büyüközkan & Vardaloğlu, 2012; Fu et al., 2010; Fu, 2016; Wang et al., 2005).

Apart from this, research is especially lacking regarding the very early phases when partners in the supply chains are not yet committed, are unsure of the outcomes, or lack the understanding of the processes required to begin such a project (Skjoett-Larsen et al., 2003).

When we focus on Sweden, it can be stated that research is very scarce and hard to come by in relation to supply chain collaboration, CPFR, and CPFR in the manufacturing sector. Nevertheless, research from the Swedish grocery goods sector evidence the fact that Swedish manufacturing firms are apprehensive of sharing information and cooperating with their supply chain partners due to fear of losing knowledge and competitive advantage (Elg, 2007). Another study, (Olhager & Selldin, 2004), points out that Swedish manufacturing firms focus on supply chain partner quality above all else, however, integration is rather low. Thus, right from the start (although indirectly) we learn that relationships are regarded as important for business in Sweden.

While no other studies are available to show the reason why CPFR would be viable or desirable by Swedish manufacturing firms, the overall benefits that companies can obtain are related to better demand visibility (Taylor, 2016), reduced inventories and improved customer satisfaction with a long-term collaboration focus (Sari, 2008), leading the way to automated forecasting and ordering processes (Thomassen et al., 2013), for example; these will be further discussed in the literature review. No additional perks have been identified from the literature that can be particular to Sweden.

Thus, it is important to understand what are the critical factors that determine successful CPFR implementations, and, as such, gain more insight in the future prospects of such initiatives in Sweden. Understanding the applicability, usability of the concept and overall mind-set of the firms allow researchers to discover the underlying reasons for the scarce research and low popularity of CPFR.

1.2. Purpose and research question

The purpose of this thesis is exploratory in nature, to study the criticality of factors that can affect the feasibility of a potential CPFR implementation in Sweden, from the perspective of a manufacturer in a pre-CPFR implementation stage. Since recent successful CPFR implementations are very hard to come by, due to their complexity and high risk, studying the first step of the process, in relation to the criticality of the factors that can affect implementation, allows the researchers to contribute, to gain additional insight in determining the value of CPFR and the prospects of CPFR implementations, especially since this area is lacking in research.
As such, our focus is on understanding and determining what are the most crucial implementation factors that the manufacturing firms have to focus their resources on, evidencing the current capabilities that they possess, in relation to a future CPFR implementation.

The research question, derived from the purpose, is as follows:

RQ: What are the critical success factors that can affect the feasibility of a potential CPFR implementation from a manufacturer’s perspective, in Sweden?

This question will also allow us to understand the necessary capabilities required for CPFR implementations in Sweden, if the current mind-set of the studied firms match the pre-requisites, or what additional work in building relationships and capabilities are required.

1.3. Scope and delimitations

The scope relates to studying the criticality of factors relevant for a CPFR implementation in Sweden, in the manufacturing industry. In this regard, the first delimitation relates to the study of the criticality of CPFR factors and does not study the prospect of an already deployed CPFR implementation plan at the manufacturer, or any of its supply chain partners.

The second delimitation is that it will mostly focus on the main units of the study, the manufacturing firms, and it will not include any of the supply chain partners. This is mostly due to time limitations related to this thesis as the increased difficulty level associated to this concept requires more study time than currently available.

The third delimitation is related to the geographical area, focusing on manufacturing firms that operate, and cooperate with their supply chain partners in Sweden, not focusing on any other area, via subsidiaries or ultimate owners. The main reasoning is to understand the particularities of this area and provide insights evidenced from the empirical results obtained from local companies.

1.4. Dispositions

This thesis is structured in six (6) chapters, as such:

Chapter 1 gives a brief introduction of the concepts further discussed in this thesis. It provides the purpose of the thesis, the research question to be answered and the overall gaps in the academic literature.

Chapter 2 presents the literature review that stands at the basis of the thesis discussion, further explaining the concepts, and insight from the academic literature.
Chapter 3 explains the research methods used to research this topic, giving reasons why these methods have been chosen and their outcomes.

Chapter 4 summarizes the empirical findings obtained from the field work in relation to the research question, purpose and research methods.

Chapter 5 presents the analysis of the empirical data shown in Chapter 4 and linking it to the literature reviewed in Chapter 2.

Chapter 6 focuses on discussing of the results, providing theoretical contributions, managerial implications, limitations to the research, and what future research can be suggested in to fill in the gap/gaps related to the topic.
2. Literature Review

In the sub-sections that follow below, we analyse the literature that describes and defines the collaborative planning, forecasting and replenishment concept (CPFR), the research and evidence on the potential benefits and drawbacks that stem from using this concept, the CPFR implementation model, and lastly, the key factors that determine a successful adoption program which will be used later on in this study.

2.1. The CPFR concept

CPFR can be delimitated under the supply chain collaboration strategies (Whipple & Russel, 2007), and relates to a common agreed upon initiative among various supply chain partners, having the purpose of improving collaboration efforts by jointly focusing resources in planning, sharing information, and communication processes to provide benefits for all the members involved (Panahifar, Byrne & Heavey, 2015a).

Yet, the origin of this concept is not new; it stems from prior research and earlier models, and among the plethora of said models that deal with collaboration available in the academic literature, the “Vendor Managed Inventory” (VMI) can be provided for comparison - a strategy still popular today, used prior to the development of CPFR, where the supplier and customer share information, and the former takes care of the latter’s inventory replenishment activities (Kamalapur, Lyth, & Houshyar, 2013).

Among the first to successfully implement VMI was Walmart along with Procter & Gamble in the 1980’s in the retailing industry (Waller, Johnson, & Davis, 1999). The strategies’ main objectives are to improve supply chain efficiency and drive down inventory numbers and costs (Govindan, 2013); however, the collaboration focus and effort is rather limited, with a lack of supply chain visibility (Barratt & Oliveira, 2001).

On the other side, the CPFR concept grew in popularity towards the end of the 1990’s, when various companies managed to successfully implement it: Walmart and Procter & Gamble, having previous experience with VMI (Skjoett-Larsen et al., 2003; VICS, 2007), while Metro, Carrefour, Tesco, Compaq, Ford, Johnson & Johnson, Eckerd Drug, General Motors, among others, quickly adopting it afterwards (Wang et al., 2005).

In this regard, we can notice that it is more closely connected to the retailing and fast consumer goods industries, even though there are no significant barriers in its applicability across other industries (Barratt & Oliveira, 2001; Fliedner, 2003).

Some authors state that CPFR is an advancement of VMI through the addition of planning and forecasting mechanisms (Hollmann, Scavarda, & Thomé, 2015; Thron, Nagy & Wassan, 2006), while others state that CPFR is a stand-alone concept and is not an extension of VMI or any other concept, but rather, an integrative concept, focusing on using the Internet to connect and share information between supply chains partners in real-time (Johnsson & Mattsson, 2013; A. Kumar, 2006).
Based on available data, more than 300 large companies have implemented it since 1998, with quantifiable inventory reductions for the firms that used the concept, in between 10 to 40 percent (VICS, 2004).

The Voluntary Interindustry Commerce Solutions Association was an association formed out of various organisations with the goal of improving collaboration, efficiency and performance in the supply chain in the late 1990’s in the U.S.A (A. Kumar, 2006). In addition, the association worked in creating implementation guidelines for CPFR and recommendations, providing the necessary help for companies to implement it (Hill et al., 2018; VICS 2004; VICS 2007; Yao, Kohli, Sherer & Cederlund, 2013).

When we relate CPFR to other types of collaborative approaches, Tyan and Wee (2003) formulated a matrix based on available collaborative supply chain models and the power structure between a supplier and a retailer. They show that the CPFR concept provides the most balance in terms of what benefits can be derived by using collaborative methods and extracting value for all the parties involved, with its bi-directional focus, in terms of up-stream or down-stream processes in the supply chain (Tyan & Wee (2003).

Thus, CPFR is of high importance through its integrative focus on information sharing and forecasting data sharing (Johnsson & Mattsson, 2013), providing a co-operative mindset in terms of common planning, replenishment, and long-term relationship building processes (Danese, 2007; Du, Leung, Zhang & Lai, 2009; Kubde, 2012). In this regard, among all the other collaborative models and strategies, CPFR is the most advanced one, due to the above-mentioned reasons (Tyan & Wee, 2003).

While this concept can have a strong impact on improving the efficiency of the supply chain, it also has a certain degree of controversy in the academic world; while the incentive and interest from the business world is high (Wang et al., 2005), in recent years the adoption factor was low (Büyüközkan & Vardaloğlu, 2012; Panahifar et al., 2015a; Panahifar et al., 2015b; Sari, 2008).

The reason for this low adoption rate is related to the aforementioned complexity, and high costs, while also lacking a common framework to connect different partners within the industry or partners that operate in cross-industries (Danese, 2007), forcing companies to learn and continuously improve the process (Yao et al., 2013) which in turn requires a constant flow of financial resources and knowledge to be poured into such a project.

CPFR is not a “one size fits all” solution (Doiron, 2004), since the results of the implementation, and usage can be very different (Skjoett-Larsen et al., 2003), depending on industry specificity, supply chain network structure, the end goals of CPFR partnerships and its development stage (Danese, 2007).

One strong perk of this concept is related to its modularity. Danese (2007) states that based on the report provided by ECR Europe (2001), the VICS implementation plan of
CPFR has modularity in mind, due to the capability of firms of using it whilst not following through all the implementation steps to obtain a working version of it. In this regard, companies can focus on certain parts during the initial stages of the pilot project, such as focusing on forecasts, and collaborating only with few partners, scaling up the procedure later, when more experience is acquired Danese (2007).

Several authors (ECR Europe, 2001; Kubde, 2012; Skjoett-Larsen et al., 2003; Wang et al., 2005) discuss the implications of such approaches, by splitting CPFR into three distinct levels, based on its scope and collaboration factors. This is evidenced in Figure 2 below.

These three levels, basic, developed and advanced CPFR show the progress that partners have to achieve in developing towards its full potential. Based on the scope of this thesis, our discussion shall only focus on the basic level, where the integration level is low and usually focusing on a single or few processes (ex: only exchanging information about inventory levels) – (Skjoett-Larsen et al., 2003).

When we turn our attention on how CPFR works, a general schema can be used for most industries. The main actors, in a simplified manner, are the buyer, seller and an end customer; this however, can be dependent on the industry (VICS, 2004).

The basis of the concept is to link the planning, forecasting and replenishment operations of the partnering firms (buyer-seller). In this regard, the parties develop a category plan of what types of products and their quantities are required, and the manufacturer (seller)
incorporates in their production forecast, based on shared historical sales data (Kubde, 2012; VICS, 2004).

In addition, both actors coordinate on replenishment and promotional activities (if applicable), having the buyer determine the necessary quantities of products needed, while the seller’s customer service department obtains the request and maintains the volume of products requested to keep the flow of goods running and avoid out-of-stock issues (Kubde, 2012; Stank, Daugherty & Autry, 1999; VICS, 2004).

For example, point-of-sale data is used in retailing to determine the replenishment planning and forecasting levels, and human intervention is used when issues occur with the system (Barratt & Oliveira, 2001). A schema of CPFR related activities can be identified in Figure 3 below.

![Figure 3 CPFR activity process. Source: Adapted from Barratt (2004)](image)

These processes require a certain degree of business reengineering, as cross-functional teams are required to maintain these activities and meet the demands of the buyer; this is especially valid for the seller (manufacturer) – (VICS, 2004; VICS, 2007).

Another element is information technology, which is highly desired to share forecasting data, selling data, resolve exception issues (where inconsistencies appear, and where human intervention is required), and maintain a two-way flow of communication (VICS, 2004; VICS, 2007; Yao et al., 2013). VICS (2004) recommends that the concept be integrated into the enterprise systems of the companies, and be used as a shared solution, or as a peer-to-peer network application, either in-house or hosted by a third party.
Its importance is manifold; it helps firms to improve transparency in the supply chain, allowing for a “pull” marketing strategy, and focus more on the end customer demands, through coordination (VICS, 2007). It is also based on official agreements between the partners, that define the methods of collaborating, sharing resources and maintaining the same goals throughout their business activities (Caridi, Cigolini, & De Marco, 2005; Simatupang & Sridharan, 2004; VICS, 2007). Lastly, it provides a platform to maximize the gains of all the companies, thus, driving competitiveness, innovation, and a more customer-oriented mindset (Skjoett-Larsen et al., 2003; Stank et al., 1999; VICS, 2007).

Further below, the discussion will continue with evidencing the benefits and drawbacks (or possible drawbacks) of using this collaborative concept.

2.2. Benefits and drawbacks of the CPFR concept

There is a large amount of academic literature that examines the benefits and drawbacks related to CPFR. It is of high importance that these are accounted for in order to properly weigh in whether CPFR’s value proposition is attractive or not. However, most of this research does not study the phenomena in depth, but only briefly discuss them. Nonetheless, these available insights will be split below, and analysed individually based on their directions.

2.2.1. Benefits

Among the first set of benefits derived from CPFR is related to visibility in the supply chain, by reducing the bullwhip effect and lower inventory management costs. Kamalapur et al., (2013) show that through sharing of demand information and connecting forecasting data, companies can reduce the cost impact of inventory in the supply chain, for both the manufacturer and the supplier; their analysis show that the cost of manufacturing can decrease versus the traditional supply chain setting through more accurate forecast data, however, more testing is required to fully validate their results (ibid.).

Traditionally, firms can avoid a stock out situation by communicating the customer’s demand upstream with a large time gap before the product is actually needed (Mentzer, 1999). By connecting the IT systems (enterprise systems) of the firms and having effective communication protocols, such times can be trimmed down, and costs reductions can also be achieved through linking the firms that are part of CPFR (Dong, Huang, Sinha, & Xu, 2014). It is of high importance for collaborating firms to have a smooth supply chain activity to drive down costs.

A second set of benefits relates to a more responsive and efficient supply chain, and as such, better customer service levels. McCarthy & Golicic (2002), through their research, evidence the fact that exchanging information related to orders and demand can better
align the manufacturer’s processes with the expectations of the customer, thus, providing an increase in perceived quality.

Kahn, Maltz, & Mentzer (2006) show that forming strong bonds (relationship and trust) are much more important in the overall performance/efficiency of the supply chain than just relying on information technology alone. While this is true, we can argue that both dimensions are important for a high-performance supply chain, by having good relations with partners and also possessing the capability to communicate and share information in real-time. These two aspects also enhance the value proposition for the end-customers (Hill et al., 2018; Kubde, 2012; Skjoett-Larsen et al., 2003).

The third category is related to increased profitability and value (Panahifar et al., 2015b), through supply chain integration and having closer relationships. Through collaboration and daily interaction, the relationship building process is increased (Attaran & Attaran, 2007), providing trust and long-term common goals (Ryu, 2014).

In addition, by integrating the activities of each partner, better decisions can be made at a strategic level, synchronizing the activity of each company in the chain towards the end-consumer (Ryu, 2014). Danese (2007), evidences the fact that the level of integration is dependent on the goals of the partnership, and while CPFR is shown to improve the performance of a company that implements it, such perks can only be achieved through long-term interaction, while being very hard to achieve if only short-term collaboration is considered (Danese, 2006; Du et al., 2009).

2.2.2. Drawbacks

In terms of drawbacks, one negative set is related to complexity, and a high cost related to the operation and implementation of CPFR (Sari, 2008). Skjoett-Larsen et al., (2003) identify two types of investments necessary: “hard-investments”, such as equipment, and software programs, and “soft investments”, in terms of skilled and knowledgeable individuals.

The exemption-based forecasting is the most common method available in the literature that helps companies lower some of the costs associated to forecast synchronization (Dong et al., 2014). This method allows to manually intervene when there are mismatches between the forecasts or when the demand exceeds the forecasts. Among other ways to ensure successful implementation and long-term partnership is commitment from management and make use of dedicated teams – each company should have teams that focus on the requirements and demands of their partners (Yao et al., 2013). It is safe to say that through close collaboration and trust such costs can be kept at managing levels.

A second set of possible drawbacks relates to a dependency on having mutually-agreed common goals, and issues related to communication (Terwiesch, Ren, Ho & Cohen, 2005). In terms of strategic and business goals, these need to be properly aligned, otherwise, trust issues can occur. In this regard, issues might arise in the form of
incorrectly sharing forecast information on purpose to ensure preferential treatment or to obtain the supply needed under uncertain periods (Terwiesch et al., 2005; Özer, Zheng & Chen, 2011). The reason why is that in CPFR all partners depend on the actions of the other companies partaking in this collaboration; incorrectly communicating or refusing to communicate can have disastrous effects on future business partnerships, and overall performance of the supply chain (Chung & Leung, 2005; Dong et al., 2014).

According to Aviv (2007), Premkumar, Ramamurthy and Saunders (2005), and Steinfeld, Markus and Wigand, (2011), among the main difficulties related to information sharing is information asymmetry, where the information from the originator cannot be truly verified. In this regard, the other company that receives this information must trust that this information is valid and correct.

Another problem discussed by Dong et al. (2014) is related to information transparency, as some companies benefit from it while others do not. This can be affected by the fact that some companies do not want to share certain information (Aviv, 2007; Dong et al., 2014) for fear that it will reach the competition or other third parties. Zhu (2004) recommends the use of incentive mechanisms to maintain good relations. Because of this, contracts need to have strict privacy rules and procedures in case the partners break them (Carmén, Gottfridsson, & Rundh, 2011). Further below, we shall continue our discussion on the CPFR implementation model, its steps, and defining elements.

2.3. The CPFR implementation model

As previously pointed out, the Voluntary Interindustry Commerce Standards Association (or VICS) iterated an implementation guideline to smoothen the process of CPFR pilot-projects (VICS, 2004). The modern version of the CPFR model can be split into four different processes (ibid.), as seen below:

a) **Strategy and planning**: this first process deals with collaboration arrangements, where the partners create the framework by setting up rules and regulations in relation to their cooperation. They decide upon business goals and the scope of the relationship, whether it is going to be full or partial cooperation, their responsibilities and key metrics (VICS, 2004). This part is often related to lengthy negotiation processes and signing of a contract/contracts (Caridi et al., 2005).

b) **Demand & supply chain management**: the second process relates to forecasting consumer’s demand and order planning for future order shipments (VICS, 2004). The buyer and seller need to collaborate in proposing and adjusting prices, quantities and forecasts in order to reach a synchronisation point (Caridi et al., 2005).
c) **Execution**: the third process deals with order generation and order fulfilment. It translates into various operations, related to production, shipping, delivery and inventory management (VICS, 2004).

d) **Analysis**: the last process consists of exception management and performance assessment activities. Exception management focuses on monitoring outbound activities for issues, discrepancies, while performance assessment involves around performance evaluation of the initiative, where key performance indicators are analysed, shared, and adjustments made on planning, forecasting and operation to further improve efficiency (ibid.).

This implementation plan guideline can also be represented graphically, which can be shown in Figure 4 below.

![Figure 4 The CPFR implementation framework. Source: VICS (2004)](image-url)
This model also allows for multiple tier collaborations; while a two-tier supplier-retailer project is shown, it can also prove effective when it comes to a three-tier or a four-tier collaboration scheme (supplier-manufacturer-retailer-customer) – (ibid.).

We can also mention that the implementation plan is not set in stone, but rather, depends on the engagement level of the actors within the supply chain, and that the level of partnership between partners determines the strength of CPRF effectiveness (Danese, 2007; VICS, 2004). This aspect has a high impact when it comes to potential pilot-projects, as we have seen previously that even though not all steps need to be taken in order to achieve CPFR, the initial start will mean that the coordination will be limited to a small number of partners (Barratt & Oliveira, 2001; Skjoett-Larsen et al., 2003).

While the VICS framework is the most common, there are several other academic scholars that have also tried to come up with improvements and modifications to it. For example, Fliedner (2003) proposes a five-step process, focusing on the core capabilities of CPFR (create an agreement, create a business plan, and forecast generation – information sharing and replenishment of inventory).

Du et al., (2009) on the other hand focus only on three steps (plan development, order forecast and sales, generation of orders and shipping). Caridi et al., (2005) focus on improving the overall result by using autonomous agents within CPFR to optimise the negotiation processes.

T.H. Chang et al., (2007) on the other hand, experiment with the use of application service providers (ASP), or A-CPFR, that inject information from the market to improve the accuracy of the forecast, since, in their opinion, CPFR does not include marketing activities and does not take into consideration the competition.

Shu, Chen, Lai, and Wang, (2008) study the impact of credit risk on the supply chain and organisation; the authors propose the introduction of a credit granting guarantee option, to improve the efficiency of the supply chain and reduce the default risk of its members participating in CPFR.

K.K. Chang and Wang, (2008), on the other hand, propose the incorporation of Six Sigma methodologies to improve the forecasting accuracy, through the use of statistical tools and mean absolute percentage error (MAPE) process in order to analyse its overall efficiency.

As we have seen, the literature is abundant regarding CPFR modelling and methodologies. Apart from these contributions, some authors have argued that the model iterated by VICS is too rigid to be able to be implemented (Burnette, 2010; Hollmann et al., 2015; Skjoett-Larsen et al., 2003), or it is too complicated to allow companies to successfully implement it (Du et al., 2009). Because of this, VICS attempted to further improve it and integrated the sales and operations planning method with that of CPFR, to
synchronize external activities in the supply chain with the internal activities of the company (VICS, 2010).

Based on what was discussed above, several aspects need clarifying: even though there are many variants of the model, none of the authors have tried to develop a simplified version of such model for the pilot-stage CPFR typology. Another aspect about the CPFR model is that VICS, although the originators of the model, do not specifically give additional information for new pilot-projects. Because of this, most of the time the companies have to discover through trial and error the exact capabilities that they require (Ireland & Crum, 2005, pp. 64-72; Yao et al., 2013). This is especially important as the model itself is not easy to implement and requires a lot of tweaking from all the partners involved.

Further below, we will analyse the main determinants of a successful CPFR implementation scheme.

2.4. Critical success factors of CPFR implementation

There is an abundance of articles that discuss the most important factors that can determine a successful implementation. These factors identified can be grouped as following: trust and relationship building (Büyüközkan & Vardaloğlu, 2012), information sharing and compatibility (Barratt & Oliveira, 2001; Büyükoğlu & Vardaloğlu, 2012; Fliedner, 2003), goal alignment, performance measurement and costs (Danese, 2007; Naesens, Gelders, & Pintelon, 2009), top management commitment (Lin & Ho, 2014; Panahifar, Byrne & Heavey, 2014; Panahifar et al., 2015a), change management and cross-functional communication (Fu et al., 2010; Wang et al., 2005). One aspect that requires mentioning is that these factors are not clear cut and delineated, but rather, intertwine and connect with each other.

2.4.1. Trust and relationship building

Collaboration and trust are among the most important enablers of CPFR. As shown before, (Kwon & Taewon, 2004; Terwiesch et al., 2005; Özer et al., 2011), predatory-style partnerships promote distrust, which can lead to failure due to diverging goals, potentially leading to law suits and generally decreased performance. One way to resolve this issue is through formal contracts/agreements; however, the development of the relation can suffer due to lack of freedom from the rules, even if their role is to ensure commitment and lower risk (Carmén et al., 2011).

Long-term relationships can also be affected by subjectivity, such as cultural differences, social trust and, ways of doing business (Guang Qu & Yang, 2015). Social trust can be summarized as the perception or capability of an individual to trust other individuals, from their own or other cultures; the higher it is, the more trustful and open are the individuals in that culture and vice-versa (Mikucka, Sarracino & Dubrow, 2017). It is
evidenced that companies from countries where the social trust factor is high tend to cooperate much better than companies in low social trust factor countries (Guang Qu & Yang, 2015). These aspects need to be taken into consideration when collaborating with companies from different cultural areas.

Apart from these, Lang (2004) evidences the fact that relationships are also dependant on knowledge integration (inter-organisational coupling); through tacit or explicit knowledge exchange (Whipple & Russell, 2007), value is created from the capabilities and needs of each partner.

2.4.2. IT capabilities, information sharing and compatibility

In terms of IT capabilities, all the partnering companies need to have the capability of sharing information and communicate efficiently, such as possessing electronic data interchange (EDI) capabilities (Fliedner, 2003). Kuk (2004) evidences two barriers in terms of IT systems when it comes to implementing partnerships: valuation and conversion barriers – the first one relates to the alignment of a company’s IT system with the standards used at industry level, while the latter focuses on determining the required costs to switch to a compatible system.

The higher the compatibility factor is between the partner companies (Büyüközkan & Vardaloğlu, 2012), the fewer resources they need to invest after the agreement to collaborate is made. It is safe to say, then, that the more advanced the IT systems of the partners are while still maintaining high compatibility factors, the better the performance of the relationship will become. Thomassen et al., (2013) show that CPFR adoptions can be done without a strong focus on IT and information technology, but dedicating resources to this area can further improve the chances of success.

In addition, accurate information (Panahifar et al., 2014; Panahifar et al., 2015a) is critical for the continued cooperation and profitability of the endeavour; on the other side, information delay can have an impact on uncertainty, that can propagate throughout the supply chain (Angulo, Nachtmann & Waller, 2004) thus, potentially affecting the partnership. Kyu Kim, Ryoo and Dug Jung, (2011) consider the fact that information visibility is just as important, allowing partner firms to have access to valuable information that the company might possess. Lastly, collaborating firms must possess security protocols in order to safeguard their information (Panahifar et al., 2014; Panahifar et al., 2015a); as we have previously seen, most companies are afraid of sharing information, as this might compromise their competitive advantage, compromising their confidentiality, and place them in a vulnerable position (Aviv, 2007; Barratt, 2004; Dong et al., 2014).

To summarize, not only having advanced IT systems is sufficient, but also to be able to share this information when it is needed, and to be accurate, while maintaining a high
degree of security through the supply chain network. These factors, while they can be minor, can still have a high impact on the performance of a firm, and its partnerships.

2.4.3. Goal alignment, performance measurements and costs

As previously discussed, the firms that take part in a CPFR implementation need to clearly specify their goals at the start of the collaboration and maintain them throughout the collaboration. Otherwise, unclearly specified goals can determine a failure of the project (Evrard-Samuel, 2008).

One could argue that the reason behind this issue could be related to the fact that each party has a set of expectations at the beginning of the plan, and if the goals are diverging from the previously-agreed upon goals, these require additional resources to re-align at a later date (Attaran & Attaran, 2007; Panahifar et al., 2015a). In this regard, firms need to have clear communication strategies (Fu et al., 2010), to communicate in a truthful manner with the partners their goals and expectations, to ensure a smooth implementation plan.

Another aspect is related to performance measurement (Danese, 2007). Partners need to agree in setting up performance indicators, to allow the analysis and monitorisation of the endeavour. In this regard, partners will find it easier to maintain the pre-set thresholds and be able to adjust by having the necessary data on-hand (Danese, 2007). Otherwise, without such measurements, firms will find it very hard to monitor the CPFR implementation effort.

While cost is not a variable discussed in detail in any of the articles analysed so far, as a critical success factor, we can determine from the knowledge gained so far that it is also an important determinant of a CPRF implementation, just as all the other factors listed earlier (Wang et al., 2005). Sari (2008) argues that CPFR implementation is dependent on high investments to initiate and maintain such a project. Indeed, costs are intertwined with aligning goals and maintaining performance metrics, as no company desires to lose profit in any way, especially when it comes to failed implementation projects.

2.4.4. Top management support

Another aspect relevant to success is maintaining support and commitment at all times from the upper echelons of a firms’ management (Evrard-Samuel, 2008). In addition, they must also analyse and commit to the decision of sharing information with their partners (Panahifar, et al. 2015a). The leading actors in a firm must fully commit to such an endeavour, because as we’ve seen previously, this procedure demands time, resources and knowledge.

One negative aspect related to management commitment is oftentimes the lack of budgeting allocation for support services, such as IT system (Barratt, 2004; Barratt &
Oliveira, 2001) due to lacking in financial resources (Cassivi, 2006). Since IT capabilities are important for CPFR implementations, top management must consider all the elements that are required for the implementation, and not skipping certain elements for the sake of saving costs (Fu et al., 2010).

Another aspect identified by Seifert (as cited in Panahifar et al., 2014) is the lack of effective leadership; often times the management does not have the skills, experience, and vision necessary to implement such concepts, resulting in a waste of resources for all the partners involved. This is in line with Marble’s (2003) research, where it was identified that a supportive management may not lead to the desired results if the employees perceive that the project/initiative is not being handled properly by top management.

Managers and management dealing with implementation should consider the 3-P’s (passion, persistence, and patience), providing explanations, listening to team members, and clarifying the reasons for the importance of the implementation, not just enforcing it (Englund & Bucero, 2015). Apart from this, it can be shown that high performing companies have top management that is flexible, embraces change and is not afraid of uncertainty (Javalgi & Todd, 2011). It can be argued that such traits should be passed down by management to their subordinates in order to keep this performance level.

2.4.5. Change management and cross-functional communication

Based on Wang et al., (2005), CPFR requires firms to reshape their internal organisational processes, to bind all the previously scattered departments, getting rid of the old organisational silo approach (Evrard-Samuel, 2008) for firms to work more cohesively, through cross-functional communication (Fu et al, 2010). In this regard, companies need to be flexible and understand the flaws in their internal organizational structure to better synchronize with their partners and make the most out of CPFR.

Newton (2011, pp. 18-20), underlines the importance of project-led changes and continuous change; the first type can optimize processes, activities, while the latter focuses more on a philosophy of never ending change and innovation. It is argued that both types are needed in an organization in order to survive.

Among the biggest issues related to change, is the failure of properly communicating the ideas and visions from top management to employees and allow the change to become part of the cultural organisational norm (Aziz & Curlee, 2017, p. 244; Kotter, 1996, pp. 9-14). Most individuals are not willing to commit to a project unless it will provide real benefits and are certain that it is feasible, based on the company’s resources and capabilities. In addition, top management must “lead by example” (Kotter, 1996, pp. 95-97), and commit to such changes (Gareis, 2010).
Changing a firm’s processes or activities (way of doing business) can be seen as a threat by the employees, due to the fact that they are not motivated to partake in the process as contributors, but rather, are seen as liabilities (Elearn, 2011, p. 71). They might consider that any changes will affect their jobs and professional future at the current organisation.

In order for change to be effective, lower and middle management must also be given independence, to come up with ideas and solutions to drive change (Kotter, pp. 46-47). Among the most important criterions for successful change are trust and effective teamwork, between top management, lower management, and common employees, to ensure success (Kotter, 1996, pp. 61-63).

On the other side, cross-functional teams and communications are important for enhanced company and department performance (Boerner, Schäffner, & Gebert, 2012), thus, fostering knowledge generation in the firm (Sheremata, 2000). In this regard, this can also be applied for CPFR implementations, to further improve the result.

It is important to understand that cross-functional communications can have benefits (making use of different skills, knowledge and, different perspectives), but also drawbacks (relationship conflicts that may arise) – (Boerner et al., 2012). Among the solutions, one way to deal with such issues is through team meetings that enhance understanding, allow conflict generation, and create cohesion (Mathieu, Goodwin, Heffner, Salas & Cannon-Bowers, 2000).

Further below, a summary of the literature review will be presented, along with the gaps identified for the topic at hand.

### 2.5. Summary of the literature review

To sum up, four major ideas can be derived from each part of this literature review:

Firstly, we have evidenced the fact that CPFR is a well-known concept from an academic perspective, however, it is difficult to put into practice, due to having very high dependencies related to the industry, supply chain network, and a company’s capabilities.

Secondly, there are many benefits in relation to its usage, in terms of demand visibility, better inventory management, efficiency, reduced costs, and providing better services to customers; however, on the other side, the drawbacks are related to high complexity and dependency on the partners partaking in the CPFR implementation, in terms of capabilities, alignment and trust.

Thirdly, despite having well-documented implementation guidelines and active scholars researching into the subject, CPFR is still difficult to implement due to a lack in clarity in relation to requirements, complexity and demanding costs. However, at the same time, it is modular, and companies can still implement it without following the procedural implementation plan.
Lastly, several critical success factors have been identified from the available literature, related to the importance of maintaining good relations with CPFR partners and maintaining trust, dependencies related to having a developed IT infrastructure and a capability to share information, the importance of having and maintaining aligned goals during the implementation and beyond, having key performance indicators to observe the implementation process, determining the implementation costs and financial impact, requiring top management commitment, good cross-functional communication and collaboration, and having an open attitude towards organisational change.

The main reasons for studying the critical success factors of a CPFR in Sweden are related to comparing insights extracted from the literature with empirical results obtained from manufacturing companies, to determine which are the most important factors, and whether the business-making environment in Sweden is in line with the requirements or whether they miss certain pre-requisites.

Below, a framework of the most important critical factors extracted from the literature in relation to a successful CPFR adoption is shown. This framework has a guiding role in structuring the research process of this thesis. Please see Figure 5 below.

Figure 5 Critical factors for a CPFR implementation (based on the analysed CPFR literature)
3. Research methodology

In this part we shall discuss the underlying philosophical assumptions in relation to this thesis’ research methodology; afterwards, the strategy and methods employed related to the gathering and analysing the empirical data are presented.

3.1. Research philosophy

Research philosophy is the basis of scientific research, that builds upon existing philosophical concepts to allow the designing of the research through rigor, precision and purposiveness (Sekaran & Bougie, 2009) with the end-goal to develop and generate relevant knowledge through academic inquiry in the topic/area in question (Saunders, Lewis & Thornhill, 2016).

Since the purpose of this study is to answer the research purpose related to business concepts, practices and capabilities that cannot be probed through an external, positivistic manner (Saunders et al., 2016) partly due to the social nature of the studied phenomena, and partly due to lacking academic research to allow such an approach, the philosophical standpoint used in this thesis relates to a qualitative research approach, having an ontological standpoint relating to relativism (Easterby-Smith, Thorpe, & Jackson, 2015).

The main reason why this philosophy is chosen is because our topic delves in uncovering the criticality of CPFR implementation factors, which can entail that the phenomena in question is created by individuals and organisations, through social norms, rules and by exchanging different views, opinions and experiences (Easterby-Smith et al., 2015; Saunders et al., 2016).

Furthermore, in terms of epistemological viewpoint, since relativism is the main anchor point for our “reality”, it connects with constructivism (Easterby-Smith et al., 2015; Saunders et al., 2016). The reason for using this viewpoint and not another, is related to the fact that the individuals taking part in this research have different levels of knowledge and experience related to the studied topic, being influenced and affected by business policies and practices, and/or by other individuals working in the same collective; in this regard, each individual’s viewpoint helps in gaining a clearer understanding of the phenomena (ibid.).

This is supported by Bryman and Bell (2011) who argue that the social world, or the organisational world, continually changes, due to constant interaction between its individuals.

3.2. Research approach

When it comes to the available research approaches, the most common theories discussed in the literature are related to deductive or inductive theories (Bryman & Bell, 2011; Sekaran & Bougie, 2009). Deductive theory focuses on creating hypotheses based on
theory and afterwards testing this theory to confirm or falsify it. On the other hand, inductive theory refers to gathering data in order to generate new theories or theoretical frameworks (Easterby-Smith et al., 2015; Saunders et al., 2016). The third theory is abductive theory and focuses on gathering data to generate categories and ideas, which afterwards these are tested again with new empirical data (Saunders et al., 2016).

This research uses a mix of both deductive and inductive reasoning approaches. The reason is that the categories and factors used for gathering empirical data, and the interview design as well, are drawn out from the theory, thus, a deductive reasoning, while the empirical data collected is analysed based on an inductive reasoning approach. This type of research approach combination is possible (Saunders et al., 2016, p. 149); it can also be stated that the inductive reasoning can have more weight in this research due to a scarcity of literature on the topic at hand, which only allows the generation of untested conclusions from the analysis, and not a confirmation/falsification approach.

3.3. Research method and design

Based on the overall goals of this study and research question, the purpose of this research is exploratory in nature (Saunders et al., 2016), to study the criticality of factors that can affect the feasibility of a potential CPFR implementation in Sweden from the perspective of a manufacturer, a topic not thoroughly researched so far, thus, expanding it further.

The adopted research stance, or role, is that of an external researcher, obtaining access in order to gather empirical data, but not allow external influence on the research, all the while maintaining trust and high ethical standards (ibid.). Hammersley (2005) enforces that notion, discussing the fact that the qualitative researcher must be professional in its endeavours, to maintain independence throughout the research to avoid biased results and maintain the integrity of research structure and its validity.

When it comes to the time horizon, this study is based on a cross-sectional design (Easterby-Smith et al., 2015; Saunders et al., 2016), where the purpose is to inquire about the phenomena only once to obtain an understanding CPFR factor criticality and the current capabilities of the case firms at this point in time, and not focus on an extended period. Among the reason for such an approach is due to short research time allowed for this thesis, and, additionally, due to the fact that since CPFR implementations were not currently under way at the case firms, further inquiry would not be possible at this point in time.

In terms of research strategy, a holistic multiple case study approach is chosen, (Maylor & Blackmon, 2005; Saunders et al., 2016; Silverman, 2014), based on two distinct business entities in Sweden, due to the capability of cross-case analysis, allowing the researchers to obtain deeper knowledge about the phenomena studied, all the while grounding the research through in-depth, contextual analysis of the company’s business activities, providing similar or contrasting results (Cooper & Schindler, 2011; Saunders
et al., 2016; Sekaran & Bougie, 2009). Both case studies fall within the instrumental category, due to the more general approach of studying the importance of implementation factors and capabilities, all the while having expressive elements, because of the specific industry in which they operate (Easterby-Smith et al., 2015).

The multiple case study approach (Maylor & Blackmon, 2005) allows us to identify distinct or common features between these two studied entities and provides the necessary insight to obtain a more complete result related to the topic through constant comparison, thus, understanding how capable these firms are to use concepts such as CPFR and what is their mentality in relation to collaboration, drawing common factors important for the Swedish manufacturing sector.

On the other hand, among the main drawbacks of using this method is the fact that due to the short amount of time available for the research, the effort needs to be split between the two cases, resulting in a lack of in-depth focus for each individual case (Maylor & Blackmon, 2005), and overall difficulty of this research strategy to generalize the results to the whole population (Flyvbjerg, 2005; Saunders et al., 2016).

3.4. Data collection

In studying the topic at hand, secondary data as well as primary data was collected to reach our research purpose. Secondary data was used through academic literature inquiry, to allow the researchers in determining and focusing on the most important factors for CPFR implementation, and primary data through interviews to obtain answers and clarifications for our purpose from the business world.

3.4.1. Literature review

The first step of the research is related to gathering and analysing the available specialised literature on the topic at hand. The literature writing method employed is a traditional literature review style, using a snowball approach in obtaining relevant information (Easterby-Smith et al., 2015; Saunders et al., 2016; Sekaran & Bougie, 2009), where, based on the articles identified via database search, we use the author’s reference lists to obtain additional insight and to identify relevant articles that were not found by using the search items.

It is important to state that a systematic literature review method (Easterby-Smith et al., 2015) was considered, however, due to disparate findings and an inconclusive number of articles found regarding the topic at hand, partly due to a low number of studies, and party due to being scattered in a wide range of fields, industries, topics, the strategy was switched to the aforementioned traditional style to provide more meaning and focus to the review.

In this regard, the databases used for data gathering are the Jönköping University Library’s search engine, “Primo”, while additionally scouring through “Scopus” and
“Web of Science”. While “Scopus” was identified as being the most encompassing database, “Web of Science” was also used, to ensure that important articles are not missed.

The key inclusion criteria for the academic papers are as following: only peer reviewed articles – as these are argued to contain knowledge of high quality and relevance (Easterby-Smith et al., 2015), published in or after the year 1999, to ensure that the theories, frameworks and discussions are relevant today.

A notable exception to this criterion is the usage of VICS’ reports, to further discuss and present the CPFR implementation framework, point 2.3. in the literature review. Another exception to the above rules is related to the discussion for points 2.4.4. Top management commitment, and 2.4.5. Change management and cross-functional communication, where additional articles and books from other business disciplines are used due to a scarcity of such discussions from CPFR/supply chain collaboration researchers.

In terms of search items that are used in identifying our literature, these are related to “supply chain collaboration”, “supply chain collaboration Sweden”, “CPFR”, “CPFR Sweden”, “CPFR factor/s Sweden”, “CPFR implementation”, CPFR implementation plan”, “CPFR adoption”, “critical success factors of CPFR”, “success factor OR factors of CPFR”, “benefits OR benefit of CPFR”, “drawbacks OR drawback of CPFR”, “determinant OR determinants of CPFR”.

### 3.4.2. Empirical data

The empirical data collection method used for this study is a semi-structured interview, which is categorized as striking a balance between the highly structured style and open discussion style (Maylor & Blackmon, 2005), focusing on the areas/topic of the research, but allowing the interviewee to elaborate more on their experiences and views. An interview guide is available in Appendix A - Interview guide.

The reason why this type of interview method was selected is because due to our purpose in studying the criticality of different factors that impact the implementation, and since exploring the literature review has provided several key factors that we have incorporated in the interview design, it requires a more structured form to guide the interviewee towards our research goals (by making use of the interview guide), but at the same time allow a certain degree of flexibility to gain deeper insight in researching the reasons behind the criticality of CPFR factors, from the view of the companies.

While Saunders et al. (2016) argue that explorative studies should use unstructured interviews, to gain rich data; however, such an approach would not be feasible for this study, as the different factors of implementation require a more structured, funnelled approach in probing for data.
3.4.3. Sampling method

The sampling method used for the gathering empirical data falls within the non-probability sampling methods (Cooper & Schindler, 2011), and relates to purposive (judgement) sampling (Cooper & Schindler, 2011; Saunders et al., 2016; Silverman, 2014); for case companies, focusing on their industry specificity, size, location and access to relevant data, while for potential interviewees part of these companies, only the most relevant individuals with connections and experience to our purpose, such as management in the supply chain, purchasing, planning, forecasting, sales departments, for example.

Several companies were contacted all around Sweden regarding our thesis topic. Prospective companies were grouped based on their industry sector before being contacted via e-mail and telephone, to allow the study of case firms from the same field. However, such an objective could not be achieved due to lack of access, and as such, companies that would be interested in the topic were considered for study, all the while meeting the main criteria from above. Among these, three companies from the manufacturing industry in Sweden accepted a pre-interview – three hours of interview time in total were generated through face to face interviews with their management, with the initial purpose of learning more about their area of activity, interest in CPFR and supply chain collaboration.

Two manufacturing companies were selected based on the aforementioned sampling method, focusing on company size, forecasting and planning capabilities, willingness to improve and develop collaboration efforts with their supply chain partners and interest in future collaborative-based initiatives. Based on discussions with Assistant Professor Per Hilletoft from Jönköping University’s Engineering School, the third company was considered to be too small to allow the collection of relevant data, and as such, as per recommendation, the two other firms, which are considered to be large by Swedish industry standards, were considered for study instead.

The first manufacturing firm (X) specializes in manufacturing plastics and packaging products headquartered in Sweden, while the second (Y) manufactures products for the medical sector, headquartered in Germany. Further discussions with the management of these two companies ensued, discussing the goals and approach of this research, and the overall required access to specialized individuals in the firms that have the knowledge and experience to answer our questions.

Through management intervention, access to potential interviewees was provided by obtaining contact telephone numbers and e-mail addresses; thereon, everyone was contacted individually via phone, or, in other circumstances via e-mail, in order to participate in a face to face interview, all the while providing them with an overview of the concept and main ideas that will be discussed and a time schedule. The interview time was set and agreed with the case firms at 1 hour 30 minutes to allow enough time to probe
into complex aspects. As it can be seen below in the interview list, this strategy permitted
the researchers and interviewees to discuss the topic in more detail.

Apart from only one Skype interview, all the rest were conducted face to face. Approximately 11 hours’ worth of empirical data were collected from the interviews. After each interview, the researchers inquired the interviewees about other potential participants that would fit to our requirements.

As it can be evidenced, elements of snowballing approach were used (Bryman & Bell, 2011; Cooper & Schindler, 2011) in support of the purposing method to further gain access to relevant data. Please see Table 1 below for a list of interviews conducted.

Table 1 Summary of interviews conducted

<table>
<thead>
<tr>
<th>No</th>
<th>Company</th>
<th>Position</th>
<th>Interview type</th>
<th>Date</th>
<th>Duration (hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Y</td>
<td>Business area manager</td>
<td>Face to face</td>
<td>17-Apr-18</td>
<td>01:39</td>
</tr>
<tr>
<td>2</td>
<td>Y</td>
<td>Supply chain coordinator</td>
<td>Face to face</td>
<td>17-Apr-18</td>
<td>01:23</td>
</tr>
<tr>
<td>3</td>
<td>Y</td>
<td>Supply chain coordinator</td>
<td>Face to face</td>
<td>17-Apr-18</td>
<td>01:20</td>
</tr>
<tr>
<td>4</td>
<td>Y</td>
<td>Supply chain coordinator</td>
<td>Face to face</td>
<td>17-Apr-18</td>
<td>00:32</td>
</tr>
<tr>
<td>5</td>
<td>Y</td>
<td>Supply chain manager</td>
<td>Face to face</td>
<td>18-Apr-18</td>
<td>01:03</td>
</tr>
<tr>
<td>6</td>
<td>Y</td>
<td>In-bound manager</td>
<td>Face to face</td>
<td>18-Apr-18</td>
<td>01:15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No</th>
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<th>Position</th>
<th>Interview type</th>
<th>Date</th>
<th>Duration (hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
<td>Material planner</td>
<td>Face to face</td>
<td>04-Apr-18</td>
<td>01:06</td>
</tr>
<tr>
<td>2</td>
<td>X</td>
<td>Supply chain manager</td>
<td>Face to face</td>
<td>10-Apr-18</td>
<td>00:53</td>
</tr>
<tr>
<td>3</td>
<td>X</td>
<td>Material planner</td>
<td>Face to face</td>
<td>04-Apr-18</td>
<td>01:13</td>
</tr>
<tr>
<td>4</td>
<td>X</td>
<td>Purchasing manager</td>
<td>Skype</td>
<td>24-Apr-18</td>
<td>01:19</td>
</tr>
</tbody>
</table>

The interviews followed the interview guide (please see Appendix A), which is split into three major areas of discussion: a short discussion regarding the individual’s role in the firm, a more focused discussion on the CPFR factors, from where the main body of data comes from, and a discussion on future projects in relation to the topic at hand that the firms might have planned. The number of interviews gathered was highly dependent on the total number of employees working in the departments that are suitable for the
research topic. For the case companies, the majority of employees are working in the production and warehousing areas, sales, or customer support, thus, a small sample of relevant personnel was available.

3.5. Data analysis and results

All the interviews were recorded and subsequently transcribed; more than 45000 relevant words were generated from the transcription process. An ever-present category in the research methods literature is that the collected data must be analysed in a critical manner, thus, the use of a systematic process is mandatory to obtain valid knowledge (Maxwell, 2013, p. 88). In order to analyse the transcribed data, the content analysis method was chosen (Easterby-Smith et al., 2015), structuring and coding the discourse based on the factors obtained from the literature review.

Bryman and Bell, (2011) and Neuendorf, (2017) state that this method of analysis is systematic, allows for replicability, it is transparent, provides objectivity through its connection to quantitative research strategy, and allows flexibility for the researchers; however, drawbacks are related to a tendency of focusing on what can be measured instead of the theoretical significance of the empirical data, it has a very high dependability on the quality of the data gathered by the researchers, and a certain bias on the coding schemes exists, as there are no steps to follow in order to ensure bias-free results.

The reason for choosing this method is related to the fact that it allows the researchers to make an analysis of the empirical data based on the factors relevant for our research, through coding, which can help in further refining the results and provide better conclusions, all the while being flexible and allowing a systematic process to be built. Other analysis methods such as the grounded theory method, or analytic induction method (Saunders et al., 2016, pp. 590-596) for example, are not suitable, as the research is started deductively, probing the academic literature, having pre-fixed categories (or factors) for the analysis, and the data collection process could only be performed once, due to imposed time limits. Lastly, the flexibility of the content analysis in terms of research theory provides a better fit with the overall research method for this thesis.

In terms of the actual content analysis procedure, Bengtsson (2016) presents a general content analysis framework: stage 1) de-contextualization, where units of meaning are drawn out to create codes, 2) re-contextualization, the codes are compared with the data, 3) categorization, where the ideas and codes are further refined and condensed 4) compilation, where conclusion are drawn out of the analysis and further checked for accuracy. As such, we will apply this process during our analysis of the empirical data.

Due to a multitude of factors involved in a CPFR implementation scheme and different ranges of experiences the respondents may have, it is of utmost importance to structure, and evidence any particular areas, or factors that the respondents might focus on. The
analysis is made on each individual case and cross-case, to expose any commonalities or differences between the case firms.

The underlying reason for such an approach is due to the implementation of factors evidenced from the literature review, infused into the analysis to create pre-determined variables before the beginning of the actual data gathering and analysis parts. Based on Neuendorf (2017) such an a priori design is necessary to maintain objectivity in research. However, we also argue that the sub-categories, categories, the underlying reasons and the impact of the factors should come from the empirical data. In addition, due to having two case studies with individuals that have different levels of experience, the results will never be the same all-round.

The main purpose in quantifying the categories via the content analysis method is to evidence the criticality/importance of the factors that emerge from the data for each factor per each case firm. Thus, the graphs have the purpose of evidencing the importance of each category on the factor/s and not to analyse the data in a more quantitative manner than already is. As such, the scaling for the graphs were based on the number of times the categories drawn from the data were reflected in the respondent’s discourse.

3.5.1. Reaching the results (analysis procedure)

Based on the content analysis method, several steps were taken in order to reach the results in Chapter 4 and Chapter 5. It is also worthy to mention that the analysis of the data is made in Chapter 4 providing quotes, descriptions and graphs that determine the importance of the implementation factors through calculating the weight of categories influencing each factor, while Chapter 5 has the role of grounding and comparing the results from the previous chapter with theory and provide an overruling summary of the results. As such, the results were reached by using the following steps:

a) The interviews were transcribed, and a Word-text document was created for each specific interviewee; after checking for consistency, all of these were grouped together in a single consolidated file;
b) From there, each factor was analysed individually, per company, by creating additional Word documents for each specific factor (factor file/s), per case firm; afterwards, each document pertaining to the factor/s was read, and common points were highlighted, and specific quotes/words relating to reasoning why the factor is important or not, or risks/concerns in relation to the factor were isolated in Excel;
c) A second pass-through was used through the full transcript text to ensure that there are no quotes/words that were related to each individual factor for each firm and were not accounted for, to ensure the completeness of the result;
d) Thereon, these quotes/words were then grouped based on their direction of discussion/topic into sub-categories; the quantification was done by summing up how many of the quotes/words were related to the sub-categories;
e) Afterwards, these sub-categories were further refined into categories based on the direction of discussion/topic and the same quantification procedure as shown above was used (summing up how many of the sub-categories would fit into the larger categories);

f) From there, graphs were created, showing the degree/level of importance and how strongly these categories affect each factor, for each firm, by providing evidence through quotes and analysis/discussion of each of the categories, per case firm;

g) For each factor, a cross-case analysis would be done, to present commonalities and differences between the results, and how do these might affect the potential implementations;

h) At the end of Chapter 4, point “4.2.7. Criticality of the factors for implementation success”, an overruling analysis was made for each individual firm, by showing graphically the degree of importance of each factor, based on the categories evidenced in the earlier points (summing up the categories for each factor to determine the strength level). The underlying reasons were to allow us to determine the degree of importance that these factors have from the company’s perspective. This was done for both firms;

i) The points “4.2.8 Potential barriers against implementation” and “4.2.9. Potential implementations of CPFR at the companies” (Chapter 4), were derived from the analysis procedure explained earlier;

j) A summarizing discussion of these results was shown in “4.2.10. Summary of the empirical results” (Chapter 4), and were expanded upon in Chapter 5;

In chapter 5, based on the analysis made in Chapter 4, the findings were compared to the literature to appraise the importance of these results and how do they connect with the theory. Afterwards, the results from both firms were further condensed in a graph to assess what are the most important factors for CPFR in Sweden, from the perspective of the case firms, active in the manufacturing sector and what do these mean from a Swedish perspective.

3.6. Research quality and trustworthiness

Due to the inquisitive nature of scientific research, several criteria need to be met for the study to maintain its research quality throughout and, evidently, the quality of the knowledge that can be gained at the end.

Among some of the prerequisites of high research quality are transparency, disclosing and giving reason to why certain methods were chosen and what the effects of such decisions might have on the research, and having a systematic and thorough approach to the study (Easterby-Smith et al., 2015), evidencing the usefulness and validity of the results (Maxwell, 2013).

In addition, for qualitative research, it is important to be objective throughout the data gathering and analysis processes to avoid bias and skew the results of the study (Easterby-Smith et al., 2015; Maxwell, 2013). For this study, bias was managed through the use of two researchers, to manage any interview, or analysis biases (Easterby-Smith et al., 2015).
It can be stated that the narrative of this thesis follows these principles as best as possible, disclosing what theories, concepts, and research methods were used, all the while evidencing the impact that they have on the quality of the study.

Based on R. Kumar (2011), four criteria are identified as being important in determining the overall trustworthiness of the qualitative research: credibility, transferability, dependability and confirmability.

3.6.1. Credibility

Based on Maxwell (2013), rich data derived from interviews is a criterion that enables validity and credibility of the research, by using multiple data sources. The interviews conducted provided a large amount of data, as most of the discussions delved into various areas in relation to the research purpose, allowing better results. Due to the structured format of the interview guide, multiple views on the topic at hand were obtained during the interviews, which allowed the researchers to obtain more a more accurate picture of the phenomena by using the same procedure on all respondents.

Another important element that can enhance credibility is the use of a multiple case study approach, which enables the obtaining of better evidence and replicability of results (Saunders et al., 2016); During the study, the same data gathering procedures were applied on both case study firms, in terms of questions and processes, to obtain stronger results that can then be replicated with more accuracy.

3.6.2. Transferability

One notable aspect in terms of transferability is the academic discussion in relation to case studies. While this study focuses on a multiple case study, to allow better results, it does however, have several weaknesses. Among the biggest, is the issue of allowing other studies to replicate the same result and allow generalisation (Easterby-Smith et al., 2015). Positivistic researchers denounce the usefulness of such a method due to the lack of replicability, while qualitative researchers support it as it allows theory-building and transferability can be achieved through factors identified in the research (ibid.).

While this study has a difficulty in providing transferability of results, due to the very specific nature of the topic, the specific characteristics of the studied case firms and studied industry/country, however, the detailed description of the results can provide useful insight and allow for further theory building or testing, as it focuses on the most important factors for CPFR implementation in Sweden, which in turn allows other researchers to use the findings, categories, ideas and factors evidenced in this study for further scientific inquiry in Sweden.
3.6.3. Dependability

R. Kumar (2011) evidences that in qualitative research, dependability is linked with the transparency in which researchers document their studies. As such, in this research, we have attempted to document in detail every aspect in relation to theories, methods used, data gathering and analysis procedures that can be relevant for future researchers attempting to inquire in the same topic.

3.6.4. Confirmability

This aspect relates to the degree of the results from this study to be further confirmed or infirmed by others through following the same steps as documented here (R. Kumar, 2011). In this regard, the detailed description of the methods used, the usage of a semi-structured interview format for an exploratory study, combined with a multiple case study where the same format was used for both cases should allow for a similar result if this research were to be undertaken again.

3.7. Ethical considerations in research

Due to having direct exposure to activities, documentation and procedures at the case firms, several overruling principles must be enforced during this academic research. Bryman and Bell (2011) present four ethical principles:

a) Not doing harm to participants

In this regard, during the interviews, the researchers will not attempt to force interviewees to divulge information that they would normally not be allowed to divulge, thus, affecting their future career prospects. In addition, the offer of anonymity will be provided to the interviewees, to allow shielding their responses from any potential backlashes from other personnel inside or outside the company.

b) Lack of informed consent

For our particular case, the research topic will be disclosed, along with obtaining relevant access in order to complete the study. At the same time, research information will not be shared with the participants, to ensure unbiased and truthful results.

In addition, a pre-interview preparation was necessary by providing each respondent with a quick general overview of the concept and topic that is studied; this was done due to the fact that most, if not all of the respondents, where not familiar with such academic concepts, and initial help was necessary for them to focus on the topic at hand.
c) Invasion of privacy

Before each interview, the informants will be asked if they desire to keep their identity anonymous, and the interview recordings and additional data will not be shared with any party not part of the research, while disposing of it at the end of the research. In addition, interviewees are being given the opportunity to access the interview materials and the final report, if requested.

d) Deception

During this research, no deceptive schemes are to be used, focusing on the topic at hand, and no other hidden topics, communicating this to the company’s leadership and obtaining the necessary access to collect data on this topic.
4. Empirical findings

In this part we provide a short description of the case companies that took part in our research. Afterwards, we present the empirical findings collected from the field related to our purpose that will later on form the backbone of our analysis and results.

The empirical findings in this chapter are presented via the content analysis method, by providing quotes and graphs that determine the importance of implementation factors through calculating the weight of categories per each factor. By determining the underlying aspects of each factor (the categories), the degree of importance that each factor has can be calculated, allowing the researchers to discover which are the most important (crucial) for CPFR implementations in Sweden from the perspective of the case firms. This aspect is covered in Chapter 3, “3.5.1. Reaching the results (analysis procedure)”.

4.1. Background and description of case companies

Below we will shortly describe the companies that were part of the empirical gathering process for this thesis. As mentioned before, the research method will be a multiple case study approach, dealing with results gathered from data collected through interviews from employees with the roles in supply chain managers and other related experts of these two companies.

4.1.1. Company Y

The first company is a manufacturing firm that produces various items for the medical sector. In Sweden, they are active in two markets, medical and pharmaceutical. The medical market revolves around hospitals, providing medical tools and equipment, while for the pharmacies, drugs and other miscellaneous items.

The Swedish market is dominated by a tendering system: it relates to firstly presenting their offer (products and services) to customers (hospitals, pharmacies), by applying for the tendering process, and then, being accepted for initial discussions, called hearings, where they discuss with reference groups from each county in Sweden (comprised out of purchasers and material consultants); two months after these discussions the proposal agreements are sent in for approval, where the company needs to comply with what kind of products, volumes, quality, and delivery times they need to fulfil.

If the company does not deliver on time, hefty penalty fees by the customer are imposed. To ensure that the deadlines are not missed, the firm buys products from the competitors at a premium price to cover for the missing products and deliver on time, or, alternatively, provide the customers with other products that are similar in function, if they agree. The county councils have the right to cancel the tenders if the company underperforms, and all the other municipalities in Sweden also have the freedom to also cancel if the company...
fails in one, or multiple counties. The standard lead time imposed by the customer is 3 to 5 days, with no negotiation terms.

The company’s suppliers are the other sister firms, part of the group; these suppliers are manufacturing firms located in Europe, that produce various products, from which these are distributed to each market, worldwide.

They make use of a single central depot in southern Sweden, from where the products are shipped throughout Sweden, Norway, and Denmark. Most of the products at the central depot are, small, in large quantities and with low value. The high value products are shipped from the main factories and central warehouses in Germany.

In terms of IT capabilities, these are dictated from the headquarters and are standard worldwide. They make use of SAP enterprise resource planning system (“ERP”), with modules to enhance it; for planning and forecasting, they make use of the “Exact” module. Currently, they have an ongoing EDI project to allow their customers to place electronic orders instead of manual orders via traditional communication channels. In addition, they have a VMI initiative set in place with their suppliers (part of the group); they control the replenishing process, based on forecasts and constant communication between them and the firm in Sweden.

When it comes to planning, the firm in Sweden creates one major production plan every year in August, for the next year. This plan is sent out to headquarters. In terms of forecasting, this is done monthly: they make use of automated forecasting processes via the ERP, based on historical sales data, and tendering contracts data (new and old). The forecasting is also done manually when there are issues, such as bottlenecks in production (where their affiliated production plants are at full capacity), sudden requests from the customers, or other unforeseen issues. This is also done for focused products, critical products that require constant monitoring (syringes, and other products of high demand). The ERP system allows for alerts when there are discrepancies between forecast and demand, where manual adjustments are necessary.

In terms of collaboration, the supply chain, sales and marketing teams in Sweden constantly communicate with their suppliers when bottlenecks ensue, sending this information to their customers, providing back order logs, and dealing with late deliveries, and any queries from the customer’s side. However, most of the communication process between the firm and the customers is done via traditional channels, mostly e-mails, phone, and very rarely meetings. While the firm has EDI to simplify the ordering process for the customer, the collaboration overall with the customer is rather limited, the company having more of a reactive approach, having the customers contact them when there are issues.

When it comes to key performance indicators, the company is monitored and analysed by the customers based on delivery performance. Since the company’s production capacity
is limited, they have constant bottlenecks, which can affect the lead times; this effect is also enhanced by the Swedish market, as it is considered rather small, even if the margins are high; as such, more focus is placed on larger markets. As mentioned in the beginning, high penalties can be reached if they fail to deliver on time.

In addition, for the transportation of goods from the warehouse in southern Sweden to the various customers in the country, they employ a local transportation firm as a carrier; while the firm does not have any key performance indicators for them, there are issues in terms of transport time and delivery quality, with damaged goods reaching the customers. In this sense, the logistics team also has a customer support function, where they monitor and investigate the complaints, and discuss them with the transportation firm, to further improve the process.

### 4.1.2. Company X

Company X is a manufacturing company, specialized in the production of plastics and packaging products. They have a presence in Western Europe, Scandinavia, and other parts of the world.

In terms of supply chain partners, they use several suppliers for each type of product, having more than two dozen suppliers, at least two per each required category, such as carton boxes, carton roll tubes, wooden pallets and plastic pellets needed for production and shipping. Most of the suppliers that they make use of are local to Sweden; others are in Central Europe, or other countries such as Spain (for the plastic pellets). In terms of customers, the most important ones are in Sweden, Norway, Germany, Australia, New Zealand, and the U.K, among others. The standard lead time for customers is 4 weeks (from production to delivery).

In terms of IT capabilities, the company makes use of “Movex” ERP to manage inventory, planning, forecasting, and organization. It is evidenced that their main ERP system is lacking in capabilities but have additional auxiliary systems to help them integrate their activity, in terms of automatic transportation order planning, or customer electronic ordering process that links with the main ERP system. Except for the larger customers, where orders are electronic, for suppliers and smaller customers these are done manually through e-mails.

The planning and forecasting activities are structured as follows: the production planning is computed based on the necessary items/materials, and communicated to material planers; in turn, they create a monthly forecast (always one month ahead of time), and afterwards, the information is sent to the purchasing department where orders are placed to suppliers; the order confirmation is received, and delivery dates are set (several deliveries a month for each type of material are necessary). For plastic pellets (raw material) or other products from suppliers outside of Sweden, these are shipped via freighters to Gothenburg port, afterwards via road carriers to the production plant. The
usual lead time for material receiving is 2 to 3 weeks. The forecasting is mostly based on historical data, yearly sales, and it is highly dependent on human input - it is made and adjusted manually, as there is a high volatility in production and planning from one period to the next, which requires constant monitoring.

Collaboration between other supply chain partners is mixed, having strong, long-term relationships only with the biggest customers, with stock purchase agreements set in place; they also share planning, forecasting, in terms of quality and volumes, and future developments in terms of demand through several meetings each year (such as customers from Norway). In addition, X has dedicated key account managers to maintain good relationships with these customers, dedicated pricing specialists, and other experts related to products to ensure long-term collaboration, through added-value services in the form of support and consultancy.

A similar approach is also used for the larger suppliers, where they make use of consignment, safety stock at the supplier’s warehouse for the carton boxes and carton roll products that X require, and they have weekly meetings, regarding coordination, deliveries, and any delays or issues. Through this approach the standard lead time is shortened from 2 weeks to 1 week. Apart from these, the collaboration with smaller customers and suppliers is rather limited, revolving around traditional communication channels, e-mail, phone calls, and occasional meetings.

4.2. Factors of implementation

Further below, the empirical findings will be split based on the factors identified in the literature, evidencing the main categories that contribute to each individual factor; individual case and cross-case discussions ensue. Towards the end, the factors will be discussed based on their weight/criticality, evidenced earlier, ending with barriers of implementations and reasons for or against potential implementations.

4.2.1. Trust and relationship

Company Y

In terms of relationships, these can be grouped into five (5) major categories: (1) improving communication, (2) cooperation, (3) mutual understanding, (4) stronger service levels, and (5) focus on key customers. Among these, the first three are the most important. Please see Figure 6 below for a graphical representation.

Communication (count: 23) is seen as the most important category. Here, evidence suggests that the staff and the company are not very proactive in daily communications with the customers; they adopt a reactive stance, waiting for the customer to call and inquire on late deliveries or other issues, thus, creating mistrust from the customer’s perspective, due to breaking the promise that the company can deliver as agreed upon.
The interviews discuss the fact that due to the nature of their production process, they have a problem in communicating correct information to the customers for fear of showing weaknesses in their business, due to bottlenecks that affect their lead times. Admittedly, projects are underway to improve the communication effort.

“We don’t tell the customer beforehand if we can’t deliver so we wait until we get the order…and then if it’s an important item…we tell the customer…or, actually in some cases we don’t even give them a confirmation”

When it comes to cooperation (count: 16), the company has issues in improving the cooperation effort between them, and their partners (customers); this is due to not being able to deliver on time, which causes difficulties in having long-term and trustful relations. Also, certain interviewees consider that a more active role needs to be taken by the staff and be more engaged in relations with their partners, in terms of communication, attending meetings, and providing insight regarding the products, and processes that lead to the deliveries.

“...because we want a relationship regarding current or future products... [and then] absolutely...I think that it is something that can be improved even through it is [also] important to talk [about it] ...it is not only [about] sitting in office and dealing with all things in office ...because this is [a practice that belongs in the] past...”.

The third category relates to having a mutual understanding (count: 15) with the customer. Here, better understanding of each party’s needs can allow better planning, thus, fostering better relations and improved delivery times - “you know exactly how much the customer wants and you know how to plan”.

The last two categories related to stronger service levels (count: 3) and focusing on key customers (count: 3) are less present in the data. For the service levels, there are indicators that the firm is working towards a new alert monitor to track the purchases and allow the employees to provide addition support to the customers – “best practice [techniques] [to provide support] for the customers”.

For the key customers, it is stated that CPFR should first and foremost focus on the most important customers that they have in important areas such as Stockholm or Gothenburg - “like Stockholm and Västra Götaland [municipalities in Sweden] are the most important counties because they are dealing with more than 40% of the total area sold”
Company X

From company X perspective, seven (7) categories were identified: (1) cooperation, (2) maintaining current relationship status-quo, (3) long-term relationships, (4) focus on key partners, (5) local suppliers, (6) communication, (7) price factor. Please see Figure 7 below for a graphical representation.

The most important category is related to cooperation (count: 11); great emphasis is placed on this category, as they consider essential to have good cooperation with their partners, as they can benefit from their knowledge, understanding, and can easily resolve any issues. In terms of customers, X provides added services, in the form of access to specialists related to pricing and product knowledge; these specialists are active worldwide.

“One of our main, when we look at the [mission statement] ...our strategic [focus] is long-term, [to be] reliable...so for us to have a long-term relationship...is of course [important]... [it can be] a big issue with the customers but also need to have it with the suppliers, that we don’t change just because we can get a little bit cheaper”

Regarding the status-quo category (count: 6), there is a unanimous attitude for maintaining the current relationship processes with the partners, maintaining the status quo, and not attempting to change them. It is argued that there is no benefit of changing the very good relationships that they have with customers and suppliers as of right now. This can be connected with the 6th category, which points out that the firm is interested in local partners, and not international ones. This can be an explanation of the very good relationships and trust between the firm and their suppliers - “I don’t see the reason why we should change because we do have good relationships today”.

Figure 6 Y relationship factors (Own Analysis)
The third most important category relates to long-term relationships (count: 5), where it is argued that it is much easier for the firm to maintain close relations with the partners they currently have, towards long-term mutual gain. It is stated that they have several partners that they provide help to and obtain help from, due to the very good relations that they have, and in turn, they maintain a more flexible approach to deadlines and minor errors – “it's not very easy just to replace everyday with someone else”. However, the data suggests that such strong long-relationships occur only for the local suppliers and not the international ones.

Focusing on key partners (count: 4) is viewed as mildly important. The interviewees specify that focusing on the most important partners is desirable, especially in the beginning, as it should not be done for all of them.

When it comes to local suppliers (count: 4), the discourse focuses on the fact that it is much easier for them to communicate and maintain contact with local suppliers instead of international ones – “I think it would be easier to have [an implementation] ...with local suppliers”.

In terms of communication (3), they consider that working more closely can better improve the relationship and having mutual benefits through understanding each other’s activities - “...if you visit others and see how they handle daily work...”.

The last category revolves around the price factor (count:3) that can affect the relationships with their suppliers. It is evidenced that even though they focus on relationship building, for raw materials price is an important factor when it comes to relationships, as it affects their overall costs for production and selling price – “raw material price plays a very important part [of] the final product price”.

![Figure 7 X relationship factors (Own Analysis)](image-url)
Based on the empirics above, we can observe a strong focus on the cooperation category, as a factor for maintaining, improving, and developing relationships with partners for future developments. While company Y lacks in proactivity and considers communication among the most important factors to influence implementation, company X focuses primarily on cooperation with their current partners towards long-term mutual relationships. Both companies consider that relationships are based on communicating and understanding the activities of their partners and vice-versa.

4.2.2. IT capabilities

Company Y

During the interviews with Y, eight (8) main categories were identified related to IT capabilities, such as (1) resources necessary for implementation, in terms of time, knowledge, costs and process changes, (2) allowing visibility and transparency for their supply chain partners, (3) the overall performance of the system, (4) compatibility between partners, (5) being flexible and allowing customizability, (6) having the capability to share information, (7) being able to enhance service levels for the customers, and (8) being simple enough to be used by staff. Please see Figure 8 below for a graphical representation.

The most crucial factor is related to the time, processes and resources (count: 12) required to change, to adopt or align the IT systems with those of suppliers or customers. This category has the highest level. Some of the sub-categories in relation to this category are related to time requirements, from both the customers and firm, issues already present with other IT related-projects underway, and knowledge requirements – more staff capable of such changes. An example of quote regarding this category can be seen below:

“…that the person is working with this, they have the knowledge about it and what’s needed and…that’s why we’re changing now…but I think that the current system is maybe…will not make the company reach its [full] potential”

Apart from these, there are also individual sub-categories that are of importance in the discourse related to the category, such as security issues, since the information shared are of high sensitivity, as most of the time private patient’s details are also transmitted due to healthcare policies set in place.

“…we are in a business where a lot of the customers we have - the pharmacies - sometimes the products are ordered by…..using patient names so if you know about [that] it would be difficult to handle it in [the] system…it would be practically official between customer, us and back to headquarters… it would need to be transparent, but then again [there] would be issues with other things coming through, so the IT system needs to be secured so that’s an additional cost [to consider]...”.
The second category, visibility and transparency (count: 8), revolves around the high impact that the business activity has a high impact on society – “depending on life…. [it is] life threatening”. They consider that the firm is not very transparent today, and that there are concerns whether improved visibility will be a threat or opportunity of Y.

Performance (count: 6) is the third category. It is evidenced that the current system they employ is viewed as “old”, inefficient and “limited”, and that it’s impacting the overall performance of the activity.

The 4th and 5th categories are connected and relate to compatibility (count: 5) and customizability (count: 5). They are also related to the third category, performance. The discourse focuses on the fact that currently, the firm is compatible only with only a handful of partners, and that more connectivity would be desired, as well as more flexibility in customizing the system to allow better performance – more freedom to customize the system and their modules.

The 6th category is about being able to share information (count: 5). Information sharing currently is mixed, only sharing information with larger, more important partners. Certain individuals consider that is it a threat for the firm to share information with their partners – “bad thing to share that kind of information” – while others consider that it is important to provide them access to smoothen the flow of the business.

“It helps a lot…I believe that they will no [longer] take our time to phone us and request the information that they can find by themselves if the system gives them [the] information”.

The 7th category revolves around with the end-goal of improving service level (count: 4) by having a more flexible, adaptive system that can be tailored for multiple types of customer requests – “[the system] generates …what the customer wants to see so they can get the information they need”.

The last category, simplicity (count: 4), is highly connected to the previous ones, in terms of flexibility, compatibility and performance. It has a low impact overall. However, it is considered that the IT system should be easy to use by the employees, and not require long training sessions.
Company X

When it comes to company X, four main categories were identified: (1) information sharing, (2) implementation time/processes/resources, (3) performance, (4) simplicity. Please see Figure 9 below for a graphical representation.

It is important to note that the two most important categories here have a negative relation, as in, they are unwilling to modify their IT systems, and they are afraid of sharing electronic information. Thus, the most important category out of all is information sharing (count: 10); however, several sub-categories that are part of this bigger category are related to a fear of sharing information, while other are related to having no incentives to share information. In terms of fears of sharing information, the interviewees state that the firm does not want to risk leaking sensitive information about themselves, their customers or other aspects related to business. This can be quoted below.

“We don’t want to share information, I mean, we have to make sure that they cannot find out anything about the customer and so on... Because we have our recipe that we don’t share with it our suppliers and we don’t want to tell the supplier about this...”

Apart from this, the sub-category related to incentives to share information, can be supported by the fact that their production, planning and forecasting are subjected to constant changes (as evidenced at 4.1.), this creates a barrier in sharing information. In addition, their customers and suppliers do not make use of advanced IT systems and neither the firm, information sharing occurring via traditional channels – e-mails, or phone calls.

“...it’s quite tricky to give them something in advance when we don’t know ourselves when the order is coming, um...and in those cases, the suppliers cannot prepare anything either because they’re not producing anything until they have a firm order”
The second most important category is related to implementation time/process/resources (count: 6); here, the direction is also inverted (as specified above), as they are unwilling to make change to IT systems, and a lack of resource dedication due to a myopic focus on production capabilities more than anything else – the reason stated in the discourse is that the firm is “selling-oriented” and considers that IT cannot improve the current relations. Certain respondents show fear of trusting IT systems to automatically forecast, due to volatile production, thus, creating the possibility of issues occurring; as such, they consider that manual planning, forecasting is the most suitable way.

“when it comes to [the] IT system - when we had the high-base storage - it’s a lot more difficult to get the money because how you make it pay off a high-base storage, how you make it pay-off a better relationship with the supplier, so I would say it’s quite difficult, how do we prove the benefits, how can we see the money”.

The last two categories, IT system performance (count: 1) and simplicity (count: 1) have a very low impact rate, mostly revolving around how easy the system is to adapt to and allowing better compatibility and more efficiency than the current systems that they possess. No other reasons were provided for these categories.

Figure 9 X IT factors (Own Analysis)

Cross-analysis Y vs X

When it comes to comparing the IT factors critical to success, we can present several differences between the two companies. The main difference is related to the fact that Y has more experience and resources in relation to IT systems and their implementation, due to their wider international presence than X. Thus, Y partners are more international than X partners, where most are present in Sweden.
However, a very striking difference can be observed from above: even if Y has a greater risk of losing sensitive information (with long lasting repercussions) during a CPFR implementation (via connecting the systems between supply chain partners), they are still willing to improve visibility for their customers and service levels, sacrificing costs, knowledge and time, if necessary. This is in stark contrast with X, where there is a strong fear of sharing electronic information with their suppliers, even if it would improve the relationship. One of the main reasons for this fear, based on discussions, could be that they are reluctant to share the different recipes that they have created, not to allow the suppliers to gain advantage, in terms of prices and power.

4.2.3. Goal alignment, KPI, costs

Company Y

In relation to this topic, 6 categories were identified: (1) partnership alignment, (2) performance measurement, (3) implementation cost, (4) mutual benefit, (5) partner’s commitment, (6) detection of issues during the implementation. The most important categories here are related to having aligned purpose/partnership, being able to measure the performance of the implementation, and the associated costs. Please see Figure 10 below for a graphical representation.

In terms of having an aligned partnership (count: 16), the interviewees stated for example, that it is important to have the “same idea what the end result it would be…”, and to be able to remove any barriers that might stand between the partners, blocking the efficiency of the partnership. In addition, most partners have processes already set in place, which will require to re-align and customize these for the company, something that most are not willing to commit so easily for a single supplier.

“Cooperation [with] the customers, because in the end we need to find barriers, take-away barriers between the supplier and the customer to find open ways…”

The second major category is related to being able to measure, to quantify performance (count: 15); this is connected to the high demands of the medical and pharmaceutical sector, where delays are penalized. Thus, accuracy, and high-performance activity are identified as major factors in their relationships with their partners (customers) and in a CPFR implementation.

The third category is directed towards implementation costs (count: 12); here, the interviewees specify that an analysis must be made to quantify the benefits that can be obtained from such an initiative, to ensure that it is worth the resources of the firm.

“…can't cost too much because in the end we need to earn money…the margin can't be really too low”
Mutual benefits (count: 9) are related to the fourth category. It revolves around using new technologies and concepts to provide efficiency for both partners, to improve and grow together; this allows for loyalty and trust among each supply chain partner – “you understand each other more and you share more, you get to see the bigger picture”.

Partner’s commitment (count: 6) is connected with the previous category, and translates to being able to share expertise, providing an investment towards the “positive side”, to integrate, and increase the loyalty and trust with the customer, through their commitment during the implementation.

The last category is detection of issues during the implementation (count: 3), to be able to measure the progress and have the capability to detect issues during the whole endeavour – “because you can really measure what the problem lies in, if there are problems, and also make it better”.

![Figure 10 Y goal alignment, KPI's, costs (Own Analysis)](image)

Company X

For company X, 4 major categories were identified: (1) partnership alignment, (2) implementation cost, (3) performance measurement, (4) partner’s commitment. Please see Figure 11 below for a graphical representation.

The most important categories are related to having aligned goals with the partners (count: 10) and being mindful of costs (count: 9). For the first one, the respondents consider that having good communication with suppliers, benefiting together from the initiative, and knowing the partners more are of importance for the success of the implementation.

“I'm sure it's quite some work for them as well, so of course, we need to have common goals why we are doing it...”
On the other hand, costs related to a new initiative (CPFR) ranked high; the major concern of the respondents is in terms of the overall expensive nature of such a project, and difficulty in quantifying the return of investment of it. This is related to the myopic view on focusing the firm’s resources on production, as specified during the IT part. Among the most critical aspect is “seeing” the benefits first-hand before even considering a decision to implement.

“We need to prove and show that we have the benefit and most likely have to show it in money [towards management] ...”

Performance measurement (count: 4) is the third category. Here, mostly the performance of deliveries is discussed, in terms of improving the overall efficiency of the process through such an implementation. No other reasons for measuring the implementation process are provided.

The last category is partner’s commitment (count: 3) before and during the implementation process. It revolves around giving their partners assurance that the concept is beneficial for them, and not a waste time and resources – “because the supplier also needs to see the benefit otherwise [they will not commit]”.

![Figure 11 X goal alignment, KPI’s, costs (Own Analysis)](image)

Cross-analysis Y vs X

When we compare the results between the two firms, we can evidence common points, related to aligned purpose and view, and the overall costs related to implementation. However, there are differences.
The biggest are related to a lack of consideration from X of mutual benefits that can be obtained from the partnership, and the capability to detect issues, problems during implementation. The capability of their partners to commit to such an initiative and the use of performance indicators to measure the progress also score low. One reason can be related to the empirics from the previous points, where X considered long-term partnerships very high, having high trust, thus, they could consider that their partners would be ready to commit if such a project would be initiated.

4.2.4. Top management support

Company Y

In terms of management, 6 major categories were identified: (1) initiated by top management, (2) employee empowerment to bring improvements, (3) management support, (4) boundaries set by management in relation to implementation. Please see Figure 12 below for a graphical representation.

The most important category identified during discussions is the one related to top management-initiated change (count: 20). Most of the strategic decisions of the company in Sweden are made at the headquarters; in addition, most of the respondents consider that change should be initiated by those in senior positions “higher-ups”, and not start with any ideas from the bottom of the organisational hierarchy.

“...because you can't...if you're working in operation...and tell the higher ups this is better for them, they'll feel like...who are you to tell me what's better for me...”

The second most important category of discussion is related to employee empowerment (count: 10); most respondents consider that they have the freedom and flexibility to bring new improvements and ideas to their managers/seniors, however, any serious improvement needs confirmation by the management, through the ranks, from the line manager to top management.

“It's both...depending on the situation...sometimes I find out something or other people in my group and others think that this is something that we should do and go to management and sell our idea and if they think the same then we go for it”

In terms of management support (count: 10), most of the discourse of the respondents is focusing on requesting help from management to deal with any resistance from other employees, and to provide meaning and show the benefits of this implementation – “...those are the ones who's going to help you ensure that the resistance will move away...”

There is also a distinct category related to boundaries that management needs to put into place (count: 5), to ensure that the employees and the partners do not try to revert to the old processes, undermining the implementation effort due to complacency –
“...commitment would be easy to sidestep and say we have a working process already let’s go back to that one...”

Figure 12 Y management factors (Own Analysis)

Company X

For company X, three major categories were identified: (1) top management to initiate the implementation, (2) employee empowerment, (3) management support to help through the implementation. Please see Figure 13 below for a graphical representation.

The most important category is related to top management initiating the change (count: 10). It is evidenced by the respondents that major changes that require significant amounts of resources need to go through top management approval; apart from this, all respondents consider that top management should be the initiators.

“I cannot go above the budget without having the vice-president to accept, and then the management team needs to be on the same...Have the same opinion as me”

The second category in terms of importance is employee empowerment (count: 7). The respondents agree that the company allows them to come up with improvements and ideas, and implement them in their daily activities, if these are under the provided budget and the impact on financial resources is limited – “...if we in my department see a benefit or something then it's up to us to work with it...”

The last category is related to management support (count: 6). The respondents consider that if they have improvements, first, they need to have the support of the line managers to advance to more senior level managers, or, provide help for the smaller improvements that have a minor impact on the budget – “we need to have the purchasing manager with us, because he's the one with the responsibility of the partnership with the suppliers”.

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When we compare the results of the two companies, we can observe that for both the major categories are related to management and having top management taking initiative, having freedom to bring new ideas, and having supportive management to help them with the implementation.

The main difference between the two companies is that for company Y they are restricted in any implementation/initiatives, as everything must be controlled by their mother company. One respondent discloses the fact that the mother company is very cost-conscious, which can impact the employee empowerment in Sweden. On the other hand, the limiting factor for company X is the management mindset and their financial resources; even though the employees are empowered to improve, these must be done in a very cost-efficient manner. As such, the overruling factors are more or less similar for both companies.

4.2.5. Cross-functional communication

Company Y

For the communication between different departments factor, 5 categories were identified: (1) cross-functional alignment, (2) lack of integration with HQ, (3) transparent communication, (4) lack of commitment from departments, and (5) to avoid firefighting. Please see Figure 14 below for a graphical representation.

The first three categories rank very high. Cross-functional alignment (count: 17) is considered important in having the same mind-set and “thinking” between the different departments during daily work, supply chain, sales and marketing. Some respondents consider that the supply chain function is not active in providing customer support, and
as such, the company needs to be able to share knowledge and capabilities between each function. This category is considered critical in order to ensure success of any implementation project.

“I can't really say how it should work if we do not have the same thinking, when we are working like we ['ve] done [here]…up in the Nordic countries...”

The second most important category relates to issues in communicating and obtaining correct information from headquarters (count: 17). All respondents consider that this lack of integration is damaging the relations with the customers and the overall performance of the firm, due to a lack of concise information in terms of planning, production, and bottlenecks. This information that they require is viewed as critical to continuous business performance in Sweden. The staff in Sweden consider that the headquarters neglect their attempts to improve communication and overall performance of the firm - “...makes us vulnerable because we don't even know that, and we need to tell our customers that we've changed our products...”

The third category revolves around transparent communication between different departments (count: 16). The respondents consider it very important to have constant communication and interaction between the distinct functions to be able to resolve issues related to demands, planning, forecasting, and on-time deliveries. However, they consider that there is still room for improvement, in terms of the processes that allow transparent communication – several projects are underway to improve transparency.

“I guess we have...clear communication...it's...very easy to give a call o whatever it's quite transparent but in terms of processes there's still a lot of room for improvement”

The last two categories focus on resolving a lack of commitment from departments (count: 3) to improve and avoiding firefighting (count: 2). Several respondents consider that several departments (sales department) have responded negatively to any attempts to smoothen the communication through new standardized processes such as “IBP” – Integrated Business Planning. The reason for not committing was time, as it was considered that it takes too long. However, this is related to the last category, where it is pointed out that due to issues in communicating with the headquarters, difficulties in managing tight deadlines, these improvement efforts are for the sake of avoiding “firefighting” through more standardized processes and allow employees to have a more streamlined way of working.
Company X

For company X, two major categories were identified: (1) transparent communication, (2) cross-functional alignment. Both are equally important. Please see Figure 15 below for a graphical representation.

Regarding transparent communication (count: 12), the respondents state that this criterion is the most important for the performance of the firm and implementation of projects, and ensuring that they coordinate during planning, forecasting, production, goods receiving and shipping - “...so, it is very important that we have good communication between the different departments...”

For the second category (count: 10), alignment between other functions, the respondents consider it very important for them to have clear cooperation, as most of the time their work is dependent on the work of other employees from all the other departments, otherwise, a slowdown in the process will occur and the production will be affected.

“How we should produce is based on the forecast, and the forecast is made by the sales team, so we need to have...collaborate with the other departments”.

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**Figure 14 Y cross-functional factors (Own Analysis)**

![Y Cross-functional factors](image)
Cross-analysis Y vs X

If we compare the empirics of both companies, we can observe that having transparent communication and having aligned mindsets between the departments are crucial factors for their business activity and can also affect implementations. It is argued that without these, the implementation process will not be possible.

One divergent aspect is related to Y, where they emphasise the need to have clearer communication channels with their mother company, to be given accurate information so they can use it to further support their customers. A lack of commitment can also be observed, as improvement projects were declined in the past and had to be restarted in the present. The respondents also consider that better processes of aligning the departments are necessary to improve their activity due to the demanding healthcare industry.

4.2.6. Change management

Company Y

In terms of change management, 4 categories were identified: (1) openness to change, (2) company’s innovation factor, (3) commitment from staff and management, (4) capacity to change. Please see Figure 16 below for a graphical representation.

Being open to change (count: 18) is identified as the most important category; the discourses relate to the ability of current staff to change from one position to another, and adapt to new processes fairly quickly, allowing them to accept change much easier – in that sense, the staff is flexible. The staff is open to change, not being afraid to work with new projects and processes. It is also mentioned that management must also be open and committed to change.
“...but in the whole company I don't think it's a problem...in new thinking”

The company’s innovation factor (count: 11) is also an important category; it relates to the number and degree of changes occurring in the company. The respondents declare that there are multiple projects to improve systems, processes, roles and way of doing things. They state that the company’s motto is related to innovation, sharing expertise and improving the industry. Thus, working in an environment that constantly changes is beneficial in removing and resistance to change.

“I don't see that an issue as the company stands for innovation and sharing expertise so as long as it's beneficial for the company... [the concept will be considered]”

Apart from these, having the capacity to change (count: 8) and having committed staff (count: 8) are also important categories. As specified above, the company is continuously improving, having processes, roles, and teams set in place, which provides the capacity to be able have such changes inside the organisation.

In addition, the respondents consider that having willingness, capacity and commitment to make the changes, from staff and management, are also important factors in allowing changes to take place inside the organisation.

“[if] you [are] not really committed to the change or new process and it will not work...then it will just...end up in nothing [fail] I think”

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**Figure 16 Y change management (Own Analysis)**
Company X

For company X, 4 categories were identified, identical to company Y. Please see Figure 17 below for a graphical representation.

The company’s innovation factor (count: 6) and openness to change (count: 6) are equally important. The responders show that the company is continuously developing, with new investments, projects and processes. The innovation factor not only stems from improving the production processes but through coming up with new innovative products and post-sale services.

Because of the constant investments and projects, the employees are open to change, and consider that it is important improve as much as possible and be open to such changes. The respondents consider that perhaps the changes are occurring too fast for them to actually keep up with – “...how can we just make it a little bit better [today] because we have changed so much during the last 6 years”

Commitment (count: 5) is also a category that is important. The employees consider that they are compelled to “always have to find a more efficient way to work”, and to provide new ideas, and ways to improve their usual work. This is related to the last category, capacity to change (count: 4). As mentioned in the paragraph above, the employees are positive in the way the company adopts the changes, and how they are part of the innovative process.

Figure 17 X change management (Own Analysis)
Cross-analysis Y vs X

While comparing the empirics of both companies, we can observe that the factors evidenced from the interviews are similar. The importance is placed on the capability of changing, and the degree of openness and commitment from the staff.

While company X has high scores for all four categories, company Y focuses more on the openness to change category. Among the reasons related to this category, many respondents consider that time, additional manpower and alignment with the customer are necessary for implementation, as their time is already taxed by having to balance customer demands and production shortages, which can affect the overall degree of flexibility of the staff.

4.2.7. Criticality of the factors for implementation success

Company Y

As identified by several respondents from Y, all factors are important for a successful implementation. However, based on the data, some factors are more important than others. Please see Figure 18 below for a graphical representation. Below the factors will be presented based on their importance, evidencing the categories that impact them.

**Goal alignment, KPI and costs** (count: 61): among the most crucial factors. Aligned goals are important due to the highly regulated healthcare industry, where most of the power is held by the customer (hospitals and pharmacies), and where they have put in place their own processes related to supplier relationships which are common for all to ensure transparency. In addition, monitoring the progress of the implementation is imperative to maintain the goals in place. Apart from these, costs are also relevant, as concern is raised in terms of commitment from the customer’s side to support such a project financially. However, the interviewees state that Y has the capability to make the investment to ensure the future collaboration with the customers.

**Relationship and trust** (count: 60) This category revolves around obtaining the commitment from their supply chain partners to be part of an implementation effort. Due to issues in the past related to delivery performance, the firm needs to convince their customers of the mutual benefits that can be obtained from this effort. More proactivity in communicating and dealing with customer’s needs must be emphasised, as the firm today maintain a very reactive stance, only acting in case there are severe issues. Thus, long-term relationships and trust building through delivery performance are important for the success of an implementation.

**Cross-functional communication** (count: 55): the third most important factor. Here it is argued that all the departments of the company must take an active role in ensuring successful deliveries and customer support. Knowledge sharing, and constant communication are critical. Another critical aspect identified is the lack of cooperation
with different functions from the mother company. Incorrect, vague, and late information sharing impacts the performance of the firm; thus, firefighting is common for the firm in Sweden. Together, these affect future implementations through a lack of focus, time wastage, and lack of standardization.

**IT capabilities** (count: 49): the success of the implementation is closely related to the resources, knowledge, the degree of connectivity with partners (customers), and the capability to share information with one another. It is argued that IT connectivity between the partners will provide enhanced performance, while other respondents consider such a connectivity can be potentially dangerous, since the company has productivity bottlenecks, and this will place the firm in a “bad light”, creating the illusion of low quality of products and services. Security is another critical aspect for the industry in which they work with, due to sensitive information, and as such, additional resources are needed to ensure that there are no leakages.

**Change management** (count: 45): Openness to change is considered important. The more open and capable to change a company is, the more willing will be the employees to commit to the projects, to invest time, and commitment to ensure its completion. This is connected to the number of changes that occur frequently, processes are set in place, teams are created to work on different implementations; then, the employees will be more accustomed to accepting such changes, making it easier for the firm to innovate.

**Top management support** (count: 45): this category is related to having top management take the initiative. Y respondents consider that the mother company needs to initiate and support an implementation, due to high dependency of the Swedish firm on their mother company. While the respondents consider that they have enough freedom to start an implementation on their own with the customers, they still require top management approval and support. Another aspect evidenced is the need for management to set barriers to stop employees in reverting back to the old processes, due to complacency.
For company X, a big focus on relationship and trust, having aligned goals, KPI set in place, and cost management can be observed. A summary of the reasons supported by empirical findings can be provided below. Please see Figure 19 below for a graphical representation.

**Relationship and trust** (count: 36): this is the most crucial factor for company X. It revolves around maintaining and improving the already amiable relations that they have with their suppliers and customers. In this regard, long-term relationships are crucial for the performance of the firm, as they make use of good communication and cooperation between them and their partners to further the ties: for customers, they provide support, expertise, high quality, and communication while for suppliers they maintain constant communication and each party updates the other in relation to issues.

**Goal alignment, KPI, costs** (count: 26): the second most important factor. Here, the respondents consider that having a common goal is crucial, and that the partners undergo a process of knowing each other’s way of working, through visits, and sharing insight on processes. Another important aspect is related to costs; here, there is a short-sightedness on investments that only focus on machinery, since the return of investment can be easily calculated. It is considered that any other intangible benefits are hard to calculate and not critical for the business activity of the firm.

**Top management support** (count: 23): the third most important factor, as they must be the ones that need to take the initiative. This view is in line with the previous factor, as investments need to be ratified by management, and since any improvements that require significant resources need to be motivated, negotiations need to ensue to provide reason. The respondents also consider important to have the freedom to come up with ideas to
further improve the firm’s activity; they are free to do so, as long as the budget is not considerably affected. For small improvements, line management is important, with the respondents considering that they are very supportive at X.

**Cross-functional communication** (count: 22): here, transparency in internal communication are deemed as important. Since each individual is dependent on the work of another, thus, maintaining clear communications and cooperation are important for the overall performance of the firm. They make use of cross-functional skills to resolve any issues that their customers might have, and meetings with customers and/or suppliers are always comprised out of staff from various departments to ensure higher performance.

**Change management** (count: 21): the firm’s innovation factor and employee openness to change are seen as equally important. Since the firm is continuously investing in new production capabilities, new products to capture new markets, the employees feel obliged to maintain the status-quo, bringing new ideas and ways to further improve their work-related processes.

**IT capabilities** (count: 18): the IT capabilities are seen as a lesser factor for implementation. Firstly, sharing information is perceived to be dangerous, as the suppliers or other third-party actors could obtain sensitive information about their customers and their internal processes. Secondly, it is considered that the way they maintain their relations right now is more than adequate, and IT investments can affect performance and financing. However, it is considered the fact that a new ERP system would be necessary to further smoothen out the ordering process for the customers and allow more integration with them, and suppliers.

![Figure 19 X critical success factors (Own Analysis)](image-url)
4.2.8. Potential barriers against implementation

There are several potential barriers that can be identified for each company, each with the potential of influencing the start or success of the implementation.

Company Y

Commitment from partners (customers): one major impediment identified in the discourse is related to the dependency on the customer’s commitment. As evidenced earlier, each hospital, pharmacy, hub (depot), have their own processes set in place. The implementation is highly dependent on having the customer agree to favourable treatment of Y instead of other suppliers. Since Y has a history of problematic deliveries, and the strict nature of the industry, the customers must consider if this initiative is worth the investment (time, relationship, costs).

Knowledge and skills: another barrier is related to capabilities that are required to begin such an implementation. It is seen that IT requires knowledgeable individuals, having the necessary skills. The respondents also state that they are overtaxed at the moment in terms of work and projects, due to low employee numbers (in comparison with the activity) and external help might be required or having to recruit new staff.

Management: as previously stated, the company in Sweden is highly dependent on information, decision-making, and resources from the mother company. The issue was raised before in terms of lacking the freedom to make decisions that have a wider impact in relation to the scope of their activity.

Company X

Fear of sharing information: among the biggest barriers that can be noticed is the fear of sharing information to avoid any leakages in terms of sensitive information. While it is evidenced in the discourse that having good relationships is a very important factor, they are apprehensive of providing forecasting, inventory, planning information with suppliers. The biggest challenge is related to plastic pellets (raw material), as the firm has different recipes for producing plastic (different grades, thickness, quality) and they wish to keep such information away from their suppliers, in order for them not increase prices and gain power over the firm.

Management: another barrier is related to a short-sightedness in terms of decision-making, allocating resources only to enhance machine productivity and disregarding any other benefits that could be obtained through investing in intangible assets, such as IT capabilities; the reason why is that productivity is the only factor to be considered, which is exactly the opposite of an innovative driven culture discussed earlier.
4.2.9. Potential implementations of CPFR at the companies

During the interview discussions, mixed responses were provided regarding potential CPFR implementations with their supply chain partners, provided that both parties agree, and commitment is provided. Below, examples of implementation alternatives are provided.

Company Y

There are possibilities in implementing CPFR with several customers of Y. In this regard, the respondents consider that the firm can begin an initial process, working in parallel with their already set in place procedures, setting up the infrastructure to connect with the customer, and to align the internal procedures of both firms. This is to ensure that if issues appear, the firm is not at risk of failing the deliveries and disappointing the customers.

The targeted customers for implementation are the larger county hospitals or pharmacies in greater Stockholm area, or Gothenburg as these are the most profitable and have the highest demand in Sweden. Alternatively, other partners that can be targeted for implementation can be wholesalers that consolidate the merchandise and distribute it to various regions, as it would enable Y to make use of their extensive reach. Among the biggest challenge of the implementation process is related to planning and forecasting of the required goods; even though the customers have tender contracts with exact demands, these are highly volatile based on number of patients and illnesses – this requires a higher safety stock from Y which can affect holding stock, and production capacity from the plants. In addition, process changes are required to allow such a concept; however, these changes need approval and alignment with the customer.

Company X

The respondents consider that a CPFR implementation is possible with their supply chain partners: for key customers, where they already maintain a high level of integration (with high trust through joint planning), while for suppliers, they maintain strong relations only with the most important ones. In this regard, among the targeted partners for a potential implementation are key suppliers that are located in Sweden, mostly the ones providing cardboard, carton boxes, carton rolls, and other assorted products, for example.

The main reason the respondents consider that such an initiative with other suppliers is not feasible, such as the ones related to plastic pellets (raw material) which are global, and very large, is that it would be detrimental for X, due to vulnerabilities in terms of sharing information that could be used against them. For the customers, a CPFR implementation is possible, however, only after obtaining strong evidence that benefits can be gained, due to fear of breaking the current strong relationships.
4.2.10. Summary of the empirical results

Further below, we can summarize the empirical results of the study. The summary will be done at a condensed level, encompassing the most important elements of the empirical data.

As observed through the discussion, the factors that can impact potential CPFR implementations are interconnected; even though we have attempted to separate each element of discussion, some can and will spill over into another category or factor. This evidences the complexity and the overall difficulty of CPFR implementations, due to interdependency.

Thus, as we’ve seen, relationship and trust are critical in attempting to implement CPFR, as not only this is among the main goals of implementing the concept, but also due to requirements in terms of firms being able to collaborate and commit together in order to achieve successful implementations.

In this regard, goal alignment is also important, to ensure that both firms are at the same level of capabilities and strategic thinking. KPI’s are more than desirable to ensure no hidden issues appear during the implementation process. However, the implementation costs pose a problem, as the financial effort is significant; respondents from both firm evidence that feasibility studies must be done before even attempting such a project.

Cross-functional communication is in identified as important, not only for the implementation but to maintain high business performance levels, while top management must commit and provide all the support necessary for the employees to work on the project.

IT capabilities, while important in the literature, are seen in the empirical data as a heavy burden, risky and during certain points, not useful beyond the most basic necessities of the firms, as evidenced by X. The reasons for such responses are related to costs, high knowledge requirements and, as evidenced from firm X, good relationships and already set-up processes with their supply chain partners were achieved without investing heavily in IT systems.

Change management is seen as important, as a CPFR implementation requires large amounts of changes. However, both companies possess high levels of innovation, which from their perspective is not a significant issue if they are to implement the concept.

Respondents from both firms affirm that a future CPFR implementation is possible, albeit only with key customers and/or suppliers, by either a slow development of the project, or by having this project run in parallel with their current business processes. However, strong commitment from their partners is necessary first, and having access to personnel with the necessary experience and knowledge, all the while having top management to provide support throughout the endeavour. Thus, not an easy target to reach.
5. Analysis

This chapter focuses on analysing the empirical data presented in Chapter 4 from a theoretical perspective, based on the literature evidenced in Chapter 2. Each factor of the implementation is discussed, determining the level of connectivity between the empirics and available academic insight on the subject.

Based on the content analysis used in the previous chapter, the findings are compared with the literature to appraise the degree of connection of these results with the theory and overall theoretical implications. Afterwards, the results from both firms are further condensed in a graph to assess what are the most important factors for CPFR in Sweden, from the manufacturing sector’s perspective and determine as much as possible what do these mean in a Swedish context (based on summing up the factors of both case firms). This aspect is covered in Chapter 3, “3.5.1. Reaching the results (analysis procedure)”.

5.1. Importance of CPFR

Several reasons why a CPFR implementation can be potentially beneficial for the companies were given. Among these, the most important and common reasons are related to improving the relationship between their current partners, to have a stronger, and closer relation, to identify barriers that block them in their attempt to further integrate, to improve the delivery lead times and performance, to maintain high customer satisfaction levels, and gain more information regarding demand, to better allow them to plan their production, in terms of freeing or committing production capacity.

These findings are in line with the literature in relation to the benefits that companies are looking for, such as improving demand visibility, in terms of more accurate planning and forecasting to match the actual needs of the customers (Kamalapur et al., 2013), allowing cost reductions for both suppliers and customers through efficiency (Dong et al., 2014; Hill et al., 2018; Ryu, 2014; Skjoett-Larsen et al., 2003), reducing overall time between ordering and receiving of goods (Mentzer, 1999), and allowing financial benefits through supply chain integration (Beheshti, Oghazi, Mostaghel & Hultman, 2014). As previously seen, improving customer satisfaction and trust are end-goals that both firms want to achieve (McCarthy & Golicic, 2002). These can be achieved through better cooperation and information sharing (Danese, 2007; Du et al., 2009; Johnson & Mattsson, 2013; Kahn et al., 2006; Kubde, 2012).

Doiron, (2004) discusses the fact that the results of a CPFR adoption are not standard, but rather, these are highly dependent on the industry, network of the supply chain, and overall goals (Danese, 2007; Skoett-Larsen et al., 2003).

As we have observed, Y is active in a highly regulated industry, where power is held by customers through tenders, thus, for them, maintaining strong levels of trust and improving delivery performance and quality are a top priority. On the other hand, X is
active in an industry where they are forced to continuously innovate, as they are in competition with companies that can produce much cheaper; thus, post-sale added services by sharing expertise, supporting the customers can be used as a retention strategy, and maintaining very close, relations with the customers. Thus, both are driven to find new ways to maintain their high commitment towards the customers.

5.2. Trust and Relationship

The willingness to improve the relations is viewed as very important for the firms, to find barriers that block the development of their relations with their partners; this is in line with Terwiesch et al., (2005) as collaboration and trust are among the most important enablers for implementation. It can be argued that this is the main driver of CPFR implementations.

As seen in the last chapter, relationship and trust are high for the companies in Sweden, whether with suppliers or customers; this is supported by Olhager and Selldin, (2004). As per Guang Qu and Yang, (2015), social trust factor plays an important role; Sweden can be seen as a country where the social trust factor is high, thus, relationships form much easier between firms and are stronger.

One exception to this rule is regarding company X, where CPFR implementations with other suppliers outside Sweden (suppliers with activity in Spain have been pointed out during discussions) are seen as improbable and risky, preferring local firms instead. They are afraid of sharing information, presently and in the future with suppliers due to fear of leaking sensitive information. This aspect is also covered in the literature by Aviv, (2007) and Dong et al., (2014), where they evidenced that companies do not want to expose themselves and compromise their operations. This is supported by Elg (2007), where a similar behaviour was identified for Swedish manufacturers in relation with their retailers downstream.

The main determinants were related to not losing competitive advantage and losing sensitive data. This is in stark contrast with Y, where they also share a high risk of leaking sensitive information about patients, however, they see it as a calculated risk and a potential cost to ensure security, but the benefits of stronger relations can outweigh these costs. However, X still considers relationships as mission-critical, in terms of suppliers and even more so for customers. They place emphasis on long-term relations and personal contact much more than Y, through joint planning, sharing information, constant communication, and customer support. It is viewed that relationship development should be based on “common sense”. This degree of knowledge integration between partners (Lang, 2004; Whipple & Russell, 2007) is missing for Y.

For Y, trust and relationship are very important, however, its development is complicated due to formal legal contract bindings – tenders - which can restrict the process of building such connections (Carmén et al., 2011). This is in line with the results from the empirics,
where Y desires better relations, maintain communications and customer support, but the formality and strictness of the contracts blocks them from further developing such bonds. Delivery performance is a major factor that affects relationships and trust; there is no negotiation to be made apart from the tender itself. A solution to this issue was raised during discussions, where Y can take the lead and cover the costs of the implementation for their customer as well, if needed. Company X also makes use of formal contractual agreements, for their customers, however, their relationships are much more fluid, allowing for negotiations.

5.3. IT capabilities

Regarding IT, Fliedner (2003) evidences the need to able to share electronic information between partners, in order to communicate efficiently, and accurately (Büyüközkan & Vardaloğlu, 2012; Panahifar et al., 2014; Panahifar et al., 2015a). Both companies, Y, and X have the means to share electronic information with their partners. However, neither of these two firms possess the direct connectivity between them and their partners. At best, Y makes use SAP ERP system to automatically forecast the future demand, and plan accordingly, and is currently setting up EDI processes for customers to place orders electronically; however, this is an ongoing project, thus, the degree of connectivity is limited. At worst, the firm communicates only via e-mails or phone calls and lacks any visibility downstream apart from the contractual agreements. In addition, while they are connected with their mother company and production plants via VMI to allow replenishment, they lack a direct communication channel in case issues appear in production, except e-mail and phone calls.

For X, the ERP system is outdated, having auxiliary systems set in place to allow customers place orders electronically and link them with the ERP system. Apart from this, it is viewed that the IT system is not a major factor for strong relationships and future CPFR implementations, as the current relationships are strong enough to begin such a process without a connected IT framework. X’s view can be related to the conclusions of Thomassen et al. (2013), where CPFR adoptions can in truth be successful even without IT connectivity. In addition, the results of the study partially contradict Olhager and Selldin (2004), which state that the classic communication (phone, fax) will be replaced by Swedish manufacturing firms, although evidence from both companies is that they still use phone and other more traditional communication approaches on a daily/weekly basis to communicate with their partners.

Security is another concern for both firms; while for Y this can be seen as an inherent risk, due to the nature of the industry, and are willing to commit to resolve them through IT, for X is a matter of choice, preferring not to risk the current relations and financial health. Panahifar et al., (2014) and Panahifar et al., (2015a) argue that security protocols need to be set in place for both partners involved. Information leakages can compromise the competitive advantage of a firm, and place it in a disadvantageous position (Aviv, 2007; Barratt, 2004; Dong et al., 2014).
Both firms have disclosed the fact that they are not IT compatible with most of their supply chain partners, potentially slowing the implementation process. Büyüközkan & Vardaloğlu, (2012) evidence that the more compatible the systems are, the faster and cheaper it is to integrate.

5.4. Goal alignment, KPI, costs

Both firms, Y and X consider that having aligned goals is important for implementation. For Y this aspect is accentuated by the fact that the industry requires them to be accurate, and on-time with deliveries, thus, measurement tools are important.

The findings in both companies are in line with the literature, where Evrard-Samuel, (2008) evidences the need to maintain common goals throughout the initiative. Properly monitoring the implementation process to make corrections is seen as a requirement (Danese, 2007; Fu et al., 2010). While Y is strongly in favour of this, arguing that they need to maintain the right direction during the project, X does not put emphasis on performance indicators; while they consider it important, they do not provide any reasoning. It can be determined that since their trust with the partners is very high, they trust them and themselves to ensure the success of the operation. X, places a stronger emphasis on costs, as previously mentioned.

Cost can be a barrier for implementation (Kuk, 2004), as both firms are concerned with potential implementation costs, and will only commit to an implementation only after strong benefits are evidenced beforehand from feasibility plans. Sari (2008) evidences that such CPFR projects can be very costly, thus, most companies refrain from such projects, as much as possible, such as the case of company X, where CPFR is seen as useful, however, since the relations with their supply chain partner are at high levels for the moment, they question the usefulness of such an endeavour. For Y, cost is also important, however, they are committed to invest as long as they can find a way to improve the relationships with customers and further smoothen the business activity.

5.5. Top management support

Evrard-Samuel (2008), and Panahifar, et al., (2015a) discuss the fact that top management must commit to the project and maintain support during the whole implementation process. Here, both firms are in line with this reasoning, where it is considered that top management should take the initiative. While employees can work on its adoption, they need to obtain knowledge, training, and the purpose before committing to work (Y). This is in line with Marble (2003), which states that management must be seen as capable, and provide the necessary incentive and reasoning for the project, and not just enforce it (Englund & Bucero, 2015). Sandberg (2005, pp. 117-118), through his study, also supports these aspects for the Swedish manufacturing sector.
One aspect that is pervasive through the whole discourse is the relation between investments, budgets and management. For X, the management seems to focus on investing in production capacity, and having a sales-oriented mentality, where other elements, such as IT investments, are viewed as irrelevant. On the other hand, for Y, it is viewed that the mother company has a similar mentality, focusing on standardized processes and capabilities for all markets, and does not allow individual markets to use budgets for projects that are not benefiting the company as a whole. This is an aspect found by Barratt & Oliveira, (2001), Barratt, (2004), and Cassivi, (2006), where budgets are oriented on the capabilities that only generate sales.

5.6. Cross-functional communication

Evrard-Samuel (2008) and Wang et al., (2005) state that CPFR implementations require firms to have better integration between departments. This is applicable for both firms, as cross-functional communication and integration are seen as very high.

Both firms rely on constant communication and knowledge sharing between personnel from other departments, in terms of aligning forecasts and planning for different products and business units, during meetings with customers/suppliers, where knowledge from different departments is needed. In the case of X, the yearly meetings with top clientele are comprised out of different specialists, in terms of supply chain, sales, and pricing experts and so on. For Y, the situation is similar, relying on marketing, sales, and supply chain to align the forecasts with demand, and deal with customer complaints.

Such argumentation from above is in line with Boerner et al., (2012) where knowledge sharing between departments allows for synergetic benefits to be accrued, in terms of generating new knowledge, better firm flexibility and performance (Sheremata, 2000), but issues could also occur in the firm, due to relationship conflicts. No conflicts were identified for X, where they resolve all their disputes in meetings and agree together on the next course of action. Mathieu et al., (2000) argue towards a similar result, where firms should make use of meetings to enhance firm cohesion.

For Y, even though they make use of meetings and are constantly communicating, there are several issues related to this subject: firstly, there is a lingering reticence from certain departments (marketing and sales) to agree to new internal projects related to improving the current work processes due to time constraints. Based on literature, (Alas & Sharifi, 2002; Kotter, 1996) this can be translated as a sign of resistance to change; however, the company as a whole is rather the opposite. Secondly, there are issues in terms of effective and accurate communication with their peers at the mother company and sister firms. A lack of correct and on-time delivery of information was seen as problematic, impairing them in providing accurate information to the customers.
5.7. Change management

Javalgi and Todd (2011), state that management should embrace change and be flexible, and pass on such traits to the lower levels of the organisation. Evidence from both firms shows that the management is open to new ideas and implementations, as long as such changes are not financially significant; this is true for both, but especially for company X. This is related to Aziz and Curlee, (2017, p. 244) and Kotter, (1996), which state that the management should properly communicate the vision of the firm and allow changes to become part of daily business activities. Employees have the freedom to pursue new ideas and improvements, to better enhance the activity of the firms; they are not afraid of change, but rather, are accustomed to it, and expect it. They maintain an open and flexible mindset in terms of change. This contradicts the statements in Elearn, (2011, p.71), where it is stated that employees can see change as a threat to their daily activities and future employment.

The open attitude to change that the employees have is related to the overall innovation factor of the firm, the overall of speed of change to which they are subjected to. Newton (2011), evidences that continuous change and project-led change are important factors for improving the business activity of the firm and preparing for future challenges.

This statement applies to both firms, where innovation is considered high by employees and managers, where they maintain a continuous change of process activities, production capabilities, with a high number of on-going development projects. Respondents from company X view this change as critical, as high performance, quality, and added value are the only factors that affects the customer acquisition process, due to a very high cost environment and competitors with lower-cost products. In stark comparison to this setting, Wang et al., (2005) evidence that such capabilities are not present everywhere in the world; change management is a critical factor that most Chinese retail firms have to develop, since this capability is not properly developed.

5.8. Summary: critical success factors for CPFR implementation

To sum up, the respondents from both companies commented on the importance of each factor; the answers were mixed, with pro and contra arguments in regarding the factor and its impact on the success or failure of CPFR implementations. Please see Figure 20 below for a graphical representation. Below the criticality of the factors is summarized based on both studies to determine a general importance roadmap.

The most critical of factors are related to relationships and trust. The reason behind these is that a CPFR implementation is highly dependent on the current relations that the companies have with their customer (or suppliers), thus, if trust is low, before and during the implementation, such an adoption is impossible to achieve.
Goal alignment, KPI, and cost are also critical. This is supported by having aligned goals, to have the same goals in terms of matching demand, supply, and processes; it is also important to measure the progress, in order to quantify whether the implementation is cost-effective, and if it provides mutual benefits.

Flexibility and open-mindedness are required from employees, to constantly communicate and share accurate and correct information between one another. On the other hand, each partner must have supportive, flexible management that can share and maintain the vision, give purpose and guide the project and the people.

In terms of IT, only Y considered it as an important factor for implementation, to be able to connect and share data with its customers. However, costs, security, implementation time and knowledge are brought up as conditioning sub-factors. For X the discourse is rather similar in terms of sub-factors, however, they consider that IT is not a critical factor, as they already have developed relationships with their customers and suppliers by making use of less advanced IT capabilities, and a more emphasis on personal relationships.

Lastly, change management is also considered important, arguing that if the managers and the employees are not willing to divert from the old processes set in place, then, the implementation can fail; this is also true for their supply chain partners. In our analysis we observe that innovation and change management are high for both firms; however, in the discourse the emphasis on these are not as strong as the first sets of factors, due to the fact that they are already developed, and the respondents consider them to have a lower impact than the rest, as it will not considerably affect them. The only negative impact in terms of change management and innovation on their potential CPFR implementation plans is if they pair with a non-innovative firm, as the lack of willingness to change from the other side can harm the overall progress of the project.

In terms of academic literature, there are several studies that attempt to determine which are the most important factors for CPFR implementations, such as Fu et al., (2010), while studying implementation factors for retailers, they determine nine (9) critical impact factors, for example: cross-functional communication and collaboration, change management, organisational innovation capability, system complexity, mutual objectives, amalgamation capability of technology and culture, top management support, trust and communication, system security and EDI.

Büyüközkan & Vardaloğlu, (2012) in their research of CPFR success factors in the retail sector, they have evidenced the following factors: communication, trust, long-term relationships, system complexity, willingness of managers, cross department support, strength of relationship, quick adoption of innovative technology, culture of openness and honesty, among others.
Fu (2016), when comparing CPFR implementation factors between suppliers and retailers in Taiwan, evidences that top management support and trust in relationships are the most crucial factors.

As we can observe, most of the research on factor criticality comes from the retailing sector across the globe. In terms of manufacturing, supportive academic documentation is very scarce, even more so for studying the criticality of factors in Sweden, where research is thoroughly lacking. The closest research available on CPFR implementations and factors is from Norway, Thomassen et al., (2013), where they evidence that the use of IT capabilities, in the form of advanced planning and scheduling systems (APS) can be a benefit to supply chain performance under CPFR.

As we’ve seen so far, while the available academic research does not match on industry and results (due to lack of research on the topic), we can still extract supportive and useful evidence. Thus, the results that we’ve obtained during the research is still in line with the available academic literature, albeit with certain deviations, due to the nature of the business activity, industry, and geographical location.

It can be determined that all the factors are interconnected, as evidenced by previous research, meaning that the implementations require a mix of all of them to be successful. While these results show the capabilities, mind-sets and perceptions of the manufacturing firms part of the case studies, the criticality of the factors is of course highly dependent on the industry specificity, and employed strategies, as each sector has different requirements in terms of capabilities that are needed to achieve success on the market.

Figure 20 Combined factor criticality (Own Analysis)
6. Concluding discussions

This chapter focuses on the concluding discussions related to the empirical results, matching them with the academic research, the theoretical and managerial implications of this research, limitations that this thesis is subjected to, and future research that can continue the work on this topic.

6.1. Results

The purpose of this thesis is to answer the question related to the criticality of factors that can affect the feasibility of a potential a CPFR implementation in Sweden, from the perspective of a manufacturer in a pre-CPFR implementation stage. Based on the literature review on the topic, various key factors, ranging from relationships and trust, to change management were identified. Based on these identified factors, empirical probing was done at two manufacturing companies operating in Sweden, one in the plastics industry, while the other in the medical products industry.

The results show a high degree of interconnectivity between the factors, and importance at an individual level, both empirically and theoretically (Büyüközkan & Vardaloğlu, 2012; Fu et al., 2010; Fu, 2016). As we’ve previously discussed, the main factors for the implementation are relationships and building trust, aligned goals, KPI and costs, thus, the most critical of all the factors; very important factors are related to cross-functional communication and top management support and commitment, while the last two factors are related to IT and change management. The firms identify that their key suppliers and customers are applicable for the implementation, with the incentive to continue with improving the relations, due to demanding, and continuously developing markets, both in innovation and technological requirements. Apart from this, cost is a factor that can determine the start of an implementation, due to very high implementation costs. If the partner firms agree on a CPFR implementation, then setting up goals with KPI’s are of high importance for success, as well as continuous communication with various personnel from other internal departments and a proactive management support.

The use of interconnected IT system can further improve the relations, allowing for better performance during and after the implementation, and much easier communication processes. However, such systems require very high investments; while Y is willing to commit to such an investment, after obtaining supportive evidence regarding the benefits, X on the other hand does not consider it critical for the continued relationship with their partners.

While change management is considered important for implementation, the companies already have a culture of innovation and change, allowing them for a potential smooth implementation process; thus, its impact is lower in the discourse.
While studying the case firms, we can observe that they show the capability of implementing CPFR in the future, with X already having set in place joint planning operations with their key customers, while Y has replenishment processes set in place with the internal suppliers that are part of the group. The companies consider that CPFR is potentially beneficial for possible implementations in the future, to further strengthen the relationships with their supply chain partners, albeit, with lengthy feasibility studies to quantify the benefits and with strong commitment from their partners beforehand. Their targeted partners are their customers, and for X, some of their key local suppliers as well. Several implications arise from these results.

6.2. Implications

This thesis can provide contributions not only from a theoretical perspective, but also from a managerial perspective as well. These are further discussed below.

6.2.1. Theoretical contributions

Firstly, the main contribution made is by attempting to fill in the literature gap regarding CPFR, with determining the critical success factors in Sweden. Due to a lack of research in this area, this provides valuable information about the weights and specific mix of factors that are important in implementing CPFR in Sweden. In addition, such an approach was not identified in other academic writings, as these focused on identifying the factors in other countries and industries.

Secondly, it provides insight in the Swedish manufacturing industry, evidencing the degree of alignment, capabilities, strategies and mindsets in relation to CPFR and CPFR implementations, evidencing aspects that are common or different between each of the case firms. As previously seen, having good relationships and trust is a major factor in Sweden, where firms continuously interact with one another to improve their relations and activities; in addition, innovation is high, due to the high cost environment in which they operate, forcing them to improve continuously, and, they make use of strong cross-functional communication and relation to further smoothen the business processes inside the firm.

Thus, the research constitutes a building block to continue onwards with further inquiries in this field. Through evidencing the weight of the factors in Sweden, the study allows a better understanding the impact of CPFR in Sweden and provides several reasons why firms decide to implement or not.

6.2.2. Managerial implications

There are also several implications that manufacturing firms in Sweden should consider for future CPFR implementations. Firstly, this study sheds light in the factors that can and will affect such implementations, by underlyng the importance of the factors in Sweden,
allowing a better allocation of resources for the implementation. The study allows firms to reflect on their current capabilities to ensure that they are in line with the requirements.

Secondly, because the study is focused on a pre-implementation stage, this can be, in a way, considered a feasibility study, which allows managers to quickly compare the results, and obtain insight whether their firm is ready or not for CPFR, if they match with their own organisations’ processes, and where should resources be focused on to achieve this goal. CPFR requires all-round robustness and flexibility; this coupled with the capabilities of their supply chain firms, can entail a high degree of complexity, for which correct planning and organisation is required.

6.3. Generalizability

Due to a lack of academic literature to compare the results with, it is difficult to generalize the results of this thesis to the whole population at industry and country levels. This is in connection to the fact that while both case firms are present in the Swedish manufacturing sector, the markets that they operate in and the business specificities are different, which entail results that cannot be applied scale-wise to the whole sector. At any rate, the insights can still prove beneficial in providing useful insight and allow follow-ups in terms of future research.

6.4. Limitations

There are several limitations associated to this thesis; these can be underlined below as follows:

The first limitation is related to the available research time for this thesis; since the study of CPFR factors, implementations, and their effects on business activity and performance require extensive research, data collection, and analysis, the focus of this research is limited on determining the criticality of CPFR implementation factors in Sweden, for future implementations, from the perspective of companies operating on the Swedish market, limited to manufacturing. Only the perspective of the case firms was studied, their supply chain partners were not subjected to research, thus lowering the degree of overall accuracy of the study.

Secondly, even though a multiple case study approach is used (two companies), to compare the findings and provide better results, the overall generalizability of the results is rather limited, simply due to lacking research on CPFR, CPFR implementation and CPFR factors in Sweden; without previous research to compare the results, they cannot be fully confirmed and embedded in the theory.

Thirdly, and lastly, due to the complexity of the concept and limited time, additional senior-level respondents from the group level of the companies would have improved the overall accuracy of the study, such as group level supply chain managers and directors, in order to obtain strategic, and a long-term view of the firms’ goals, and future projects.
6.5. Future research

In terms of future research that could stem from this thesis’ topic, various other similar studies can be initiated to provide more accuracy on the criticality of the factors, to confirm or falsify these results, and allow the generalization of the results for the manufacturing sector in Sweden. In addition, future studies can also research the perspective of the supply chain partners, in relation to these factors, and to what degree do they match with the perspective of the case firm/s.

While this study focused on determining the criticality of the implementation factors, it has not, however, analysed their impact during or after a CPFR implementation. It is of high interest that future studies are initiated in studying the implementation of CPFR at manufacturing companies in Sweden or in Sweden in general. Thus, other future studies can attempt to cover this area, to determine if the criticality of these factors maintain their importance during, and after such an implementation attempt, and determine the overall interest levels of Swedish manufacturing firms related to CPFR implementations.

Lastly, additional future research could focus on understanding the underlying reasons why manufacturing firms in Sweden should or should not implement CPFR, when it is the time to implement this concept and whether it provides a true competitive edge for their business activity.
7. References


8. Appendices

8.1. Appendix A: Interview Guide

General questions:

1. Could you give us a brief introduction about your role in the company? Experience? Responsibilities?
2. Could you shortly give us an insight in the company’s supply chain activities?
3. How does the company currently plan, forecast, organize processes?
4. Do you have partnerships with or suppliers or customers?
5. Do you collaborate with them? Information sharing, forecasting, do joint planning, replenishment? Did you have any projects related to these activities?
6. If so, how? Please provide additional explanations, examples?
7. Any issues, problems or challenges in relation to collaboration? (sharing information, joint planning, forecasting, etc)? Do you have any back-up plans in case such projects fail? Any issues related to power? What about fines – missing deadlines?
8. What do you know about the collaborative planning, forecasting and replenishment concept (CPFR)? What are your opinions on it?
9. Did the company consider it or Any reasons why the concept was not considered before?
10. Do you consider that your company would benefit from such a concept? Yes/No/Why?
11. What would be the most crucial factors for a CPFR implementation? If the company would start to implement it?

CPFR questions:

12. How important is the IT infrastructure, its compatibility and being able to share information for CPFR implementation success?
   - How important are these to CPFR implementation and in collaborating with other partners?
   - Does the company have these capabilities? Or is it lacking? How can these be resolved?
   - How would these links the companies?

13. What is your opinion in relation to trust between companies? What about during the implementation phase?
   - Is there trust in the current relationship? Yes? No? and Why?
   - How can trust be improved? / maintained?

14. What is the importance/impact of maintaining strong relationship building with the other partner/s?
15. What is the importance of having aligned goals between the partners for a CPFR implementation?
- Are KPI’s important for the success of CPRF? Why? How?
- What about costs related to implementation? Are costs an issue to success? Would costs impact the future of such an implementation?

16. Is having a supportive management during the implementation a key factor? Why? Please explain?

17. What about cross-functional communication? How important is it? What is the impact?

18. Is change management a key factor of CPFR implementation? Why?

19. Are all of these critical factors important? Or only some of them? Yes/No? Why?
- Are some factors more important than others? Please explain
- Is the company lacking in any of these factors? Yes/No? Why, please explain?
- How will the company adjust for these issues?

20. Can the company (manufacturer and partner/s) implement CPFR, or only parts of it (planning, forecasting, replenishment)?
- What issues might be encountered during this implementation?
- Yes/No? Why?
- Are all important? Yes/No, and Why?

Ending:

21. What future plans, future developments do the company consider, relating to supply chain collaboration, CFPR?

22. What future challenges might there be in relation to what we have discussed so far? Any plans to fix them?