CHALMERS
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Improving the ordering process between a fashion retailer and its external suppliers

Master's Thesis in the Master's Programme Supply Chain Management

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Linda Nodén & Elin Olson

Abstract

This study concerns a mid-sized Swedish retailer that offers a wide range of products within beauty, fashion and home decor. The retailer is currently experiencing significant problems connected to the ordering process with their external fashion suppliers. These are issues such as high amounts of manual work, several non-value adding activities and delivery problems at the distribution centre. This has led to low efficiency and long process lead times. As lead times and supply chain efficiency are two important factors for creating competitive advantage in fashion retail supply chains, there was a need for investigating how the ordering process could be improved. The purpose of this study was to suggest a new ordering process that increases efficiency and reduces the amount of non-value adding activities.

To fulfil the purpose of the study, it was first necessary to understand the retailer's current ordering process. This was achieved by conducting nine interviews with employees as well as making observations at the retailer's office and distribution centre. Interviews were also conducted with representatives from seven of the retailer's external fashion suppliers. The current ordering process was compared to the ordering process used by similar actors, in this case a Danish retailer and an online retailer. A description of the similar actors' processes was generated from two interviews conducted with one representative from each actor. An interview was also performed with a supplier that offers electronic data interchange solutions to actors in the industry to increase efficiency in their ordering processes. An analysis was then performed of each retailers' ordering process using value stream mapping as a tool for identifying non-value adding activities and improvement areas.

There were five main categories of waste identified in the three retailers' ordering processes, namely corrections, waiting, transportation, extra processing and underutilised people. Compared to the ordering processes of the Danish and online retailer, the Swedish retailer's process involves a considerably larger amount of waste. To remove the non-value adding activities, a suggestion for a new ordering process was developed using the tool provided by the electronic data interchange solution supplier.

It is concluded that, by implementing the suggestion made for a new ordering process, it is possible for the retailer to automate several steps in the ordering process and minimise non-value adding activities, thus achieving higher efficiency and shorter process lead times. Furthermore, the new process will reduce the workload for the buyers and they will be able to handle the large supplier base in a more efficient way.

Key words: Fashion retail, ordering process, external suppliers, buying, EDI

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List of Abbreviations

CSV - Format used in for example excel

DC - Distribution Centre

DESPADV - EDI message Despatch advice

EDI - Electronic Data Interchange

INVOICE - EDI message Invoice

ORDERS - EDI message Order

ORDRSP - EDI message Order Response

OTB - Open-to-buy budget

PO - Purchase Order

PRICAT - EDI message Price Catalogue

VSM - Value Stream Mapping

XDP - Cross dock pre-mark

1. Introduction

In this chapter, a background to the studied topic and an introduction to the studied company is presented. This is followed by the purpose of the study which is divided into three research questions. Finally, a section about the scope and limitations of the study and a brief description of the report outline is provided.

1.1 Background

Traditionally, purchasing and supply management have been seen as support functions in firms, characterised by transactional buying and short-term relationships with suppliers (Kähkönen and Lintukangas, 2012). Due to increasing customer demands, this traditional view has developed and instead these functions have been categorised as strategic functions that can enhance a company's competitiveness by substantially increasing its efficiency and competitive advantage (ibid).

Having professional purchasing in place is especially important in the case of retail (Weele, 2014). This due to that retailers rarely add value to the products which leads to thin margins (ibid). The fashion retail environment is mostly characterised by short product life cycles, unpredictable demand and long and inflexible supply processes (Sen, 2008). Hence, retail buyers in fashion often need to implement highly advanced supply chain management concepts and techniques to stay competitive (Sen, 2008; Weele, 2014). The main activities for retailers in supply management are included in the trade function, i.e. activities that aim to bridge time, place, quantity and assortment gaps between customers and suppliers (Weele, 2014). This leads to buying, logistics and sales being core activities in such organisations (ibid). Retailers must often cut down on costs wherever possible and costs for material handling, storage, transportation and other operational costs are important factors for effective cost control (ibid). Thus, there can be significant improvements in performance if non-value adding activities are eliminated from the retail supply chain (Christopher & Peck, 1997).

This study revolves around a mid-sized Swedish retailer, from now on referred to as the case company, offering a wide range of consumer products from both private labels and external suppliers which is sold in physical department stores and via an online store. The case company has divided their organisation into three departments depending on the product groups. This is due to the different characteristics of the product groups and the industry structures related to each group. The three departments are beauty, fashion and home. This study will focus on the fashion department.

The case company has been experiencing problems connected to the current ordering process for the fashion brands supplied by external suppliers. The process consists of a high degree of manual work and non-value adding activities such as extensive administration. This causes long process lead time and leads to several problems regarding delivery, such as faulty deliveries in the aspect of for example amount, mix and packing. This affects both the efficiency and the lead times throughout the supply chain. Therefore, it was necessary to investigate the current

process from deciding on what products to buy to delivery at the distribution centre, hereafter referred to as DC. This way, inefficiencies and non-value adding activities in the process could be identified.

1.2 Purpose

The purpose of this study is to suggest a new ordering process that, compared to the current ordering process, increases efficiency and reduces the amount of non-value adding activities. This includes illustrating the current state of the ordering process, similar retailers' ordering processes and the proposed future ordering process. The processes will be illustrated in flowcharts where activities, input and output of each activity, actors that perform the activity and information flows are described.

1.3 Research Questions

To fulfil the above stated purpose, the following research questions were formulated:

1. What does the current ordering process between the case company and its external suppliers look like?
2. How is the ordering process carried out by similar retailers in the fashion industry and their external suppliers?
3. How should the case company's ordering process be designed in order to increase efficiency and reduce non-value adding activities?

1.4 Limitations

As previously mentioned, this study is limited to the ordering process where the activities from deciding what to buy to delivery at the DC is included. The scope of this study is illustrated in Figure 1 below. However, invoicing has been included in the process maps, even though it belongs to the process of expediting according to the figure.

Some of the activities within the other processes in the figure such as contracting and supplier evaluation has been touched upon but the main scope consists of the process of ordering and specifically the operational ordering process. Within the scope of ordering at the case company, the study was limited to include only external suppliers within the fashion department, so that no consideration has been taken to the ordering process of the case company's private labels.

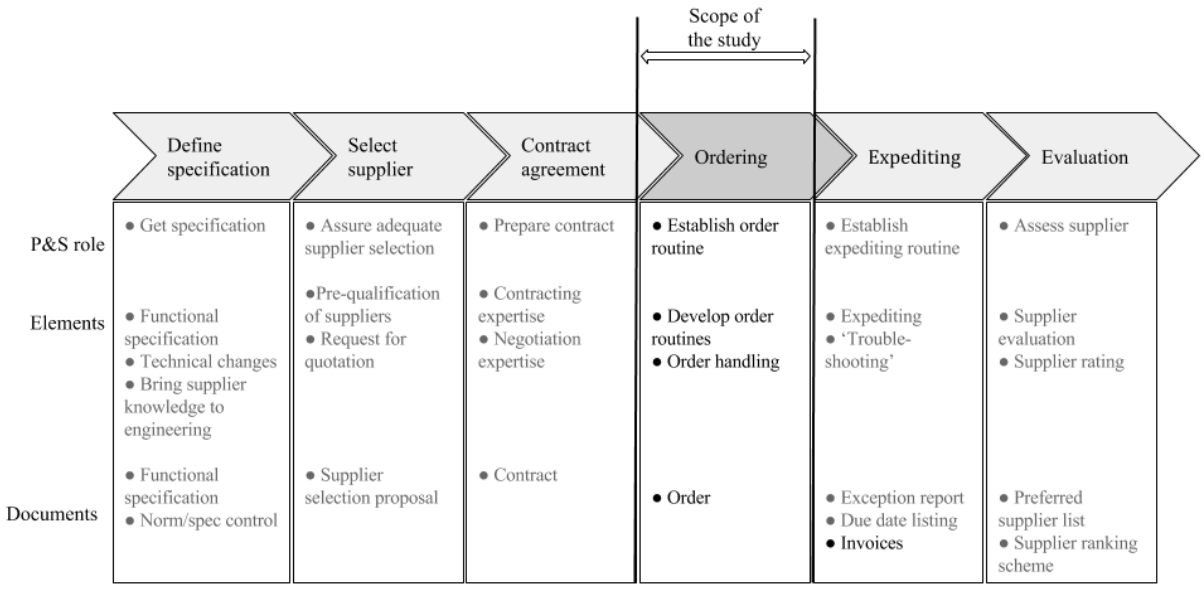


Figure 1: The purchasing processes as defined by Weele (2014, pp. 28) and an illustration of the processes that are included in the scope of this study.

1.5 Report Outline

The report has been divided into 10 chapters with corresponding subsections. The structure of the report and the purpose of each chapter is described in the project outline below.

1. Introduction
This chapter aims to introduce the reader to the problem at hand and provide an understanding of why the study is of interest. It presents the purpose of the study, the research questions that are to be answered and the limitations.

2. Theoretical Framework
The theoretical framework aims to provide the reader with sufficient background knowledge of the subject and to form a foundation for the analysis. The areas that will be discussed are the fashion industry, fashion retail, purchasing processes, ordering processes and information technology to facilitate ordering processes.

3. Method
The method chapter has been divided into four main areas. Firstly, the research strategy and design is discussed, followed by a description of the research process, data collection and data processing and analysis. The aim is to provide the reader with an understanding of how the study was conducted and why certain methods were chosen.

4. An Overview of the Case Company and its Supply Chain
The following chapter presents the collected empirical data that provides a description of the case company and their supply chain. The purpose of this chapter is to provide the reader with an understanding of the case company's supply chain context.

5. The Case Company's Current Ordering Process
This chapter presents the results of the empirical data collection and answers the first research question, i.e. what the case company's current ordering process looks like. The ordering process has been divided into three sub processes called preliminary order generation and confirmation, order creation and confirmation and order fulfilment. The process description is followed by the consequences that have been found in connection to the current ordering process.

6. Learnings from Other Actors within the Fashion Industry
This chapter aims at answering the second research question by describing how similar actors work during their ordering processes. There are two similar actors that have been investigated to answer this question, a Danish retailer and an online retailer. First, a general description of the two retailers is provided, followed by a description of their respective ordering processes. Like in Chapter 5, the ordering process has been divided into three sub-processes, i.e. order generation, order creation and confirmation and order fulfilment. This chapter also includes input from the case company's suppliers regarding ordering processes. Lastly, a description of EDI-tools used to increase efficiency in ordering processes is provided.

7. Analysis
In the analysis, the current ordering processes of the case company, the Danish retailer and the online retailer are analysed by using Value Stream Mapping as a tool for data analysis. This is followed by an improvement analysis made connected to the case company's ordering process.

8. Suggestion of a New Ordering Process
In this chapter, the answer to the third research question is presented, i.e. how the current ordering process should be improved to increase efficiency and remove non-value adding activities. Firstly, an overall strategy for the new ordering process is provided, followed by a description of the process divided into the sub-processes order creation and confirmation and order fulfilment. Finally, what implications the new process will bring are elaborated on.

9. Conclusions
To finalise the study, this chapter provides the final conclusions that can be drawn from the previous chapters. The aim of this chapter is to reflect upon the purpose of the study and summarise the answers to the three research questions.

10. Discussion
In the final chapter, a discussion offering new insights not connected to the research questions is provided. The aim of the discussion is to provide a broader view on what needs to be done in the future and what assumptions and risks that need to be taken into consideration when implementing the new process.

2. Theoretical Framework

In this chapter, the theoretical framework is presented. This aims to provide the reader with an understanding of the fashion retail industry and its characteristics, the ordering process and information technology that can be used in ordering contexts. Moreover, the framework aims to provide trustworthiness and credibility to the upcoming results and analysis by introducing existing research within ordering in fashion retail and the usefulness of information technology.

2.1 The Fashion Industry

The fashion industry is characterised by volatile demand which is difficult to accurately predict, leading to difficulties in matching supply and demand correctly (Christopher & Peck, 1997). Sen (2008) presents additional traits of the fashion industry such as short product life-cycles since the products are usually saleable in short and seasonal periods only, long and inflexible supply processes, complex supply chains and product variety. Christopher & Peck (1997) elaborates on another characteristic of the fashion industry, namely the criticality of availability in stores. Since the consumer often makes purchases based on impulse, it is of high importance to have the products available in stores (Christopher & Peck, 1997).

The fashion industry is generally synonymous with fast change and consequently, the success or failure of actors within the industry is mainly dependent on the flexibility and responsiveness of the organisation and the supply chain it is part of (Castelli & Brun, 2010). Additionally, the growing globalisation and the trend within the industry of low cost country sourcing has increased the lead times and the complexity of managing fashion logistics (ibid). There is also a high level of competition within the fashion industry, especially in the retail environment (ibid).

2.2 Retailers

A retailer is defined as a trading firm that, through physical stores or online stores, delivers products and services directly to consumers (Weele, 2014). Furthermore, Weele (2014) defines the function of trade firms as bridging time, place, quantity, assortment and knowledge between a consumer and a manufacturer. Fernie & Sparks (2014) discuss the development of a retailer's role in the supply chain, which has changed from being a passive recipient of products allocated to stores by manufacturers in anticipation of demand, to being an active controller, organiser and manager of the supply chain from production to consumption in reaction to actual customer demand.

Shephard & Pookulangara (2013) argues that the retail industry is facing many challenges due to a dynamic environment where new channels of distribution, resource shortages, climate changes and new technologies impacts both the retailers and the consumers. Furthermore, Shephard & Pookulangara (2013) states that the retailing sector has evolved from a push system where designers pushed out trends, to a pull system where the consumers dictate the trends and the retailer's role is to respond to these demands.

2.2.1 Characteristics of Fashion Retailers

There are different types of retailers within the fashion industry with different approaches to the complexity of the fashion industry described in section 2.1. There are speciality stores offering a limited range of fashion products targeting specific market segments, department stores offering a number of different brands reaching out to a wider market, mass merchandisers offering a variety of goods with "everyday low price" and there are retailers with internet as its only sales channel (Sen, 2008).

Another way of categorising fashion retailers is to differentiate between fast fashion retailers and slow fashion retailers. One main contradiction that actors within the fashion industry must deal with is that consumers are expressing increased demands and interest in sustainability but at the same time they seek out for fast, inexpensive fashion (Shephard & Pookulangara, 2013). The two types of retailers, fast fashion retailers and slow fashion retailers, are both aiming at responding to these contradictory demands in different ways.

Fast fashion retailers focus on forecasting and predicting trends with the goal of being able to accurately meet demand of the consumers (Shephard & Pookulangara, 2014). To provide the consumers with the right product at the right time and at the same time reduce the number of price markdowns, fast fashion retailers often create a high number of collections yearly (ibid). Due to high competition and lack of transparency in the supply chain, both costs and environmental standards are of low priority in fast fashion (ibid).

Slow fashion retailers on the other hand, do not focus on trends but instead considers both the environmental impact and the social impact of their operations (Shephard & Pookulangara, 2013). Moreover, slow fashion incorporates usage of better materials from a sustainable view (ibid). Shephard & Pookulangara (2013) characterise slow fashion products as quality products and thereby more expensive compared to general apparel. This makes slow fashion reliant on that consumers are willing to pay extra to ensure that the products have been manufactured under required social and environmental conditions (ibid).

2.2.2 Key Challenges for a Fashion Retailer's Supply Chain

One of the main challenges for fashion retailers is to shorten the lead times to fulfil the consumers' demand in the right time, i.e. when trends emerge (Shephard & Pookulangara, 2014). This strive for shorter lead times causes social and environmental compromises, which is often the case in fast fashion (ibid). Furthermore, when lead times are long within the fashion industry, there is a large risk that it will result in excess inventories with products that do not match demand regarding for example sizes and colours (Christopher & Peck, 1997).

Moreover, it is a challenge for fashion retailers to create a lean supply chain where non-value adding activities are eliminated (Christopher & Peck, 1997). This can, according to Christopher & Peck (1997) be achieved by reducing the logistics lead time while at the same time capture information earlier on actual consumer demand. Furthermore, Shephard & Pookulangara

(2013) elaborates on the challenge of achieving transparency in the supply chain, which is of great importance for a retailer to communicate a more sustainable image to the consumers.

As previously mentioned in section 2.2.1, another challenge that fashion retailers are facing is the trade-off between being sustainable due to the increasing consumer demands in this area, and simultaneously maintaining low costs and achieve superior product quality (Shephard & Pookulangara, 2013). Consumers' growing awareness of sustainability puts pressure on the retailers to improve sustainability practices throughout the whole supply chain (Shephard & Pookulangara, 2014). This can be done in the aspect of quality of the products and life cycle planning in the design (ibid). It can also be achieved by working with suppliers in different ways, introducing incentives, extending codes of conduct and making the selection of suppliers in line with sustainability requirements (Fernie & Grant, 2015).

2.3 The Purchasing Process

The overall purchasing process entails many different activities conducted on both strategical, tactical and operational level. There are several important aspects of the purchasing process according to Weele (2014). One of the most important aspects is that the process is aligned with business needs. Also, the output from each activity should be clearly stated since it is used as an input for the next activity, the responsibilities of the activities should be clearly determined and the organisation should be able to combine different skills and types of knowledge throughout the process (Weele, 2014).

The purchasing process can be described in many different ways. One way to define it is through the purchasing process model presented by Weele (2014), which is illustrated in Figure 2 below. Weele (2014) claims that the prime value of the purchasing process model is that it differentiates between the key stages of the purchasing process. If one of the stages is not executed properly, it will lead to considerable problems in the following purchasing process steps (Weele, 2014).

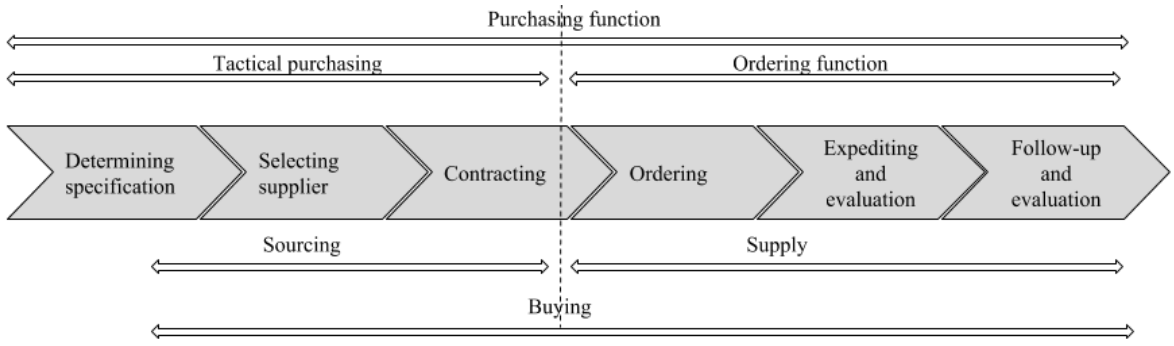


Figure 2: The purchasing process model by Weele (2014, pp. 8), showing the different purchasing activities and concepts related to the model.

This study aims to mainly focus on the operational purchasing activities and how they can be improved through strategical decisions. Thus, it is of interest to go deeper into the process of ordering and expediting.

2.4 The Ordering Process

Ordering is the activity within the purchasing process in which an order is placed when all the pre-arranged conditions such as specification and contracting are already in place (Weele, 2014). A broader term is the order fulfilment processes which involves generating, fulfilling and delivering orders (Croxton, 2003). The order fulfilment cycle time is the time it takes from when an order is placed until it is delivered (Lin & Shaw, 1998). This process usually consists of several different activities executed by different departments and there is a high level of dependency both between activities and tasks, resources and functional entities in the process (Lin & Shaw, 1998).

Croxton (2003) argues that order fulfilment processes take place on both strategic and operational levels. The operational ordering process is mainly focused on the transactions made, while strategic order fulfilment processes focus on the improvements that should be made and putting procedures in place to facilitate the operational processes (Croxton, 2003).

2.4.1 The Strategic Ordering Process

The strategic ordering process involves designing the technologies and systems needed for executing operational ordering as well as setting procedures and policies in place (Croxton, 2003). The improvement processes on a strategical level is preferably conducted in a cross-functional set up, utilising expertise and knowledge both within different departments internally and from external actors, such as suppliers and customers. This to design a system that meets customer demand in a cost-efficient manner (ibid). Improving the strategic ordering process and integration between suppliers and customers is an important part of reaching purchasing excellence and supply chain integration (Weele, 2014). By enabling supplier integration in the ordering process, mutual objectives can be set and the final customer can be satisfied in the best possible way (ibid).

Croxton (2003) divides the strategic ordering process into five sub-processes. The sub-processes are:

- Reviewing the market structure, supply chain structure and customer service goals
- Defining requirements for order fulfilment
- Evaluating the logistics network
- Defining a plan for order fulfilment
- Developing a framework of metrics

The first sub-process is reviewing the marketing strategy, supply chain structure and customer service goals (Croxton, 2003). The aim of this sub-process is to gain understanding of which factors that are necessary to achieve the overall corporate and supply chain goals. The supply chain structure also provides the context and sets limitations that need to be understood before developing a process (Croxton, 2003). By identifying the overall business strategies, it is possible to establish aligned purchasing and supply chain strategies to support the overall business plans (Weele, 2014).

When the context and business strategies are understood, the second strategic sub-process is to define requirements for order fulfilment (Croxton, 2003). By evaluating the core competencies available, the customer requirements and operational requirements needed for achieving the overall supply chain strategy, gaps can be identified between the current capabilities of the supply chain and external requirements. If significant gaps are identified between the requirements and capabilities of the supply chain, the next step is to evaluate the logistics network and redesign it to close the gaps.

After the logistic network has been set, it is time to define a plan for the order fulfilment, which is when the operational order process is decided (Croxton, 2003). The input, activity and output should be clearly stated for the overall process as well as for each individual activity, which enables tracking and tracing of every activity (Weele, 2014). When the operational ordering process has been determined on a strategic level, it is possible to achieve standardised decision-making processes and avoid operational issues (ibid). Thereafter, it is possible to set up performance metrics to continuously measure and improve the performance throughout the process (Croxton, 2003).

2.4.2 The Operational Ordering Process

Ordering takes place on an operational level and the activities may vary significantly depending on the company, its role in the supply chain and what type of supply chain it operates in (Weele, 2014). Prior to the ordering process, the suppliers, contracts and specifications have already been established. These contracts set the context and constraints for the ordering process. The design of the operational ordering process has also been defined previously during the strategic order fulfilment process.

The most common ordering process starts with a purchase order, hereafter abbreviated as PO, being generated and sent from the buyer to the supplier (Croxton, 2003; Weele, 2014). Thereafter, the supplier needs to enter the order into their information systems and process the order (Croxton, 2003). The suppliers are often requested to send an order confirmation for each PO, which is usually done electronically (Weele, 2014). The supplier is responsible for handling the documentation, fulfilling the order and delivering it to the customer (Croxton, 2003). Lastly, post-delivery activities and performance evaluation is conducted (ibid).

During the operational ordering process, it is especially important to be specific and clear about the information and instructions to the suppliers to avoid any misunderstandings and problems that may occur during the order fulfilment (Weele, 2014). The PO specification may involve both technical and functional specifications such as quality-, logistics- and legal specifications (ibid). The information sent in a PO usually consists of order number, description or specification of the product(s), unit price, number of required units, expected delivery time or date, delivery address and invoicing address (ibid). If the ordering process is carried out properly it will reduce the work needed for the following ordering handling and expediting stages (ibid). A lack of standardisation in PO specifications may lead to unnecessary administrative and logistics work (ibid).

Considerable efforts are needed from the buyer to make sure that the suppliers act according to the agreements during the processing, filling and delivery of the orders (Weele, 2014). The process of expediting can be carried out in multiple ways. The two main ways of expediting is reactive and proactive expediting. Reactive expediting can be called exception expediting and occurs when a buyer is informed by an internal customer that an order is late, missing or faulty (ibid). In this case, the buyer needs to take immediate action to solve the problems that has occurred. Weele (2014) argues that this is not an approach to strive for since the buyer will always be one step behind and a lot of troubleshooting will occur.

Proactive expediting can be conducted in many different ways. One common way is to perform routine check status, which entails the buyer contacting the supplier a couple of days before the delivery to ensure on-time delivery or that information about any deviations can be known before the actual delivery (Weele, 2014). A more time-consuming way of expediting is the advanced routine check which is most commonly used for critical deliveries (ibid). For advanced routine checks, the buyer keeps track of the progress at the supplier at regular intervals.

During ordering and expediting there are some common bottlenecks that occur. The first one occurs due to poor administrative processes that increase the workload and lowers efficiency (Weele, 2014). This can for example involve problems such as matching the invoice with a PO or faulty documents that require extra work later in the purchasing process. Another bottleneck is delivery problems that often occur due to unclear specifications or lack of supplier evaluation (Weele, 2014). These bottlenecks should be addressed during the strategic ordering process to design in ways that will avoid the problems.

2.5 Ordering in Fashion Retail

In retail, there is often a distinction between decentralised ordering, which occurs at store level to the distribution centre or supplier, and centralised ordering, which occurs on a central level and handles orders going to the warehouse or distribution centre (Weele, 2014). Although they are both a type of ordering process, decentralised replenishment orders and centralised ordering are often kept as separate activities due to their differences in fashion retail.

2.5.1 Centralised Ordering in Fashion Retail

This study mainly concerns buying, i.e. the orders placed centrally from the buying department to the suppliers. Wall, Sommers & Wilcock (1994) argues that out of the many activities performed by a fashion retailer, the ones connected to the buying of fashion goods are strategically vital for the survival of the firm.

Due to long lead times in the fashion industry and short product life cycles, fashion buyers often need to decide and order inventory for an entire season long beforehand (Mantrala & Rao, 2001). It is preferred to use past sales data as a main factor for buying decisions (Sen, 2008). Generally, fashion retail and apparel buying is based on forecasts and therefore, forecast errors

have a significant effect on sales and profit (Mattila, King & Ojala, 2002; Xia & Wong, 2014). If forecasted numbers are too low, the effect will be low service levels and loss of sales due to stock outs. If they are too high the result will be a high inventory level, leading to mark downs and thereby lower profit (Xia & Wong, 2014). This must be considered when deciding forecasting and sourcing strategy, meaning that products with predictable demand should be distinguished from the ones with unpredictable demand (Mattila et al., 2002). The products with predictable demand should be sourced cost efficiently and well in time for the season, allowing for long lead times, while products with unpredictable demand should be sourced based on market information, requiring short lead times and flexible replenishment (ibid).

Thus, fashion retail is characterised by a forecast-driven supply chain relying on two seasons: Fall-Winter and Spring-Summer (Mantrala & Rao, 2001; Martínez, Errasti & Rudberg, 2015). This two season-system leads to several difficulties in the order decision making and fulfilment. Firstly, it may be difficult to get the collections on time and in the right quantity and quality, resulting in loss of sales. Other difficulties include the issue of overstocking due to overestimated demand and stock-outs due to better sales than forecasted (Martínez et al., 2015). Thus, the order decision making affects the bottom-line profitability of fashion retailers to a high degree (Mantrala & Rao, 2001). This is partly why buyers and the buying department often report to high levels in the organisation hierarchy (Weele, 2014).

Due to the two seasons, merchandising activities often take place as early as the end of the season in the previous year, i.e. eight to nine months before the new season starts (Sen, 2008). Buyers may for example start to develop merchandising plans for the season, forecasts and preliminary orders for vendors (ibid). This can be used as a basis for the buyers' budgets which sets constraints for the buyers and their allowed purchasing spend. A commonly used type of budget is a so called open-to-buy budget, also called OTB-budget, where the buyer knows what their maximum purchasing spend for each season or supplier might be, but they can allocate the budget in different ways (ibid). At the start of the season, some buyers may place all their orders while other buyers only make some of the anticipated orders and then buy later when they know more about the demand for the current seasons (ibid). In the US fashion industry, it is common that these initial orders stand for between 60-100% of the total anticipated orders (ibid). Thus, a traditional sourcing strategy is commonly used in the fashion industry, where only a limited amount of replenishment ordering is conducted (ibid).

2.5.2 Replenishment Ordering in Fashion Retail

Because of the characteristics of the fashion retail industry as described in Chapter 2.2.1, the replenishment processes are kept as simple as possible to avoid any non-value adding activities and keep costs at a minimum. Its main objective is to fulfil the demands and keep a high availability in the stores (d'Avolio, Bandinelli, Pero & Rinaldi, 2015). Due to the limited space in the physical stores, there is a need for frequent deliveries (ibid).

The most common replenishment system in retail is an automatic replenishment system based on a re-order point where an automatic order is sent to the distribution centre or supplier when the re-order point is reached (Weele, 2014). Most commonly, the products have a barcode that

is scanned in the cash register and are at that moment withdrawn from the inventory, which makes it possible to automatically track the inventory levels with minimum manual work (Weele, 2014).

2.5.3 Buying Organisation in Retail

Due to the importance of the buying function in retail settings, Weele (2014) argues that the buying organisation should report high in the organisation and have a strategic role in the company. A buying organisation usually consists of several buying units. Weele (2014) states that there are two distinct structures for organising buying units in retail. These are a functional buying structure and a cross-functional structure.

The functional buying structure consists of autonomous buying units that act separately from other functions such as distribution and logistics. The buyers base their decisions upon category plans made based on previously performed forecasts (Weele, 2014). This set up is connected to a traditional sourcing strategy (ibid).

The functional buying structure has evolved over the years into a cross-functional buying structure (Weele, 2014). Organisational entities are not only including one function, but rather includes several different functions such as buying, physical distribution, visual merchandising and sales. The underlying reason for such a set up is that it enables decision-making for achieving the maximum value for the company and lower the total supply chain cost (Weele, 2014).

2.6 Information Technology to Facilitate Supply Chain Integration

Due to inefficiencies in traditional trading relationships, electronic linkages between the actors can be established to improve total channel performance across the value chain (Clark et. al., 1997). These electronic linkages facilitate communication and information sharing between actors in the supply chain and is considered an important tool in order to gain competitive advantage in the supply chain (ibid).

Within the context of fashion retail, coordination of actors in the supply chain and of their activities is of great importance and a lot of manufacturers in the industry engage in downstream integration through information sharing and process coordination (Castelli & Brun, 2010). Through coordination between actors in the supply chain, innovation, flexibility and speed can be achieved and thereby a competitive advantage can be gained (ibid). In line with this, Bhardwaj & Fairhurst (2010) states that a key for retailers to achieve the responsiveness and flexibility that the fashion industry demands, is to engage in close relationships with suppliers.

2.6.1 EDI and its Benefits

One way to link suppliers and retailers electronically and create benefits for both sides is to implement an electronic data interchange (EDI) system, which according to Maltz & Srivastava (1997) is especially efficient in procurement, delivery and channel coordination. Furthermore, EDI systems are especially effective for products with unpredictable demand (Maltz &

Srivastava, 1997). Loebbecke, Kronen & Jelassi (1996) states that EDI links actors, improves the integration of logistics, transportation and administration while simultaneously decreasing transaction cost. Moreover, in a study by Ahmad & Schroeder (2001) regarding EDI and its influence on delivery performance, it was found that usage of EDI enhances delivery performance in terms of on-time deliveries.

Retailers generally adopt EDI due to the tangible gains which consist of inventory and operating cost reductions and due to the intangible gains, such as improved vendor relations and competitive advantage (Vijayasarathy & Tyler, 1997). Maltz & Srivastava (1997) argue that it is not enough to simply design an EDI system, but for value to be created, the users must act upon the information that the system provides. Maltz & Srivastava (1997) further discuss that fashion retailers can use market information from the EDI system to make adjustments in purchase plans. However, the success of this strategy depends on if the information is transmitted to the suppliers and if the suppliers have a somewhat flexible production system so that they are able to respond to the adjustments (ibid).

Vijayasarathy & Tyler (1997) state that EDI can work to replace traditional ways of exchange of business documents like purchase orders, invoices and shipping notes by transmitting these electronically. This leads to benefits such as reduced transmission cost, reduced manual labour and improved information accuracy (ibid). Although these benefits can be gained by implementing EDI, the retailing sector have been slow to adopt and develop EDI (Wall et al., 1994).

2.6.2 EDI Communication Standards in the Fashion Industry

GS1 is a world-wide organisation aimed at creating supply chain standards to enable organisations to simplify and standardise information sharing (GS1, 2017). The organisation has developed standards for several different industries and are most widely known for their standardisation of barcodes (ibid). GS1 has described the business processes of the German fashion industry and how these processes are connected to information exchange through EDI communication standards (GS1 Nederland, 2014). These processes are described below.

When ordering goods for an upcoming season, the supplier and the retailer make plans for the season which results in the supplier making an assortment offer via the EDI message PRICAT, which stands for price catalogue. In the PRICAT message, the retailer receives master data about the supplier's assortment, including article information. The retailer can select articles and order these via the EDI message ORDERS. Thereafter, the supplier gets the order in their system and the retailer receives an order confirmation via an order response message called ORDRSP.

However, it is also common in the fashion industry that the selection of the articles take place at the supplier, in exhibition rooms or at fairs. In this case, after a selection is made, the retailer receives an EDI message from the supplier called ORDRSP which confirms the selection that was made at the meeting. The retailer also receives PRICAT in order to process the ORDRSP.

If the order needs to be modified, with regards to for example amount and delivery date, the retailer gets the changes via ORDRSP.

These two alternatives, that the retailer gets the PRICAT before making a selection and sends the ORDERS message afterwards or that the supplier sends the PRICAT and the ORDRSP message after the selection has been made, are two ways of ordering with EDI support. The two alternative processes for ordering through EDI are shown in Figure 3 below.

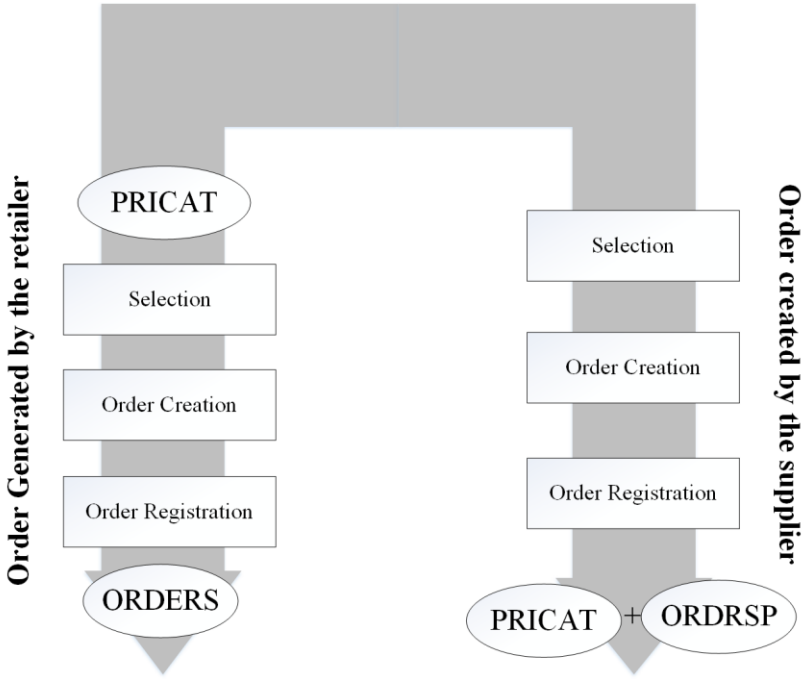


Figure 3: An illustration of the two ways in which orders are created in the fashion industry using EDI, either by the retailer or at the supplier, in exhibition rooms or at fairs. The figure has been adapted from GSI Nederland (2014, pp. 18).

When the order is confirmed and the goods are picked, packed and ready for delivery at the supplier, a despatch message, DESADV, is sent from the supplier to the retailer containing the ordered and the delivered amounts. It is crucial that the supplier sends the DESADV in time so that it is received by the retailer before the goods arrive. Thereafter, when the goods arrived, the recipient confirms that the goods are received via the EDI message, RECADV which refers to the DESADV. If there are missing parts of the delivery, the delivery that compensates for this is receipted with a new RECADV containing only the additional amount that is received. This message refers to the original DESADV.

3. Method

In this chapter, the method used to fulfil the purpose of this study is presented. Initially, the research strategy and design is described, followed by an overview of the research process. Thereafter, the reader is provided with a description of the data collection and how the selection of interviewees was made. Finally, a summary of how the collected data was processed and analysed is included.

3.1 Research Strategy and Design

There is a variety of strategies for conducting business research and it is, according to Bryman & Bell (2003), common to separate between quantitative and qualitative research strategies. The authors describe quantitative research as emphasising quantification of data while qualitative research emphasise words in the data collection and analysis. Moreover, qualitative and quantitative research differs in terms of who's view is supposed to be in focus. Bryman & Bell (2003) claim that in contrast to quantitative research, the view to be taken in qualitative research is that of the participants and not the view of the researcher. Weathington, Cunningham & Pittenger (2012) state that when the aim of the research is not to quantify an effect or difference between groups but instead to explain a phenomenon, qualitative research is useful.

Another difference between the two research strategies is that qualitative research generally aims to generate new theory while qualitative research is more focused on testing existing theories (Bryman & Bell, 2003; Weathington et al., 2012). Although the differences between qualitative and quantitative research, Bryman & Bell (2003) believe that the two strategies can be combined in a research project. In this study, the collected data is of qualitative nature, such as data gathered from interviews.

Furthermore, this study is based on a case study design. This is, according to Hedge (2015), appropriate when the researchers are aiming to focus on answering a certain question and understanding a unique and complex context. Bryman & Bell (2003) describes that a case study entails a detailed and intensive analysis of one single case. Due to this study aiming to go deeper into a specific and rather complex context of the case company, a case study approach is considered useful. To answer the research questions, multiple case studies had to be conducted and compared.

3.2 Research Process

To fulfil the purpose of this study, the research process was divided into three steps. The first step consisted of collecting data through interviews and study visits at the case company and making a flowchart of the case company's current ordering process. The flowchart includes a description of each activity, which function that performs the activity and which documents, tools and systems that supports the activity. This step was aimed at answering research question 1.

The second step was to make a description of similar actors' ordering processes. The information needed was gathered through interviews with some of the case company's external

suppliers and interviews with competitors as well as reviewing case studies and relevant theory found in literature. The result from this was also illustrated in a flowchart with a description of each activity, which function that performs the activity and which documents, tools and systems that supports the activity. This step was aimed at answering research question 2. Included in this step was to conduct an analysis of the gap between the case company's current process and similar actors' ordering processes with the support of theory.

The third step was to suggest a new ordering process for the case company with regard to its prerequisites. This was done by addressing the non-value adding activities identified in the current ordering process and by comparing the ordering process of the case company to similar actors' processes described in step 2. The new process was also illustrated in a flowchart with the same structure as in the previous steps. This last step aimed to answer research question 3. An overview of the research process is shown in Figure 4 below.

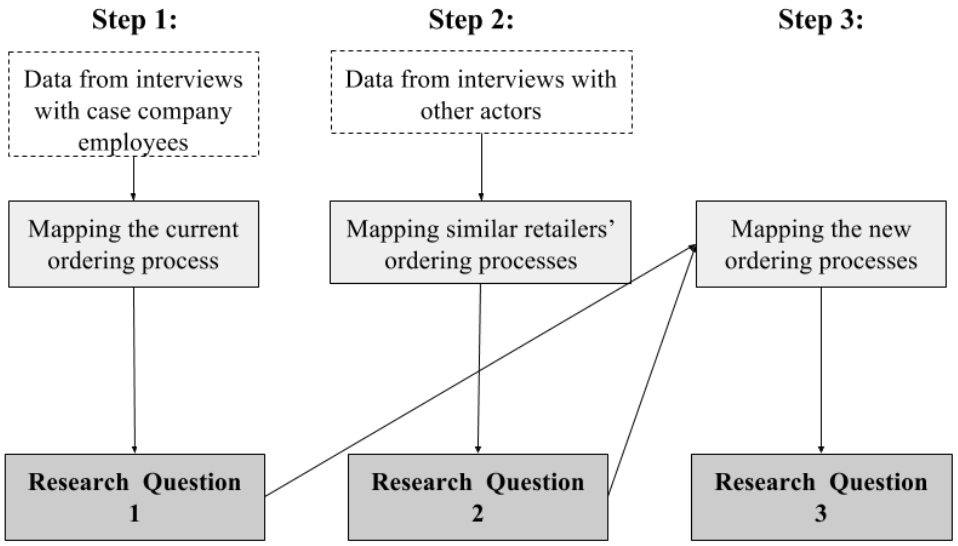


Figure 4: An illustration of the research process.

After each step of the research process had been finished, the results were presented to a group of employees with different positions at the case company. By presenting the result from each step, the gathered data could be verified continuously throughout the research process.

3.3 Data Collection

In this section follows a description of how the literature review was conducted followed by a subsection about the empirical data collection. Furthermore, the interview technique that was used is elaborated on and a discussion about selection of interviewees is provided. Moreover, the interviewees are presented.

3.3.1 Literature Review

To provide knowledge and understanding for the subject at hand as well as create credibility and trustworthiness to the analysis and conclusions, literature related to the fashion industry, supply chain management, purchasing processes and organisations, ordering processes and

information technology has been collected and studied. The main sources for the literature review are articles and previous research within the areas mentioned above. The literature has been gathered mainly through the Summon database and Scopus database which can be accessed through the Chalmers library webpage. The literature review resulted in the theoretical framework which is presented in Chapter 2.

3.3.2 Empirical Data Collection

To gather the necessary qualitative data to answer the research questions, interviews were chosen as the main method for collecting empirical data. According to Weathington et al. (2012), one benefit of conducting interviews is that it allows the interviewer to ensure that the interviewee understands the questions and gives the interviewer a possibility to ask follow-up questions to clarify the participants' responses. The possibility of asking follow-up questions was considered important in this study since data about a broad context and extensive information about ordering processes was collected. Most interviews were face-to-face interviews, which Weathington et al. (2012) claim gives a great deal of rich information.

The interviews conducted with employees at the case company, external suppliers and three other actors in the industry were carried out in a semi-structured set up. Interviews can be carried out using different techniques such as structured, semi-structured and unstructured interviews (Bryman & Bell, 2015). Unstructured interviews are basically a discussion without any agenda or guideline for conducting the interview (ibid). On the other hand, structured interviews are carried out by following a strict agenda, leaving no room for follow-up questions or a broader discussion (ibid). Semi-structured interviews can be seen as a compromise between unstructured and structured interviews. A semi-structured interview means that it is carried out using a guideline while remaining open for discussion and potential follow-up questions (Bryman & Bell, 2015). Before each interview in this study, an interview guide was prepared and sent in advance to the interviewee. Every interview was recorded and transcribed immediately afterwards.

To access the information required to answer the first research question of this study, interviews were conducted internally with employees at the case company that are involved in the ordering process. By conducting interviews with personnel involved in the process, the aim was to gather information about the activities that are carried out today, which functions that are responsible for the activities and what resources and documents that are needed to facilitate the activities.

The criteria for choosing the interviewees was that they should be involved in or affected by the ordering process. The aim was to gather input from several sources working in various parts of the supply chain to gain different perspectives on the process and which steps in the process that needs to be improved. Additionally, a study visit was made to the case company's DC, where observations were made and information regarding deliveries was provided. It also provided an understanding about the perceived issues connected to the deliveries. The positions of the interviewees that were selected are shown below in Table 1. The content of the interview guide differed slightly depending on what position the respective interviewee had but was based on the interview guide that can be found in Appendix 1.

Table 1: The case company employees that were interviewed in the first step of the research process.

Position of the interviewees at the case company	**Number of interviewees**
Buyer Assistant	2
Buyer	1
Supply Planning Manager	1
EDI and Logistics Developer	1
Supplier Development Manager	1
Brand Manager	1
Team Leader DC (responsible for the brand station flow)	1
Logistics Developer DC (responsible for cross dock and cross dock pre-mark flows)	1

The information gathered during these interviews was used in the first step of the research process for describing and mapping the case company's ordering process and to answer research question 1. The description of the current state and the flowchart of the current ordering process can be found in Chapter 5 and in Appendix 5. Apart from the interviews. four weeks were spent at the office of the case company where observations were made.

To answer research questions 1 and 2, the ambition was to interview a number of the case company's external suppliers. This to get information about their perspective of the current process and what differences there are between the case company's way of ordering compared to how other retailers that the supplier works with orders. Since the case company has around 600 external suppliers, it was, due to time restrictions, not possible to conduct interviews with all the suppliers. A selection had to be made that would be representative for the supplier base. The parameters that were important to consider when making the selection were type of products sold to the case company and which material flow their products flow through. What was also considered was if the process with the supplier is currently working well or not and if electronic communication is implemented between the supplier and the case company. With these parameters in mind, a selection was made which is shown below in Table 2. The interview guide that was the basis for the interviews with the external suppliers can be found in Appendix 2.

Table 2: The interviewees included in the second step of the research process.

Type of Supplier	**Type of Communication**	**Material Flow**	**Interviewee(s) at the Supplier**
Sport and clothing	E-mail/Phone	Brand Station Flow	Range Manager
Shoes	E-mail/Phone	Brand Station Flow	Agent
Clothing	E-mail/Phone /Supplier Portal	Brand Station Flow	Wholesale Coordinator
Sport, Underwear and Clothing	EDI	Cross Dock Pre-Mark flow + Brand Station Flow	Key Account Manager and Back-office representative
Sport	E-mail/Phone/Supplier Portal	Brand Station Flow	Sales Coordinator
Shoes	E-mail/Phone	Brand Station Flow	Agent
Underwear	EDI	Cross Dock Pre-Mark flow	Product Manager
Clothing	E-mail/Phone/Supplier Portal (EDI pilot starting soon)	Brand Station Flow	Logistics manager, Assistant Planner, Buyer

To answer the second research question it was, apart from conducting interviews with suppliers, the aim to conduct one or more interviews with retailers similar to the case company within the fashion industry. The parameters when selecting other retailers to investigate was that the retailer buys and sells brands from external fashion suppliers. The interview guide that was used when conducting interviews with the similar retailers is provided in Appendix 3.

It also occurred during the data collection in step 2 of the research process that an actor within the industry that provides solutions for EDI-communication was mentioned several times during the interviews. Therefore, a decision was made to conduct an interview with a representative from the EDI-solution supplier as well. In Appendix 4, the interview guide used when interviewing the EDI-solution supplier can be found. The interviewees chosen are presented below in Table 3.

Table 3:The interviewees included in the third step of the research process.

Type of actor	**Interviewees**
Online retailer	Senior Buyer Menswear + Supervisory Board
Danish retailer	Supply Chain Development Manager
EDI-solution supplier	Sales Manager Northern Europe

The collected data from the interviews conducted in the third step of the research process was used to map how ordering is performed by similar retailers within fashion retail and how the case company's ordering process could be designed. These results can be found in Chapter 6 and in Appendix 6 and 7.

The gathered data from all three steps in the research process together lead to the suggestion of a new ordering process for the case company. The suggested process is described in Chapter 8 and illustrated in Appendix 8.

3.4 Data Processing and Analysis

This section presents how processing and analysis of the collected data was carried out. As a tool to analyse the data, Value Stream Mapping, from now on referred to as VSM, was used. Due to that the authors of this study argue that VSM is an important tool for processing the collected data and is a part of the method used for conducting the analysis, an introduction to the concept of Value Stream Mapping and a description of how it can be used as a tool for improving processes is provided in this section.

3.4.1 Value Stream Mapping

To analyse the collected data and make the flowcharts, VSM, was used as a tool. VSM is one of several tools that can be used in creating lean enterprises (Keyte & Locher, 2004; Khurum, Petersen & Gorschek, 2014; Locher, 2008). The definition of value stream was made by Womack & Jones (2003) as all the actions required to bring a product or service through the so-called critical management tasks, i.e. problem solving, information management and physical transformation. In *Learning to see* by Rother & Shook (1998), VSM is first introduced, mainly for physical transformation of products in traditional manufacturing contexts. However, since this study aims to investigate mainly administrative processes, the extended VSM by Keyte & Locher (2004) adapted for administrative processes is used in this study.

By using VSM, it is possible to visualise activities, how they are connected and organised as well as providing an opportunity to enhance the value creating by eliminating waste (Keyte & Locher, 2004). Christopher & Peck (1997) claims that mapping a process is a vital step for both understanding the process and for identifying non-value adding activities. The use of VSM in this study allowed for illustration, documentation and measurement of tasks and activities regarding both material- and information flows which is deemed suitable when answering the research questions in this study. Keyte & Locher (2004) argue that the illustration of a process in such a way allows for creating improved processes and eliminating unnecessary activities to create a more lean enterprise.

The basis of the VSM is to first decide on the limitations of the mapping, also called Product/Service family in Figure 5 below, which for this case has been described in section 1.4. After this, the current state should be drawn to get an understanding of how the process works today (Keyte & Locher, 2004). In this study, the future state drawing is based on the current state drawing and on the drawings of the similar actors' processes, which has worked as

inspiration for the design. The goal of mapping is to develop a new work plan for the future state (Keyte & Locher, 2004). Keyte & Locher (2004) argue that changes to achieve the future state rarely takes longer than 12 months to implement.

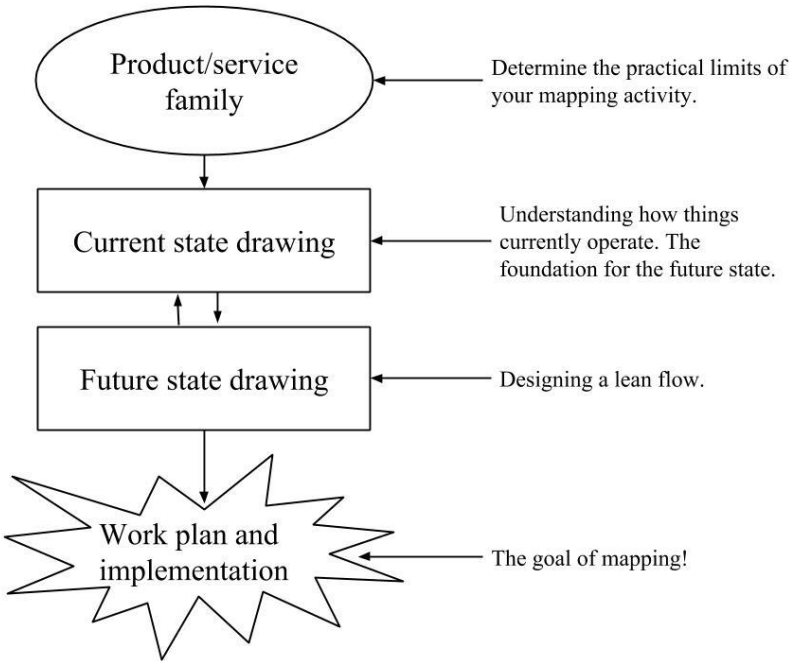


Figure 5: The basic steps in value stream mapping (adapted from Keyte & Locher, 2004, pp.7).

To create the current state and future state map, metrics and parameters needed to be chosen. Keyte & Locher (2004) argues that this might be difficult for administrative processes since they usually have no standard performance metrics that reflects costs or quality in the value stream. However, Weele (2014) argues that it is of importance to identify the input and output of each activity as well as the function responsible for performing the activity. Thus, the parameters chosen for each activity are actors, input, activity and output, as can be seen in Figure 6 below. Apart from the activities, the information flows and material flows are illustrated in the drawings as well. These are also illustrated in Figure 6 below.

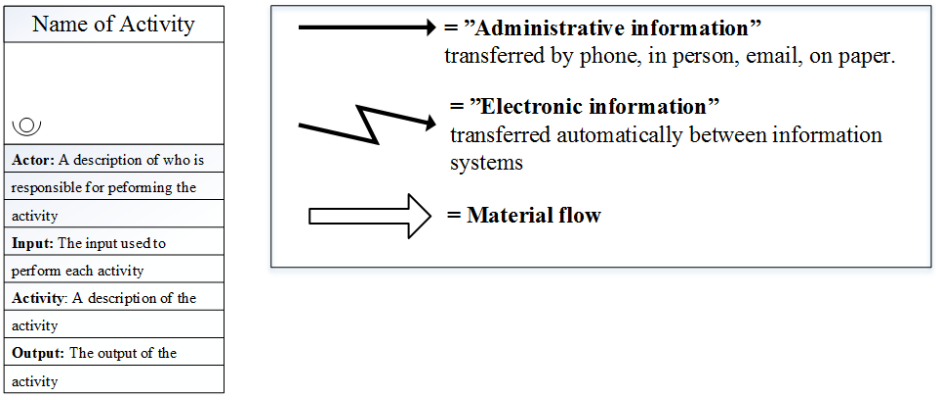


Figure 6: A description of how the activities and flows were illustrated in the process drawings as well as an illustration of the difference between information flows and material flows.

When determining which activities can be classified as value-adding, the typical question to ask is if the activity creates value as perceived by the customer. However, this is only suitable in a situation where there are shop floor activities where products are being transformed or assembled (Keyte & Locher, 2004). For this study, in which administrative activities are studied, none of the activities fall under this description. Thus, Keyte & Locher (2004) suggests that the *"eight wastes that add costs to the business but no value to the customer"* can be a way of identifying waste in the value stream. These are defined as overproducing, inventory, waiting, extra processing, correction, excess motion, transportation and underutilised people (see Figure 7 below).

Waste Category	Office Examples
1. Overproducing Producing more, sooner, or faster than is required by the next process	Printing paperwork out before it is really needed, purchasing items before they are needed, processing paperwork before the next person is ready for it.
2. Inventory Any form of batch processing	Filled in-boxes (electronic and paper), office supplies, sales literature, batch processing transactions and reports.
3. Waiting	System downtime, system response time, approvals from others, information from customers.
4. Extra Processing	Re-entering data, extra copies, unnecessary or excessive reports, transactions, cost accounting, expediting, labor reporting, budget processes, travel expense reporting, month-end closing activities.
5. Corrections Any form of defects	Order entry errors, design errors and engineering change orders, invoice errors, employee turnover.
6. Excess Motion Movement of people	Walking to/from copier, central filling, fax machine, other offices.
7. Transportation Movement of paperwork	Excessive email attachments, multiple hand-offs, multiple approvals
8. Underutilised people People's abilities, not their time	Limited employee authority and responsibility for basic tasks, management command and control, inadequate business tools available

Figure 7: The eight wastes that add costs to the business but no value to the customer (adapted from Keyte & Locher, 2004, pp. 17).

Keyte & Locher (2004) state that waste should only be reduced if it does not affect the ability to deliver to the customers. The authors also underline the importance of identifying the root cause of waste and make improvements to counteract them and not simply aim to improve the symptoms.

To eliminate waste in administrative processes, Keyte & Locher (2004) suggest using existing tools and techniques that can be found in lean research. They suggest using more standardised

work, quality at the source, cross-functional teams and error-proofing to improve the operational processes.

The aim of standardising processes is to organise the work flow and avoid going back to an unorganised state (Voehl, 2014). When it comes to quality at the source, it is argued that the data quality used as an input for a process will affect the outcome and therefore, it is of great importance that the input data is of high quality (ibid). Thus, improving the data at the source is one way to address the root cause of deviations that might occur (ibid). One way to achieve quality at the source and throughout the process is to enable error-proofing. Error-proofing means to implement methods that assure that no errors or mistakes in an individual process passes along to the next step. By performing negative analysis, i.e. identifying where and when faults can occur, it is possible to design processes to avoid these faults (Voehl, 2014). Using cross-functional teams for both designing and implementing a future state drawing enhances decision-making that will benefit the organisation as a whole and not only optimise for one function or part of the process (Keyte & Locher, 2004).

4. An Overview of the Case Company and its Supply Chain

The following chapter provides a description of the case company, the environment it is acting in and its supply chain. All information has been gathered from the interviews conducted with employees at the case company.

4.1 The Case Company and its Environment

The case company was founded in 1899 and is one of Scandinavia's largest department stores. Today, the case company has around 70 stores in Sweden and has recently launched an online shop. The case company offers a wide range of products in different price ranges, spanning from home decor to fashion and beauty. The case company sells both private label products and products bought from external suppliers. Due to the wide range of products that are offered and the different characteristics of the product groups and the industry structures related to each group, the organisation has, as mentioned previously, been divided into different departments based on product categories.

As mentioned previously, the fashion industry works mainly in a two-season system where, for each season, there is a pre-order, a main order and possibly replenishment orders. Since the case company acts in a two-season system, speed to market is important when it comes to launching new collections so that the customers have access to the products as early as possible. Two buyer assistants stated that the demand on speed is increasing, which implies that requirements are put on the case company in the form of availability and flexibility. Since the aim is to have high availability during the season while being able to sell all the products before the season ends and without price markdowns, the lead time for replenishment orders is very important. A buyer assistant described how in some cases the lead time for the replenishment orders have been too long. This has led to that the shelves in the stores are empty during the season and that the goods arrive when the season is almost over, forcing the case company to immediately markdown the prices of those goods.

The external suppliers are given delivery windows within which they are allowed to deliver to the case company. The length of the delivery windows varies but generally they are set to three months. Due to the long delivery windows the supply planner manager stated that it is difficult to secure space and capacity in the DC and availability in stores for the products.

4.1.1 The Case Company’s Buying Organisation

When buying from external suppliers, the buyers at the case company are responsible for all orders within a certain category, such as for example women’s fashion and underwear, men’s fashion and sports and shoes. This means that each buyer is responsible for around 90-120 suppliers. The buyers are also responsible for tasks of a more strategic nature, such as making decisions on assortment, influencing the budget, optimising sales and handling the supplier relationships. Each buyer has a buyer assistant that helps with supporting activities and more

operative tasks such as order administration, expediting, answering questions from suppliers and other departments and managing article information in the information systems.

The buyers report to the brand manager who is responsible for managing the buying organisation and all external suppliers. The focus of the buying organisation is to have the best and most relevant assortment which generates as much sales as possible. An issue that the buying organisation have started to focus on now is how to simplify the buying process and reduce the amount of manual labour. The brand manager described how the case company has previously focused on improving and optimising the processes for the private label operations which has resulted in the buying of fashion brands from external suppliers being neglected and less developed.

4.1.2 The Case Company's External Fashion Suppliers

The case company has approximately 600 external fashion suppliers. The characteristics of the suppliers vary greatly regarding both size in terms of volume, number of employees, product categories and geographical markets. From every external supplier, the case company orders a new collection for each of the two main seasons. Additionally, there are two pre-seasons before the respective main season, when ordering is carried out. Approximately 20-30% of the budget is spent on the pre-season whereas the remaining 70-80% is spent on the main season and replenishment orders.

Before a new season, suppliers are evaluated and it is decided which suppliers to buy from and if a phase out of any supplier is to be initiated. Moreover, a budget is determined per brand by the controller, the brand manager and the buyer. The products, sizes and colours that are to be bought is up to the buyer to decide, based on sales data from the previous season, company strategy, trends and the buyer's previous experience and knowledge.

The brand manager mentioned that there currently is no general contract or supplier guides that are used for the external fashion suppliers. Thus, there are no standardised agreements on how the case company should work with their suppliers and there can sometimes be some confusion regarding how the case company works and what their requirements on the suppliers are.

4.2 The Material Flow for Products Bought from External Fashion Suppliers

Deliveries from external fashion suppliers flows through the case company's DC before being delivered to the stores. The goods go through one of the two main material flows: the brand station flow or the cross dock pre-mark flow. To understand the case company's ordering process and its implications, the two material flows are described briefly below.

4.2.1 The Brand Station Flow

When goods arrive at the DC, they first go through goods registration where the order is identified, the goods are sorted and the delivery notes are collected. The delivery notes are given to the administrative department where the delivery is registered and administrative tasks are

prepared. Here, the delivery notes are marked with the case company's PO number so that the DC personnel can identify which order the shipment belongs to and make sure that the articles and quantities are correct. An arrival registration is also done in the information system.

Thereafter, employees in the brand station flow collect the delivery notes and other documents for the delivery and bring the goods from the registration area to their work stations. There are 26 work stations where the workers sort the goods, check that the received products and quantities correspond to what is stated on the delivery note, label the goods with price when necessary and sort them according to their allocation to different stores. If there are any deviations such as over delivery, faulty deliveries, missing PO number or similar, the goods are stuck in the DC until the problem has been solved or the goods are automatically returned to the supplier.

After the goods have been price marked and sorted, they are sent to the next department where security tags are attached. The goods are put on hangers if necessary so that they are ready to be sold in the stores. After the goods has been made "store-ready", i.e. they are labelled with price and security tags and put on hangers, they are delivered via trucks to the stores.

There is a promise made internally at the case company that the lead time from goods entering the DC to delivery at store should be maximum five days. In the brand station flow, a lot of manual handling required, meaning that it incorporates high handling costs. The aim is that goods from external fashion suppliers should not be stored in the brand station flow but instead flow through the DC and be shipped to the stores as quickly as possible.

4.2.2 The Cross Dock Pre-Mark Flow

The second main material flow is called cross dock pre-mark flow, hereafter referred to as XDP. This is the fastest flow used for replenishment orders, where the replenishment need is sent digitally from a specific store to the supplier in the form of orders. Thus, the XDP is mainly used for staple products that are available for replenishment, and not for seasonal products. Also, there needs to be EDI-communication established between the case company and the supplier to facilitate successful operations through the XDP flow.

When the supplier receives an order message, the supplier picks and packs the orders uniquely to the different stores' demands. Instead of delivering everything in one unit to the DC that needs to be sorted, a delivery can consist of several units containing orders that are already store-ready (i.e. marked with price and security tags) and marked with different final destinations. Thus, some of the material handling that is performed by the case company's employees in the brand station flow, like labelling and attaching security tags, are moved upwards in the supply chain to the supplier.

The lead time from order to delivery is said to be approximately one to two weeks in the XDP flow. Currently, this flow is mainly used for beauty products, underwear and shoes but the case company is trying to use it for clothes as well by putting requirements on suppliers to offer extended services to make the products ready to sell.

The XDP flow is built according to the characteristics of the beauty industry and is adapted to some of the large suppliers in this field. There are several issues that occur when trying to adapt this flow to handling fashion goods. Firstly, the XDP flow can only handle complete deliveries of orders and the orders need to be delivered on a specific date. The current delivery windows for the external suppliers create a problem when it comes to the XDP flow. Either, the suppliers need to wait to deliver until they can deliver the entire order in one delivery, which would delay time to market and possibly result in loss of sales. Another solution would be to create several smaller orders instead of one large seasonal order. However, this would generate significant costs throughout the rest of the process due to high administration costs. An emergency solution is to cancel the big order and split it into two new orders when a part of the original order is delivered. This would however increase the risk of suppliers re-allocating quantities among their customers which would put the case company last in line for the quantities. This could result in those quantities being delivered to another customer.

Moreover, it is not preferable for the case company if every fashion supplier attaches the security tags and puts the products on hangers at their respective facilities. This due to that security tags and hangers are reused internally in a closed loop between the stores and the DC. It would require significant investments to include external suppliers into this system. The suppliers that are currently supplying fashion products to the XDP flow do put on security tags before delivering to the case company, but this is just a temporary solution. In order for them to attach security tags, the suppliers have to order security tags from the DC to their facilities which delays the process and extends the lead time even further. Moreover, the supply planning manager stated that, for the suppliers to deliver to the XDP flow, they have to deliver exactly what is defined in the order, which is not the case today since a lot of delivery deviations occur.

Furthermore, there is an alternative flow to the cross dock pre-mark flow, which is the so called “cross dock flow”. The unique store needs are merged by the supplier into one delivery that is sent to the DC where personnel have to sort the products according to picking orders and thereafter send deliveries to the stores. The benefit of this flow compared to the XDP flow is that the cross dock flow allows for bigger orders.

With the cross dock flow, there are three flows the goods can go to within the DC. The three different flows are illustrated in Figure 8 below.

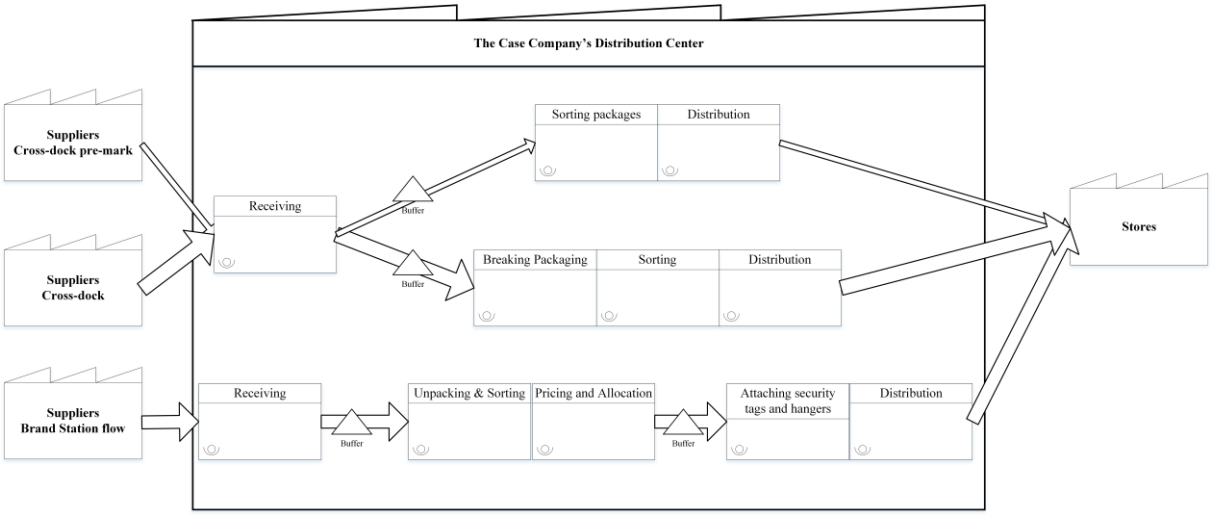


Figure 8: An illustration of the material flows from the suppliers, through the DC and to the case company's stores. The size of the arrows roughly illustrates the volume of goods in each flow. The volumes refer to all the products delivered to the DC and not only the fashion products.

The main benefits of the cross dock flow and the XDP flow compared to the brand station flow are that they allow shorter lead times and require less manual handling at the DC and they are thereby more cost efficient for the case company. Therefore, the case company wishes to get more external suppliers to do part of the manual work that now is carried out by DC personnel.

5. The Case Company's Current Ordering Process

In the following chapter, the case company's current process for ordering from external fashion suppliers is presented, thus this chapter answers research question 1. The ordering process has been divided into three main sub-processes. Initially, the process of order generation and confirmation is described, followed by a description of how the orders are created and confirmed in the information systems. Thereafter, the fulfilment of an order and the goods receiving at the case company's DC is explained. Each part of the process is accompanied by a flowchart including the activities and information flows. The last section presents identified problems connected to the current process. As in the previous chapter, all information in this chapter is based on the collected empirical data from the interviews at the case company.

5.1 Preliminary Order Generation and Confirmation

This section describes the first sub-process in in the case company's current ordering process called preliminary order generation and confirmation. This involves the activities of decision-making between the case company and its external suppliers when an order is generated.

The process begins with a supplier meeting which is held by representatives from the supplier and a buyer from the case company. Sometimes, the buyer assistant joins this meeting as well. As input to the meeting, the supplier brings information about their products and the upcoming collection, while the buyer brings general experience and sales figures from the previous season. The buyer also brings a predetermined budget for the specific brand.

During the supplier meeting, the supplier and buyer go through the upcoming collection and discuss and determine which products to buy, in which quantities and sizes and how they should be divided between the stores. No extensive data about sales from several previous seasons or formal forecasts are used to support this decision and several employees at the case company agree that decisions are influenced by the personal relationship between buyer and supplier as well as wishful thinking by the buyer.

The buyers work in different ways when generating the preliminary order. Some buyers bring the information from the supplier meeting back to their office and use an excel file that allows them to vary the quantities and see how they can spend the budget in different ways. Other buyers make their decision during the meeting. When the decisions are communicated either during the meeting or via email afterwards, the supplier transfers the information into their information system and reserves the quantities. This generates an order confirmation which is sent to the buyer via email.

The buyer has the responsibility of validating the order confirmation to make sure that all information and quantities are correct compared to what was agreed upon during the meeting or sent as a preliminary order. In some cases, this responsibility is put on the buyer assistant. One of the buyer assistants described this as difficult since it involves a lot of second hand information due to that the buyer assistants in most cases do not participate in the supplier meeting. This leads to a situation where there is a mismatch between how the suppliers have

interpreted the decisions and how the buyers and buyer assistants have interpreted it. Thus, agreeing on what the order should contain can sometimes be an issue and require several revisions to get it right when validating and accepting the order confirmation. However, the buyer assistants are currently trying to minimise the problem of second hand information by joining the supplier meetings to a greater extent.

In Figure 9 below, a flowchart of the process of generating and confirming a preliminary order is provided.

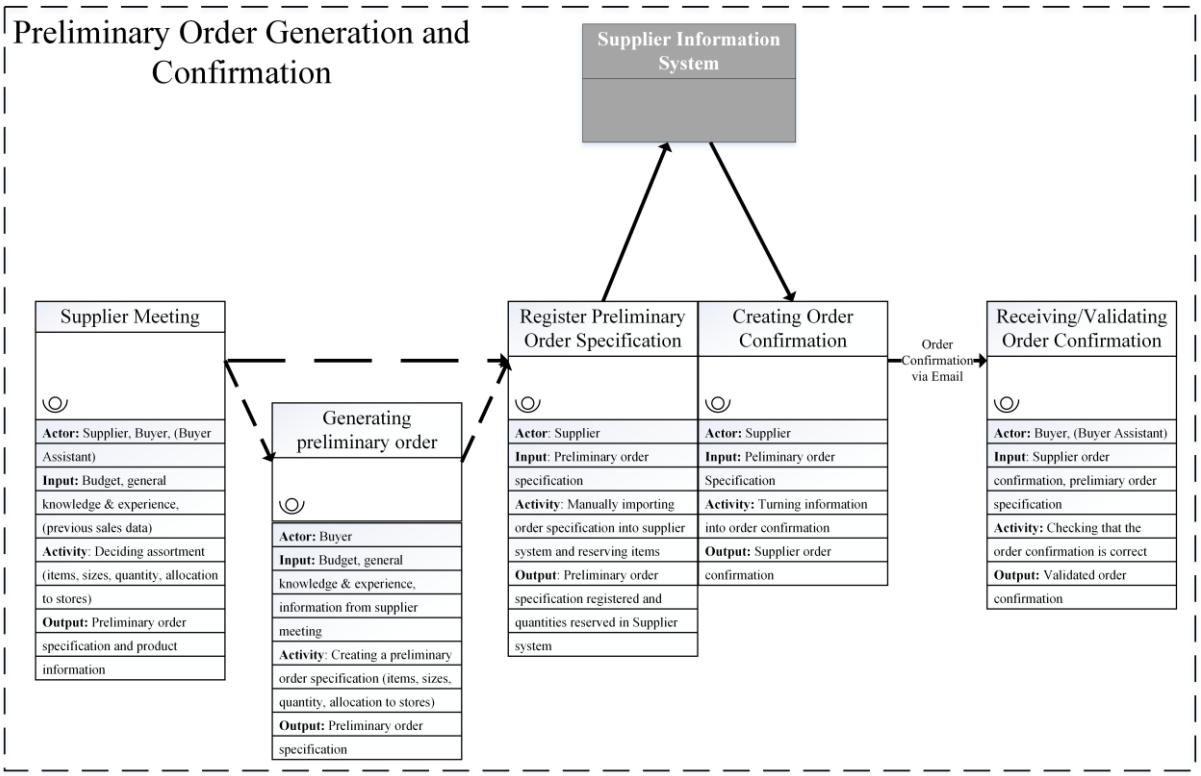


Figure 9: A visualisation of the preliminary order generation and confirmation between the case company and its suppliers.

5.2 Order Creation and Confirmation

This section aims to explain the second sub-process of ordering called order creation and confirmation. This mainly considers activities regarding creating the order in the supplier and case company's information systems and receiving confirmation that this has been done.

After the order confirmation is validated, the buyer or the buyer assistant sends an empty registration file to the supplier and requests them to fill in relevant article information for all ordered articles. The registration file is used to gather all the information required to create an order in the case company's information system. The following information is requested in the registration file:

Per order:

- Supplier site number and name
- Email address

For each article:

- Article and SKU VPN
- Barcode
- Brand, function and name/serie description
- Colour number and name
- Size
- Cost, currency and discount on cost price, net cost price and recommended retail price
- HTS code for import
- Country of manufacturing and sourcing
- Inner pack size, case size, inner pack size barcode and packing method
- Eaches length, width, height and gross weight
- Export value
- Delivery date and discontinue date
- Quantities ordered
- Store allocation

Only the articles that are to be bought need to be registered and there cannot be any products registered in the file that will not be bought by the case company. The supplier fills in the requested information and sends it back to the case company. When the file is received, it needs to be validated by the buyer or the buyer assistant to make sure that the information corresponds to the agreed upon order confirmation and that the data has been entered correctly in the file to be compatible with the case company's information system. Two of the buyer assistants claimed that it is extremely rare that a registration file is correct the first time and that there are considerable issues with data quality. It usually takes a lot of emailing back and forth to the supplier to get the right information in the right format. One of the buyer assistants commented that *"maybe one in one hundred registration files can be transferred immediately into our system without any problems".*

Another issue is that the data that is entered by the supplier must be filled in according to a certain format for the data to be transferred to the case company's system. If the supplier does not enter the data in the right format, the information cannot be transferred to the case company's system and therefore, the file must be sent back to the supplier who must redo the work. Another way of solving this problem is that the buyer assistants change the format of the data themselves to save time.

Situations also occur where the buyer assistants do not identify missing or faulty information, and the possibility of manual errors is quite large even if the buyers or buyer assistants have revised the file. The deviations are often corrected by the buyer assistants to save time but this

way of working leads to that the suppliers does not learn how to do the registrations correctly, leading to more deviations, extra work and problems in the future according to one of the buyer assistants. It is also common that the registration file is validated against different documents, for example the order confirmation sent by the supplier or the excel file used by the buyer to decide on what to buy.

The suppliers have openly expressed their dislike for the registration file, claiming that it is inefficient and requires too much manual work. One supplier declared that it can take up to a full working day for one employee to fill in the registration file. Moreover, one buyer assistant described that some suppliers have talked about joining forces to boycott the registration file and refuse to deliver to show their dislike of the file. Several suppliers mentioned that they think that filling in the information in the format of the registration file should not be their responsibility but rather the responsibility of the case company. Thus, the suppliers feel like they are performing the case company's work without getting compensated for it. It might also take time before the supplier gets access to the registration file, which elongates the lead time for the ordering process. One of the suppliers mentioned that it can take between one day and several weeks before they get the empty registration file sent to them.

Furthermore, the buyers and buyer assistants are not fond of the registration file due to the many administrative problems it causes. Firstly, problems are experienced connected to getting the suppliers to fill in the file. The process of getting a filled in registration file from the suppliers might take several days or weeks and in some cases the suppliers refuse, which severely delays the ordering process and brings problems for delivery at the DC. Secondly, it is supposed to be the buyer's responsibility to send the registration file to the supplier and remind them to fill it in. However, since some buyers lack understanding of why the file is needed and how to use it later, it most often falls to the buyer assistant to perform this activity.

However, when the registration file has been filled in correctly and validated, it is transferred to the case company's information system. The information from the registration file is used in different information systems for several types of activities. The information is manually transferred by the buyer assistants into an article registration system. An order is prepared and allocated to different stores in another system and confirmed in a third system which communicates with the article registration system. Information is sent automatically from these systems to another information system in which the order and a PO number is created. The case company's PO number is used at the DC to accept deliveries from suppliers and handling invoices. The process of order creation and confirmation is illustrated by the flowchart in Figure 10 below.

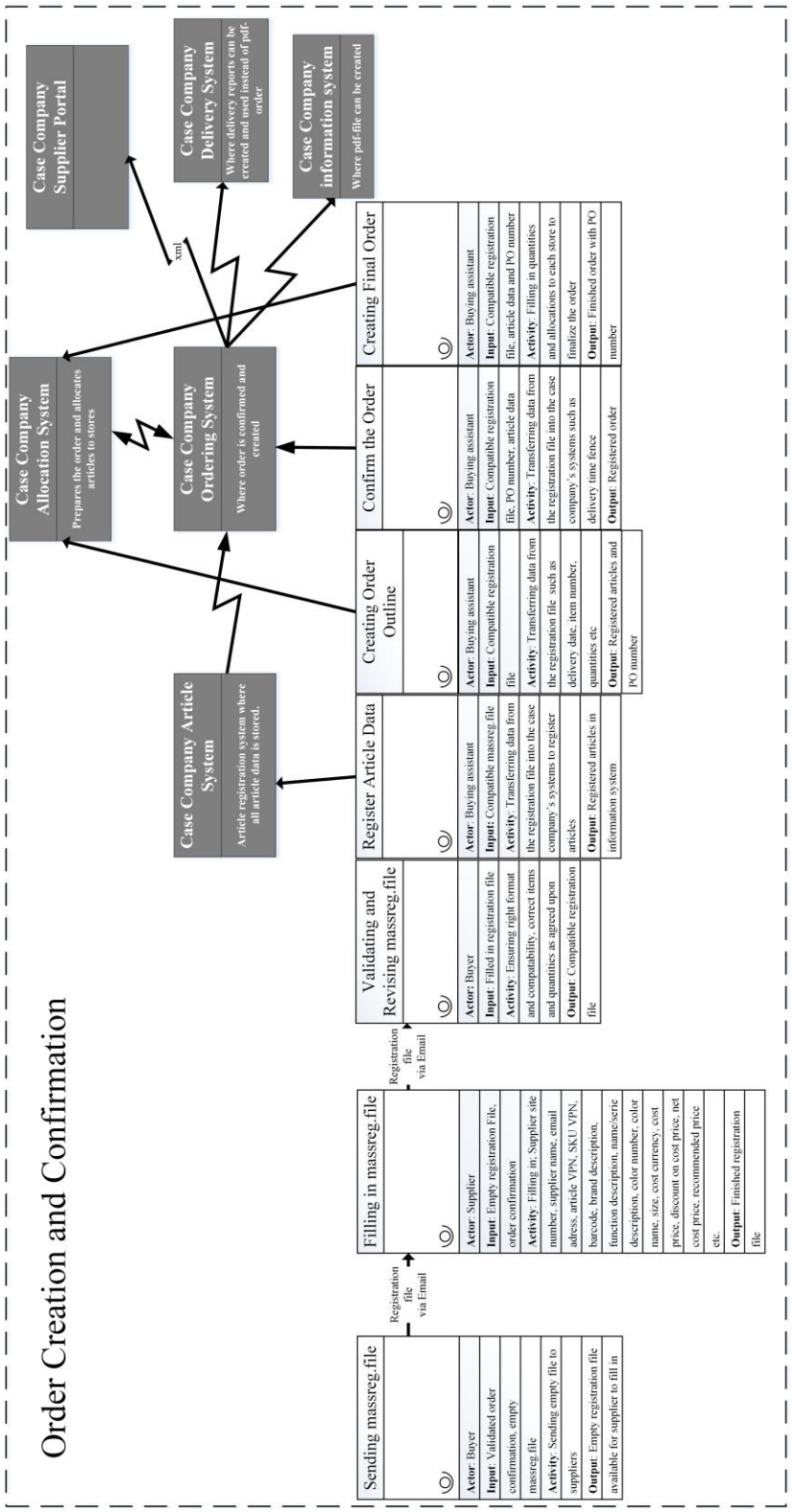


Figure 10: A detailed view of the order creation and confirmation process at the case company.

According to the buyer assistants, the process of creating and confirming the order in the systems takes approximately ten minutes in total and is not seen as a major problem area. The biggest perceived problem connected to the order generation is the filling in of the registration file and the amount of manual work which cause problems with data quality.

5.3 Order Fulfilment

The final sub-process of ordering process is the order fulfilment. This includes the activity of picking, packing and shipping the order as well as preparatory activities required beforehand.

In some cases, the order and the case company's PO number are sent to the supplier via EDI or through the case company's own electronic supplier portal. In cases where the supplier does not use either EDI or the supplier portal, a PDF order can be created by the buyer assistant and sent to the supplier. However, some suppliers do not want orders in PDF format since they cannot work in the file. Therefore, the buyer assistant extracts a report in excel format from the case company's system and sends it to the supplier. This report does not contain all required information, it lacks for example the legal parts, which is why the buyer assistant needs to send both the extracted report and the PDF order to the supplier via email.

When the order is received by the supplier, either electronically or via email, they can begin picking and packing the order. Suppliers using EDI or the supplier portal send a despatch message when they ship the order while suppliers that does not use either EDI or the supplier portal usually does not send any notification when they ship the order. The buyer assistants are responsible for expediting the orders through continuous checks of the so-called "intake so-far" in the case company's information system, which shows how many percent of the orders that has been received so far. Reminders are sent to the suppliers via email if the buyer assistant observes that the intake percent is low when the end of the delivery window is approaching.

Suppliers have expressed concerns about the handling at the case company's DC and more specifically about the long time it takes for their goods to arrive to the stores. One big clothing supplier mentioned that the lead time from that the goods arrive at the DC until it arrives to one of the stores can be several weeks which the supplier considered too long, especially for replenishment orders during the season.

After a delivery has been received at the DC, an invoice is sent from the supplier either through EDI, the supplier portal or manually. Problems that may occur in this step of the process is a missing or faulty PO number on the invoice due to problems earlier on in the ordering process. This makes it difficult to match the invoice with the order and the invoice cannot be paid. The process of order fulfilment is presented in a flowchart that can be found in Figure 11 below.

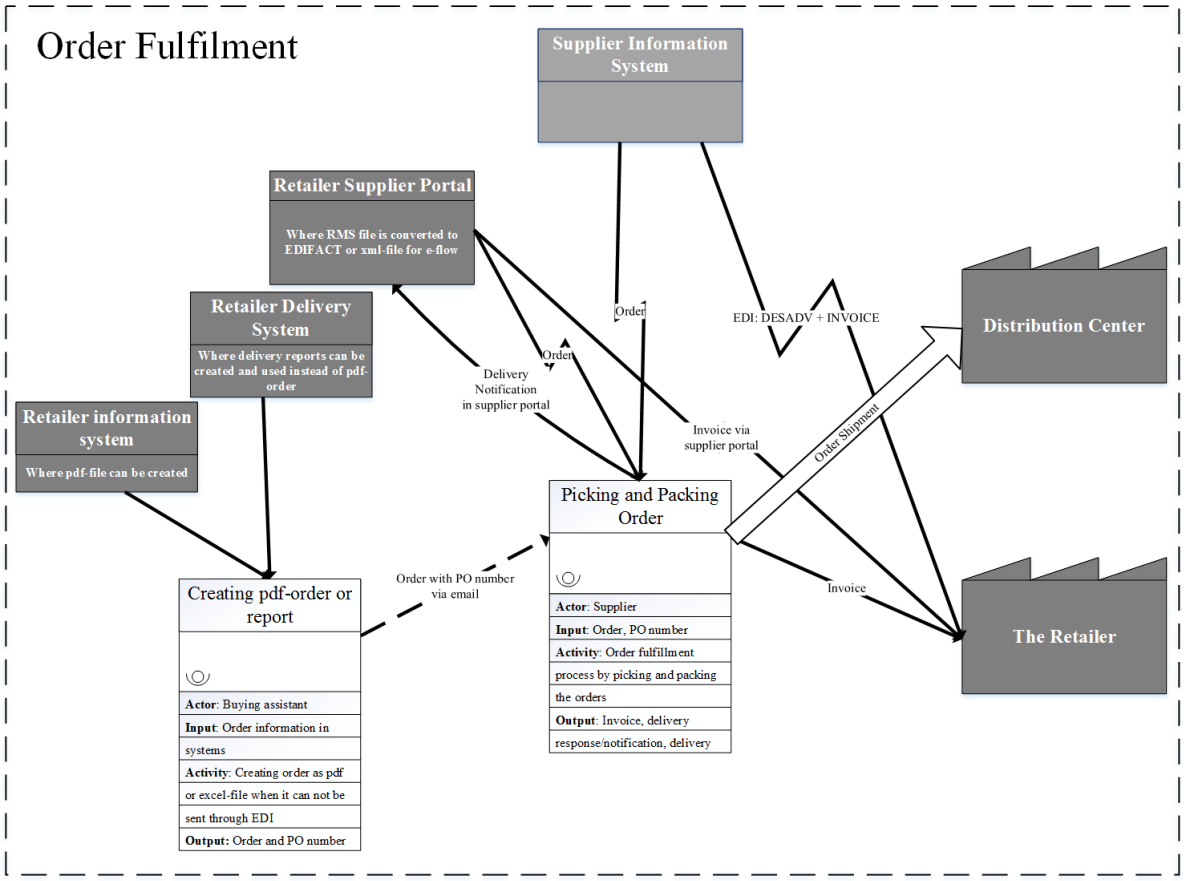


Figure 11: An illustration of the order fulfilment process at the case company.

5.4 Consequences of the Current Ordering Process

The complete current state drawing of the ordering process is illustrated in a flowchart which can be found in Appendix 5. As can be seen in the flowchart, the current process consists of many steps with a lot of administrative and manual work. The most significant consequences identified in the ordering process are summarised below.

One major issue connected to the current ordering process is that misunderstandings exist about which document that is the actual order. In some cases, suppliers interpret the order confirmation they create in their system as the actual order. The case company on the other hand interprets the final order where a PO number is created as the actual order. It is during this process that the supplier reserve quantities for the case company, and these are rarely changed afterwards. In some cases, the suppliers deliver goods to the DC before the order has been registered in the case company's system, especially in the cases where the it takes a long time to get the registration file filled in correctly. This creates considerable problems since the orders are put on hold until they figure out which PO number the shipment is supposed to be marked with. Since there is limited space for storing goods in the DC, this can be a big issue. Alternatively, the shipment is simply returned to the supplier. Because of this, it takes a long time to get the products to the stores, resulting in loss of sales. Another problem that occurs here is that the PO number might be missing in the invoice that is sent from the supplier or the information might not match the information that is registered in the case company's

information system. This creates significant problems for the financial department when they try to match the received goods with the invoices to fulfil the payment.

Moreover, the registration file represents a major bottleneck in the current process. It requires a lot of manual work, both from the suppliers' side and from the case company's side, which slows down the whole process. That suppliers are opposing to fill in the registration file creates problems for the case company due to that it leads to extra work for the buyers and buyer assistants. That the buyer assistants get a file with errors in it and instead of sending it back and requesting correction by the supplier they correct the errors themselves, leads to problems in the future since the suppliers does not learn how to fill in the file correctly. This will cause more additional work for the assistants. Moreover, if errors in the file are not identified, deviating deliveries will be discovered at the DC causing delays in deliveries to stores.

As mentioned, the case company's ordering process consists of a lot of manual administration which is an issue since it takes up much of both the buyers' and the buyer assistants' time. One of the buyer assistants stated that they do not have time for preparatory and preventive expediting activities since the majority of their time is spent handling administrative tasks. There is also an issue of unclear division of responsibilities between the buyers and the buyer assistants. For example, it is supposed to be the buyers' responsibility to make sure that the registration file is filled in correctly and that it is compatible with the case company's system. However, since some buyers lack understanding of the administration and the information system, the responsibility of validating the file usually falls on the buyer assistants. A buyer assistant expressed that it is difficult for the buyer assistants to validate the registration file since they do not know what has been decided during the supplier meeting and therefore have to trust secondary information given to them by the buyer. They also said that the registration file is validated against different documents in different situations. Sometimes they use the excel file that the buyer uses to calculate the budget and sometimes they use the preliminary order confirmation sent by the supplier. Thus, there does not exist standardised way of working.

The lack of standardisation is also visible in the way that the buyers are working. An issue that has been discovered by both employees at the case company and by suppliers is that it can occur confusion as to how the case company is supposed to work, especially in cases when several buyers work with the same supplier. This occurs when a supplier offers products from many different product categories that span over several buyers' areas. Thus, the supplier might get different information from different buyers although they work for the same company.

The fact that the decisions on assortment are made solely by the buyers without any extensive statistics to back up their decisions is also seen as problematic by both buyers and buyer assistants. One of the buyers stated that the information that would be helpful to have access to at the supplier meeting, probably could be extracted from the case company's system somehow. Although, since each buyer has responsibility for up to 120 suppliers, it is too time-consuming to extract this information manually before every supplier meeting and therefore they base their decisions on intuition combined with the sales figures from the previous season and the budget.

One of the buyers argued that the workload at the case company is one of the reasons why there is not enough evaluation and development of the current ordering process and supplier relationships. In the buyer's previous working experience, she was responsible for approximately 30 suppliers, which she considered a suitable number of suppliers to handle to make sure that her work is qualitative. However, in her current position as a buyer at the case company, she is responsible for approximately 90 suppliers, and other buyers have up to 120 suppliers to handle. Thus, it can be argued that there is a lack of resources at the case company, which causes problems throughout the ordering process. One of the main issues is that the lead time during the ordering process may vary and be long due to time constraints and lack of resources and due to that no proper supplier evaluation is conducted.

6. Learnings from Other Actors in the Fashion Industry

In this chapter, two retailers similar to the case company and their respective ordering processes are investigated. The chapter aims to answer research question 2 and consists of an overview of each retailer followed by a description of their ordering processes divided into order generation, order creation and order fulfilment. The complete ordering processes of the two actors have been illustrated in flowcharts which can be found in Appendix 6 and 7. After the two retailers' processes have been described, input regarding ordering processes from the interviews with the case company's suppliers are brought up. Finally, a section about an EDI solution supplier and their offering is provided.

6.1 An Overview of the Danish Retailer and the Online Retailer

To understand in which contexts the two retailers are acting in, a description of their environment and organisational set up is provided. Below follows a description of the two similar actors and their current business set up.

6.1.1 Description of the Danish Retailer

The Danish retailer was founded in the late 1890's and has six department stores in Denmark as well as an online store. They offer a wide range of products within fashion, beauty and home decor in all price categories. Their goal is to be the leading department store in Scandinavia with a broad assortment suitable for all customer segments.

Currently, the Danish retailer have approximately 600 suppliers in total. They emphasise that they see their suppliers as partners and that mutual trust between the Danish retailer and the suppliers is very important. The interviewee at the Danish retailer stated that they *"trust their partners until proven otherwise".* In line with this, they perform limited control of the suppliers regarding for example the goods delivery. Moreover, they have developed a partner guide that is communicated to all suppliers. In the partner guide, all requirements for working together with the Danish retailer are described. These requirements involve for example communication set up, delivery requirements and penalty fees that are in place if the suppliers do not live up to the Danish retailer's requirements. Through the partner guide, a common standard for all suppliers has been developed and exceptions are only made in special cases and for a limited amount of time. The aim is that all suppliers should comply with the partner guide eventually. The Danish retailer also performs thorough supplier evaluation and has established a balanced scorecard that measures the suppliers' financial, operational, buying and supply chain management performance. The suppliers' scores are communicated continuously and discussions regarding how to further improve their relationship with the Danish retailer are carried out with the suppliers twice per year based on the score.

The Danish retailer operates only with direct deliveries to the stores for all fashion products. The only exceptions are the private label goods and the goods aimed for the online store, which

goes through a DC. For the external brand products to be delivered directly to the stores, the Danish retailer requires that the suppliers label the products and make them store-ready. This is done in most cases but if the supplier is unable to label the products the goods are, after being delivered to one of the stores, taken to a "value adding station" within the store. There, it is possible for store employees to label products and attach security tags.

Moreover, the Danish retailer works with cross-functional buying units where a buyer, a buyer assistant, a merchandiser and a supply chain representative work together for each department. The buyer assistant supports the buyer, the merchandiser is responsible for the store stock and the supply chain representative works mainly with improving the flow and setting up new suppliers in the system according to the retailer's requirements. The interviewee emphasised that the buyers should be assisted in a way so that they can focus on their core competencies, which is finding new trends and choosing the best assortment. However, the interviewee argued that the buyers must still have an understanding of the process.

The Danish retailer has during recent years focused on automating and optimising all processes to the greatest extent possible. Their aim has been to *"work smarter, not harder".* One of their main focus areas was to initiate technical integration with their suppliers to optimise the ordering process. A new ordering process was developed utilising EDI and CSV systems. CSV is a format used in for example excel-sheets. To implement the systems, the company established yearly targets regarding which suppliers they should integrate and then executed accordingly. The requirements on electronic communication is included in the partner guide where partners are first asked to implement EDI communication with the retailer and if not possible they should implement the CSV set up. If neither of these alternatives are possible for the suppliers to implement, they are asked to speak to the supply chain representative to find a temporary solution for order communication. There is an emphasis on this being a temporary solution and the interviewee described how they usually set up a two-year plan with their suppliers in which the suppliers are supposed to move over to either EDI or CSV during this time period in order for them to continue working together. The Danish retailer has gone from having 5% electronic communication with their suppliers in 2008 to now having 98% of their suppliers using either CSV and EDI.

6.1.2 Description of the Online Retailer

The online retailer was founded in 2008 and is currently selling their products in 15 countries in Europe. It operates exclusively online and has six warehouses across Europe. The interviewee at the online retailer described how at any given moment, there are approximately 200 trucks trying to deliver to any of their warehouses, which illustrates the large amount of incoming deliveries they handle every day. In total, the online retailer has more than 1500 external fashion suppliers.

Currently, the online retailer has 165 million online visits per month and approximately 20 million active customers. The interviewee described how there has been a shift in the market from the designers telling consumers what to wear, pushing products onto the market, to that

the customers are the driving force in the market. This has forced the online retailer to focus more and more on the end-consumer.

To increase focus on the end-consumer, the online retailer has arranged their buying organisation into buying units based on different customer profiles rather than on product categories. This way, the online retailer avoids external suppliers overlapping between the buying units. Each buying unit consist of a buyer, an assistant buyer, a buyer assistant, a planner, an assistant planner and a planning assistant. The interviewee mentioned that the number of suppliers that each buying unit is responsible for varies depending on how much business there is with each supplier. However, the aim is generally that each buying unit is responsible for approximately 30 suppliers.

Before the buying period for an upcoming season, planning is carried out for each buying unit. Firstly, a trend analysis is conducted and presented by the trend department, which is used by the buying unit when their suggestion for a buy plan is developed. The trend analysis gives an insight into what the key trends will be and within which areas the buyers should buy deeper, i.e buy more of. The buyers and planners then go through previous budgets and discuss which external fashion suppliers they believe will be performing the best during the coming season. After this, a projection of potential sales and net turnover based on budgets and previous performance of the brand is made. From this, a breakdown per brand is created and the buy plan is presented to the head of buying and the head of planning. Based on the suggested plan, each buying unit is given a certain amount of money from the budget, which they can break down into one budget per supplier within each category. The plan is communicated to the warehouses to be able to plan capacity requirements. The budget given to each buying unit is an OTB-budget that each buying unit is free to utilise however they want across their supplier base. Thus, they can re-allocate parts of the budget from underperforming external fashion suppliers during the season to those suppliers that have proven themselves more interesting during the season. The interviewee at the online retailer stated that this allows the buying units to be flexible and responsive.

To facilitate a consumer-driven supply chain, the online retailer has several tools for analysis of consumer behaviour and demand over all previous seasons. Analysis can be performed for each category, brand and product. It can also be used to generate an optimal size and colour distribution. The online retailer can also use analysis tools to predict future sales and generate an optimal buy plan based on historical sales data. However, the interviewee mentioned that sometimes they are too focused on statistics and that the human element, such as knowledge and experience, is an important factor that sometimes gets neglected in their organisation when it comes to for example deciding assortment.

6.2 Order Generation

In this section, the process of generating orders at the Danish retailer and at the online retailer is described. The reason for calling this chapter “Order Generation” and not “Preliminary Order Generation” as in Chapter 5 is that the processes differ from the case company’s process where

the first order is only preliminary, while the processes described below have no preliminary orders.

6.2.1 Order Generation at the Danish Retailer

Initially, a buyer and a merchandiser at the Danish retailer have already established a buy plan and budget, first per category and then per brand, which is brought as input to the supplier meeting. At the supplier meeting, the supplier shows their collection and the buyer decides what to buy and in which quantities. The buyer from the Danish retailer makes an order split, deciding on which stores that should have products from the supplier in question. This is registered by the supplier in the supplier's information system and thereby the quantities are reserved.

After the supplier meeting, the buyer updates the budget in their information system so that it is visible how much of their OTB-budget is left to spend during the rest of the season. The buyer also receives article information from the supplier, either through an EDI message (PRICAT) or in a CSV format and an order confirmation (ORDRSP if EDI). The order response serves as a legal document for the Danish retailer. The order confirmations from the suppliers helps the retailer to keep control over what has been purchased during the season.

6.2.2 Order Generation at the Online Retailer

When the online retailer initiates their buying process, the buyer has made a buy plan for each brand. This is usually done on a category level, for example t-shirts, and the buyer usually sticks to this plan. This due to that the plan has already been communicated to the warehouses in order to plan for capacity. Thus, the online retailer brings the budget, the buy plan and statistics regarding the supplier's performance previous seasons as input to the supplier meeting.

During the supplier meeting, the buyer and the supplier start evaluating the performance during previous seasons. Thereafter, they go through the collection and the buyer takes pictures of all the products. The buyer brings all the information back to the office and sends a registration file to the supplier. The supplier is required to fill in the information in the registration file. When this is done, the buyer takes the information and transfers it into their system. Thereafter, the order is prepared with the right assortment and size-chart allocation. The interviewee claimed that this is one of the most time-consuming activities in the ordering process and that this is the reason why the buyers usually generate the order at the office and not during the meeting. After all the articles and quantities are decided upon, the buyer generates the order and sends it to the supplier.

6.3 Order Creation and Confirmation

In the following section, the process of entering the order data in the information systems and receiving an order confirmation is described in the case of the Danish retailer and online retailer.

6.3.1 Order Creation and Confirmation at the Danish Retailer

After the order has been entered in the supplier's system, the supplier sends an order confirmation or order response to the Danish retailer. When the order response is sent from the

supplier, the buyer has to validate it and make sure that the prices in the response are the same as the budget that has been registered in their systems. When using EDI, the PRICAT and the ORDRSP together automatically create an order in the Danish retailer's system when they are received. Thus, the order only has to be entered once by the supplier.

If EDI is not used, the information is sent from the supplier in CSV-format and uploaded to the Danish retailer's system. Thereafter, it is registered as an order with minimum manual handling. The Danish retailer does not send PO numbers to the suppliers, which in certain cases can lead to confusion since some suppliers are used to work with their customers' PO numbers when fulfilling the order. The reasoning behind not using own PO numbers as reference numbers is that, according to the interviewee, there is always a delay in creating and attaching an own PO number and by removing this process, the lead time of the ordering process can be reduced.

6.3.2 Order Creation and Confirmation at the Online Retailer

After the order has been generated by the buyer at the online retailer, it is sent to the supplier. The supplier registers the order and sends an order confirmation, preferably within one to two weeks.

After the order confirmation has been received by the online retailer, the buyer assistant compares the order and the order confirmation to make sure that the quantities are correct. When validation of the order confirmation has been carried out, the order is released in the online retailer's systems and an order with PO number is created for each delivery. The PO number is then sent to the supplier via email.

6.4 Order Fulfilment

In the following section, a description of the order fulfilment process is described. Firstly, the order fulfilment in the case of the Danish retailer is presented and then in the case of the online retailer.

6.4.1 Order Fulfilment for the Danish Retailer

Since the Danish retailer does not use their own PO numbers to keep track of their orders, there is no delay for the suppliers in order to wait for PO number creation. Instead, the supplier can start picking and packing the orders directly after they have generated the order in their system. However, before shipping to the stores, the article information must have been uploaded, either through a CSV-document or a PRICAT message. The supplier also needs to create a despatch advice, or DESADV when using EDI, that should be sent to the Danish retailer before the order is shipped. The Danish retailer works with a one month delivery window, within which the supplier needs to deliver the quantities, but may do so whenever during that time period.

The despatch advice contains information about the products that are shipped, the quantities that are to be delivered as well as a reference number that will be written on the shipment. This reference number is used to accept the goods at the stores and to update the stock levels in the Danish retailer's system. When the shipment arrives at a store, the store employees scan the

reference number and trust that the quantities specified in the despatch advice is correct. They do not scan or control all the products but instead they trust that their partners have delivered what has been specified in the despatch advice. If the despatch advice is missing or the goods have not been marked with a reference number, the goods are stuck in the goods receival until the issue has been solved.

The Danish retailer works with a system where one despatch advice equals one invoice. These two documents must be marked with the same reference number for the deliveries and the invoices to match.

6.4.2 Order Fulfilment for the Online Retailer

After the supplier has received the online retailer's PO number, they need to mark all shipments with the corresponding number. Each delivery needs to contain the exact number of products specified on the PO. If not, the shipment is either rejected or put in quarantine at the warehouse until the issue has been resolved.

The online retailer works with a one month delivery window. Before delivery, the supplier needs to book a time slot of one hour in the online retailer's delivery portal. If they have not booked a time slot and go to one of the warehouses to deliver anyway, they are rejected. The underlying reason for using such a delivery portal is to be able to cope with the large amount of incoming deliveries. The interviewee expressed that it can occur that a supplier has forgotten to book a time slot and when they try to do so at a later stage, all the slots are occupied. This can result in late deliveries due to that the supplier has to wait until there is a time slot available. This means that the suppliers need to be proactive and book a time slot for delivery well in advance.

6.5 Input from Suppliers

All interviewed suppliers seemed to work similarly when it comes to generating orders for pre-ordering seasonal products. A supplier meeting with sales personnel and buyers is organised where decisions regarding assortment are made. One supplier of fashion clothing and accessories said that in 99% of all cases, an order is placed during the meeting while other suppliers stated that it is unusual to get the order already at the meeting.

When deciding a preliminary order during the meeting, the supplier can register the preliminary order in their system and send an order confirmation to the customer. Sometimes, the customer already has an order number before the meeting that the supplier can use when creating the order which simplifies the process for the supplier. If not, the supplier needs to go back into the order at a later stage in the order fulfilment process and manually add the customer's PO number. One supplier mentioned that all their customers provide PO numbers immediately when a purchase is made. Another supplier mentioned that, although most big customers use their own PO number, some customers instead use the supplier's reference number. In some cases, the order confirmation that is sent from the supplier is enough for the customer and the order creation is finished there.

Regarding creation of the order in the information systems, one supplier who has currently developed EDI-communication with the case company stated that for their other customers, a PRICAT message is sent to the customer which they use to create the order and send it to the supplier as an ORDERS message including the PO number. In this process, no extra administration and registration files are needed, which shortens the process lead time significantly.

In other cases, the order creation and confirmation is quite similar to the one at the case company. Suppliers explained that there are other companies who use the same type of registration files, although it is not as common anymore and other retailers' registration files are not as complicated as the one used by the case company. Some suppliers also stated that other customers do not require that the supplier fills in the article information in the customer's format. Instead, they require the information but are willing to receive it in the supplier's format and transfer the information to their own format themselves. Some suppliers think this is more reasonable and consider that the process of filling in data in the customer's format should not be their responsibility.

The suppliers also had different views on the order fulfilment process. When using EDI, a DESADV message is usually sent to the customer when a shipment is being sent. This way, the customers are aware of when a delivery is being sent to their DC. During the interviews with the suppliers, it became apparent that not all suppliers have a system in place to be able to create despatch advice messages at the moment. Instead, they mark each shipment with the customer's PO number.

According to the suppliers, competitors to the case company are known for using penalty fees and having quite strict contracts to ensure high delivery performance and accuracy from the suppliers. They also carry out more extensive follow up and measure delivery performance to a greater extent than the case company.

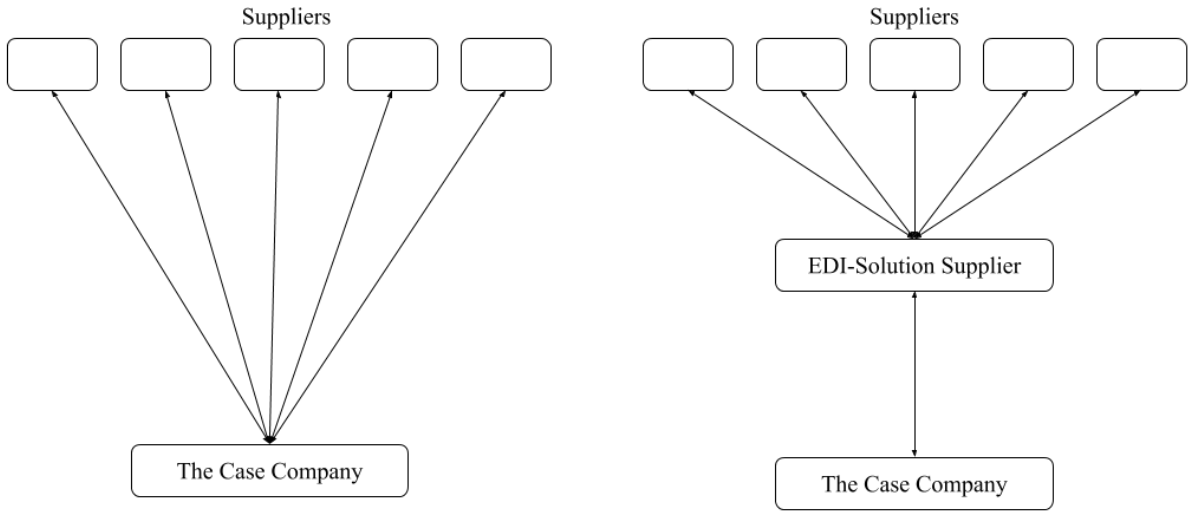
6.6 EDI-tools to Increase Efficiency in Ordering Processes

When discussing the use of information technology to facilitate efficient ordering processes between retailers and suppliers, several suppliers mentioned an EDI-solution supplier that they use for EDI-communication and integration. They also mentioned that there are other retailers in the fashion industry working with this supplier. Thus, it was of interest to investigate this EDI-solution supplier and its offer to understand how other actors in the industry work with ordering through EDI.

The EDI-solution supplier offers a tool that aims to simplify the supply- and demand chain process for data exchange in the retail industry. Their business is built upon the fact that actors in the retail industry often have different standards for communication and exchange of information which makes information sharing complex. Their aim is to create standardisation and act as a middleman when transferring information and translating the information between supply chain actors' different formats.

To achieve a smoother information transaction between supply and demand processes, the EDI-solution supplier has developed a tool which enables each actor to make only one integration towards the tool, setting up how their information is organised and communicated. The tool translates the information between the different actors and their information systems and ensure that all actors can upload and get access to information in their preferred way.

The interviewee from the EDI-solution supplier stated that one of the main advantages of utilising their tool is that the complex process of setting up and integrating each supplier into EDI-communication is outsourced to the EDI-solution supplier. This instead of using so-called direct-EDI where the retailer and supplier together have to integrate their systems. This means that each actor only has to make one integration towards the EDI-solution supplier instead of creating an integration for every supplier relationship. This is illustrated in Figure 12 below.



a) *Information transaction using direct-EDI*

b) *Information transaction using the EDI-solution supplier*

Figure 12: An illustration of the difference between a) using direct-EDI and b) using the tool provided by the EDI-solution supplier.

Another advantage brought up by the interviewee at the EDI-solution supplier is that their tool can handle not only traditional EDI-messages but also manual documents such as excel-sheets and convert them into EDI-messages. Thus, it is possible to include actors who have not yet developed or will not develop traditional EDI. They can continue working in the formats that they are used to and that their information systems can support. Thus, the tool aims to simplify the handling of the diversity in information transactions and make it easier for actors to share information with many different actors.

Apart from translation of information between actors in a supply chain, the tool offered by the EDI-solution supplier also includes a platform that allows the suppliers and retailer to create the order inside the tool and then send the finished order to the respective information system.

Moreover, another benefit that the EDI-solution supplier provides is a business analytic tool. This tool can be used to measure and create statistics of for example sales, number of transactions and number of received orders. It can also be used to measure and evaluate how suppliers have performed in terms of for example delivery deviations and number of deviations regarding price and quantity and thus simplify the expediting activities. This data can create statistics that can be used by the retailer to evaluate suppliers. The tool also offers possibilities for analysing sales data and trends which is aimed at simplifying forecasting and assortment decision making.

One of the case company's sport and clothing suppliers described how they are currently using the solution that this EDI-solution supplier provides which has simplified their processes, increase efficiency and reduced manual labour. For them, the perfect set up with the case company from an EDI-perspective using the EDI-solution supplier's tool would be the following:

- PRICAT is sent from the supplier to the case company
- ORDERS is sent from the case company to the supplier
- ORDRSP is sent from the supplier to the case company
- DESADV and INVOICE is sent from the supplier to the case company

The interviewee at the EDI-solution supplier as well as the interviewee at the sport and clothing supplier argued that even though the EDI-solution will require a significant amount of work during the implementation phase, it allows for smoother communication in the operational processes. This in turn is said to lower the total cost in the supply chain.

7. Analysis

To understand how the case company's current ordering process works today, how it differs from how similar retailers carry out their ordering processes and what improvements can be made, the following analysis is conducted using value stream mapping. Firstly, the current state drawing of the case company's ordering process is analysed and thereafter, the ordering processes of similar actors are analysed and compared to each other. Finally, an improvement analysis is made in order to identify ways in which the current state can be improved according to previous research.

7.1 VSM Analysis of the Case Company's Current Ordering Process

Out of the eight wastes that add costs to the business but not value to the customers defined by Keyter & Locher (2004), five has been identified in the case company's current ordering process, namely:

- Waiting
- Extra processing
- Transportation
- Correction
- Underutilised people

The three that have not been identified are overproducing, inventory and excess motion. This because they refer more to the physical movement of material and people within an office setting when performing administrative tasks, which have not been included in this study. The waste categories applied to the case company's current ordering process is showed in Table 4 below.

Table 4: The different waste categories presented by Keyter & Locher (2004) applied to the case company's current ordering process.

Waste Category	**Case Company Examples**
1. Overproducing Producing more, sooner or faster than required by the next process	Not observed.
2. Inventory Any form of batch processing	Not observed.
3. Waiting	Registration file PO number Delivery issues
4. Extra processing	Re-entering order information Creating PDF order and delivery report
5. Corrections Any form of defects	Faulty registration files and orders Missing PO numbers

	Delivery deviations
6. Excess motion Movement of people	Not observed.
7. Transportation Movement of documents	Registration file PO number Order Confirmation
8. Underutilised people People's abilities, not their time	Division of responsibility Non-value adding tasks Inadequate business tools

As shown in Table 4 above, there is a considerable amount waste in the form of waiting in the current ordering process. From the case company's point of view, the most considerable type of waiting is waiting for the registration file to be filled in correctly and returned from the supplier. The suppliers also expressed that they experience waiting time before getting access to the registration file, the initial preliminary order and most importantly a delay in receiving the PO number from the case company. Waiting time also occurs when deviations considering deliveries are identified, such as faulty deliveries or over-deliveries. This waiting time has a considerable effect on the lead time of the ordering process.

The second waste that has been identified in the case company's current ordering process is extra processing. Some examples of extra processing presented by Keyter & Locher (2004) are re-entering data, making extra copies and excessive reports, transactions and expediting. When it comes to the information that is required to create an order, i.e. the article information and quantities, the data is re-entered into different systems and documents as many as four times during one order process. The four occasions when the data is re-entered are when generating a preliminary order in the case company's system, when registering an order in the supplier's system, when filling in the registration file and when transferring the information from the registration file into the case company's information systems. Another type of extra processing is the creation of a PDF order or delivery report, which can be considered extra copies and excessive reports as described by Keyte & Locher (2004). The extra steps of transaction when manually sending order confirmations, the registration file and the final order can also be characterised as extra transactions and expediting that do not add value for the end customer. This is also a part of another type of waste, namely transportation of documents between actors. Although the transfer of the order confirmation and final order might be necessary to fulfil the service, the transferring of the registration file back and forth between the supplier and the case company is seen as a non-value adding activity.

The next type of waste that occurs is correction, of which there is plenty in the current process. As mentioned by both employees at the case company and by suppliers, there are deviations throughout the ordering process in the form of for example faulty registration files and orders, missing PO numbers and deviating deliveries. Although these are excluded in the current state drawing, they pose some serious threat to the ability of delivering the right products at the right place and right time. The deviations also lead to extra work due to that corrections must be

made. One example of when the deviations lead to extra work in the form of correction is when there are errors in the registration file that the buyer assistants have to correct.

The final type of waste identified in the case company's current process is underutilised people, which Keyte & Locher (2004) describe in terms of people's abilities and not in terms of their time spent. The buyers feel as though they spend too much time on administrative tasks that are not value adding which leads to that they do not utilise their competence. They do not have time to, for example, optimise the assortment. One buyer expressed the opinion that the buyers spend too much time looking backwards on previous performance instead of utilising their resources to look more forward and improve future performance. Two examples from Keyte & Locher (2004) that also can be found at the case company are limited people authority and responsibility as well as inadequate business tools. The limited people authority and responsibility is visible for the buyers and buyer assistants where the division of responsibility between the two is sometimes vague. The inadequate business tools are also clearly visible from many different perspectives. Looking at the buying process, there are several different information systems that needs to be handled and they are not communicating with each other in an efficient manner. There seems to be no specific tools for analysing customer demands and buying patterns or for handling budgets and forecasts. The case company also has several different systems for handling orders, i.e. manual administration, the supplier portal and EDI-communication.

7.2 VSM Analysis of the Danish Retailer's and the Online Retailer's Ordering Processes

From the information that has been gathered during the interviews with the online retailer and Danish retailer, it can be concluded that their processes differ considerably compared to each other and compared to the case company's process. Both similar retailers have expressed a clear focus for their ordering process. The Danish retailer focuses mainly on efficient processes and automation of the activities. The online retailer on the other hand, has the same insight as Shephard & Pookulangara (2013), namely that there has been a shift in who dictates the trends and that consumers have the power rather than the designers. This has lead the online retailer to put focus on the end-customer. This type of clear prioritisation and strategy that both the Danish retailer and the online retailer have is not clearly visible in the case company's process.

When looking at the amount of waste across the different retailers' processes, there seems to be a higher amount of waste in the case company's process than in the processes of the Danish retailer and the online retailer. When looking at the waste in the form of waiting, the Danish retailer seems to have the least amount of waiting time in the ordering process compared to the others. Since the Danish retailer has implemented EDI and CSV systems with their suppliers and does not use their own PO numbers since they want to minimise waiting time and process delays, the only kind of waiting that occurs is waiting to receive article information, the order and the despatch advice. However, this type of waiting is necessary and impossible to avoid. When comparing the case company to the online retailer, a similar amount of waiting time exists for receiving registration files and order confirmations and attaching the PO number on

the order. Hence, it is clear that the focus of the Danish retailer on creating more efficient processes has paid off when it comes to minimising waiting.

The next type of waste is that of extra processing. Again, the Danish retailer performs better than the others, and the only type of extra processing that is required in their process is updating the budget tool manually. For the online retailer, there seems to be a similar case to that of the case company when it comes to entering the order data several times. The data is both entered in the registration file, in the retailer's system, the supplier system and then released in the retailer's system.

When it comes to the waste of corrections, it is difficult to say which retailer performs better. Corrections only occur when faults have occurred in other parts of the so there is a need for understanding the root-causes for the corrections (Keyte & Locher, 2004). During this study, there has not been any comparable data for all three cases when it comes to the number of faults and corrections that occur and it seems to be rarely documented and followed up. Although, usage of EDI communication leads, according to Vijayasarathy & Tyler (1997), to reduced manual labour and increased information accuracy. Therefore, the need for corrections will likely decrease in the situations when electronic communication is used. When looking at the different retailers' processes, the Danish retailer performs best when it comes to the amount of electronic communication. Hence, it is likely that the Danish retailer experience less need for corrections than the other two. Moreover, it should be noted that the Danish retailer does not perform much controls of their suppliers and the incoming deliveries, which differs from how the two other retailers handle their suppliers and incoming deliveries. This can lead to that, compared to the Danish retailer, the other two retailers will experience a greater need for corrections as they perform more strict controls to identify any deviations that the Danish retailer might miss.

The electronic communication and automated processes also lead to less transportation of documents back and forth between the actors. Authors claim that this is one of the main benefits with implementing EDI (Loebbecke et. al, 1996, Vijayasarathy & Tyler, 1997). In the case of the Danish retailer using EDI, no documents are sent manually or back and forth. Thus, the Danish retailer is believed to experience the least amount of waste in the form of transportation.

The last type of waste identified at the case company is underutilised people. When looking at the parameter of limited authority and responsibility, both the Danish retailer and the online retailer are more progressive than the case company. They work in cross-functional teams and with a smaller number of suppliers per team, thus allowing the teams to focus on constant development and value-adding activities. As previously discussed, the Danish retailer has less amounts of waste in their process, thus ensuring a minimum amount of non-value adding activities. The division of responsibilities seem clearer at the Danish and online retailer and it also appears that they have more standardised ways of working. This is in line with Weele's (2014) statement that the responsibilities of the activities should be clearly determined and the organisation should be able to combine different skills and types of knowledge during the process to reach a successful purchasing process.

The second part of the waste of underutilised people is the inadequate business tools. Here is where it can be argued that the online retailer outperforms the others. The online retailer is highly consumer driven and have several powerful tools and practices in place to analyse buying patterns and customer behaviour in order to optimise their buying. The interviewee at the online retailer mentioned that they can create any report that they want for all the products and all the suppliers they have ever bought from. They also have an extensive planning process where these business tools are used to a large extent, thus utilising the data they possess in the best possible way.

While the online retailer has great business tools for analysing customer behaviour, the Danish retailer have developed tools for analysing their suppliers with balanced scorecards. When it comes to the case company, there is a lack of adequate business tools for analysing both customers and suppliers. Lacking a system for supplier evaluation is according to Weele (2014) a factor that contributes to the occurrence of delivery problems. It seems like the link between insufficient supplier evaluation and delivery problems might be true in the case of the case company since they have the most problems connected to deliveries and the least supplier evaluation processes in place compared to the other two retailers. Furthermore, employees at the case company have expressed dislike against their information- and reporting systems as they are too complicated and takes a long time to learn how to use.

7.3 Improvement Analysis

As mentioned by Weele (2014), one of the most important aspects of the purchasing process is that it is aligned with overall business needs. Thus, in order to find suitable improvement suggestions, the first step in Croxtons model (2003) of the strategic sub-processes for order fulfilment involving reviewing the marketing strategy, supply chain structure and customer service goals should be done. For the case company, it is important to offer a wide range of products and satisfy a broad range of customer needs, which is the case for most department stores according to Loebbecke et al. (1996). The case company strives to offer a broad assortment where their customers can buy everything they want and need in one place. Thus, they need to be able to handle a broad range of suppliers with different characteristics, from small one-man companies to giant international corporations. When it comes to the supply chain structure, the case company has two different material flows, described in section 4.2, designed to handle both centralised and decentralised orders. At the moment, it is not possible to change the supply chain structure.

As mentioned by Castelli & Brun (2010) the success for actors within the fashion industry is highly dependent on the ability of being flexible and responsive in the organisation and the supply chain. When moving on to the next sub-process of strategic order fulfilment described by Croxton (2003), i.e. defining requirements for order fulfilment, short lead times, flexibility and responsiveness are the main requirements. In order for a retailer to fulfil its purpose which, according to Weele (2014), is to bridge the gaps of time, quantity, place and assortment, the retailer needs, as stated by Christopher & Peck (1997), to be able to reduce lead times by eliminating non-value adding activities while simultaneously being responsive to changes in

consumer demand. This is one of the main challenges that fashion retailers face, according to Shephard & Pookulangara (2014). Flexibility is also needed, not only to be able to handle varying customer demands but also to handle the complex supplier base.

Since the logistics network is static and not possible to evaluate for redesign at the moment, the next step is to design the operational ordering process. Keyte & Locher (2004) have identified several options for improving the current state. The different improvements that can help when designing a new future state drawing for administrative processes that have been identified for counteracting the five types of waste identified previously are standardised work, quality at the source, cross-functional teams and error-proofing.

In the current state, information quality and the amount of manual labour and errors are major issues that lead to unnecessary administration and logistics work. Thus, one of the requirements for the future state drawing should be to improve data quality. Keyte & Locher (2004) discuss that by improving quality at the source, there can be significant improvements in reducing extra processing and corrections. Weele (2014) also argues that if the initial stages of the ordering processes are carried out properly, it can reduce the work needed in the following stages.

It has been proven that EDI and electronic communication improve information accuracy and integration of logistics and administration as well as decrease transaction costs and manual labour (Loebbecke et al., 1996; Vijayasarathy & Tyler, 1997). Thus, one of the requirements for the future state drawing should be to increase the amount of electronic linkages and automate the process in order to minimise manual labour. If implemented in a proper way, it should be possible to incorporate error-proofing, making sure that the data that is entered is correct and avoiding manual activities where faults occur. It has been mentioned by employees at the case company that they recognise that the data quality is a considerable issue. The registration file has been mentioned several times by both employees at the case company and its suppliers as one of the root-causes to why faults occur in the process. Therefore, the registration file and the high level of manual administration in the process should be addressed when designing the new operational ordering process to improve data quality.

When looking at the case company's current state flowchart, it is clear that the level of standardisation is quite low. Buyers work in different ways and there is a significant level of complexity in the supplier base. By increasing standardisation in the process, it may be possible to make the buying function more organised internally and show a unified front towards the suppliers.

Cross-functionality in the buying units is something that has been observed both at the Danish retailer and online retailer. Weele (2014) argue that cross-functional buying structures is a more evolved way of working where many different functions from merchandising, buying and physical distribution are included. This can be observed at the Danish retailer where each team consists of members from both the buying function, supply chain department and from merchandising. The online retailer also utilises a cross-functional buying structure where the planning function and the buying function are included in each team. According to Weele

(2014), this enables decision making that can maximize value and lower the total supply chain cost. When looking at the case company, it can be seen that a more traditional, functional buying structure, where the buying unit operates separately from other functions, is used. Thus, it can be argued that, in accordance with the options for improvement mentioned by Keyte & Locher (2004), increasing cross-functionality in the buying structure might be a way for the case company to improve its current state and reduce the waste of underutilised people.

8. Suggestion of a New Ordering Process

To improve the efficiency of the current ordering process and avoid the wastes that has been identified, a suggestion of a new ordering process has been developed. In the following sections, the process is described in terms of overall strategy, order generation, creation and confirmation and order fulfilment. Thereafter follows a section regarding the implications of the new process and a comparison between the new process and the current process is conducted. Thus, this chapter answers the third research question, i.e. how the case company's ordering process should be designed to improve efficiency and minimise non-value adding activities.

8.1 Overall Strategy of the Future State

As discussed previously, the overall aim with the new process was to design a process that would allow for flexibility, responsiveness, minimised waste, short lead times and a minimised number of non-value adding activities. To handle the large number of suppliers with the limited resources available, the suggestion includes the usage of the EDI-solution supplier's tool as described in section 6.6. Thus, the process is built around using their tool for EDI-communication and integration. Through this, the case company can outsource the complex task of integrating all 600 suppliers and handling each of the supplier's specific format to an actor with knowledge and expertise within that area. This will free up resources within the organisation so that focus can be put on other tasks, thus reducing the waste of underutilised people.

This new system using the EDI-tool would allow for flexibility with regards to how the case company interact with their suppliers. It means that not all suppliers need to have sophisticated EDI-systems in place but instead they can continue working manually if they prefer and upload for example excel files to the EDI-tool instead. This makes no difference for the case company as they will always receive the information in the same format no matter how the supplier chooses to send it.

Moreover, this solution requires less manual administration than the current state and provides shorter lead times since it is highly automated and several activities that do not add value has been removed. The shorter process lead time and simplified processes will also enhance responsiveness as it simplifies the process for replenishment orders. Thus, it will allow simpler and smoother processes for reacting to actual demand during the season, enhancing flexibility and responsiveness with regards to the consumers.

8.2 Order Generation, Creation and Confirmation

As a first step in the suggested new ordering process, the supplier sends the article information through EDI as a PRICAT message or upload it to the EDI tool provided by the EDI-solution supplier. Thus, all the article information about the collection is available to the case company either before or during the supplier meeting.

The supplier meeting involves going through the collection and the supplier and the buyer together making a selection of articles that will be of interest for ordering. The input for this

activity is thus the budget, general knowledge and experience, previous sales data and the article information from the PRICAT. The tool provided by the EDI-solution supplier also offer the possibility of using forecasting methods to analyse previous sales data to optimise decision making. The output from the supplier meeting is thus a selection made of the articles that are to be ordered.

In the next step of the process, there is room for flexibility depending on how the buyer and supplier wish to collaborate. Because of the EDI-tool, it is possible to create the order during the supplier meeting together with the supplier by using the ordering function in the EDI tool. This is believed to mainly be suitable for the orders where the suppliers are only going to supply a few number of stores so that the allocation process is easy. The order can then be generated inside the EDI-tool and sent as an ORDERS message to the supplier. However, if the supplier will supply goods for all warehouses it might be more suitable for the buyer to create the order after the meeting as it will take more time. The ORDERS message is then created at some point after the meeting. The supplier books the quantities in their system and respond with an ORDRSP message or by uploading an order confirmation to the EDI-tool.

In some cases, it may instead be preferable to allow the supplier to create the order in their system. Such cases may be suitable when the supplier has better understanding and knowledge about the collection and what products will sell during the season. Thus, one can utilise the competence in the buyer-supplier relationship in a better way. In the case of the supplier creating the order, they would do so in their own information system and send it as an ORDRSP message or order confirmation to the EDI-tool.

The output of the order generation, creation and confirmation will be that the order has been registered and booked in the supplier's system and a confirmation of the order has been registered in the EDI-tool and can be downloaded to the case company's information system together with the article information. The order confirmation should be validated by the buyer assistant at the case company to ensure that the quantities and articles are the same as has been ordered or decided during the supplier meeting.

8.3 Order Fulfilment

When the order is received, or entered by the supplier, the order fulfilment process can begin. It is possible for the supplier to either send a DESADV or upload a despatch advice to the EDI-tool.

Today, the supplier needs to mark every shipped package with the case company's PO number for the DC to accept the goods. With the new process in place, it is possible for the case company to choose if they want to use their own PO number, the PO number created in the EDI tool, the supplier's reference number or the despatch advice as a reference number for goods receival and invoice handling.

When this is done and the goods have been delivered to the DC, the ordering process is finished. To illustrate the suggestion for a new ordering process, a flowchart describing each step in the

process and how they are connected is shown in Figure 13 below. This flowchart can also be found in Appendix 8.

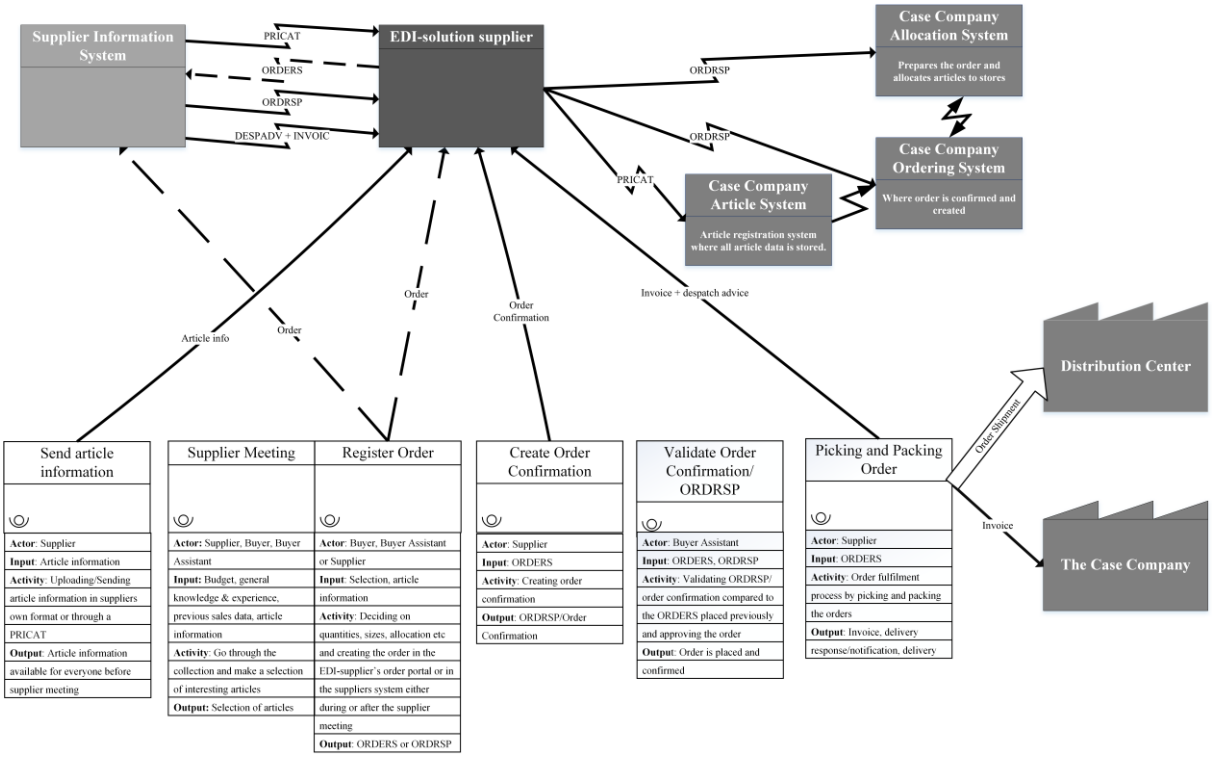


Figure 13: The suggestion made for the future state drawing of the ordering process utilising the EDI-solution supplier.

8.4 Implications of the New Process

As previously discussed, five out of the eight types of wastes described by Keyter & Locher (2004) has been identified in the case company's current process, namely waiting, extra processing, transportation, correction and underutilised people. In this section follows an analysis of how the new process is believed to affect the identified wastes in the current process.

The first type of waste that was identified in the current process was that of waiting. What can be easily identified in Figure 13 above is that in the new process, several steps have been eliminated, resulting in a more efficient process with a shorter lead time. To shorten the process lead time is, according to Christopher & Peck (1997), crucial for fashion retailers to aim for. The new process enables more activities in the ordering process to be carried out earlier compared to the current process. One example of this is that both article information and orders can be sent already during the meeting, thus speeding up the process. The registration file has been eliminated and replaced by a PRICAT message, which will lead to less waiting time for both the case company and the supplier since the supplier will not have to wait to get access to the file and the case company will not have to wait for the supplier to fill in the file and send it back. Also, the process of creating an order can start earlier in the new process, which results in that the waiting time from when the buyer decides on assortment until the order confirmation is received will be shorter.

What can also be seen in the new process is that an increased number of steps are automated compared to the current process. This will lead to that the waste of extra processing will decrease. One example of extra processing that was provided by Keyter & Locher (2004) was re-entering data. With the new process in place, the article information will be entered one time only, which is a major improvement since currently the article information is re-entered up to four times during the ordering process. Moreover, waste in the form of transportation of documents will also decrease with the new process in place since the automatic transactions between the case company's and the supplier's systems allows the case company to stop sending and receiving manual files.

The major source that creates a need for correction in the case company's current process is assumed to be the registration file. In the new process, the registration file is, as explained above, eliminated. Also, due to that the new process is considerably more automated than the current process, less errors in need of corrections will occur. This means that the waste of making corrections will decrease if the new process is implemented. This will result in elimination of the extra work that both the supplier and the buyer assistants currently needs to do and give the case company a better chance to deliver the right products in the right time to their customers. The issue of having low efficiency and high workload due to poor administrative processes is argued by Weele (2014) to be a common bottleneck in ordering, and it is believed that with the new improved process in place, this bottleneck can be avoided. Another benefit of utilising the tool offered by the EDI-solution supplier is that it is possible to conduct a more thorough supplier evaluation and follow-up. This has been argued to be one of the ways that the root-cause of problems that need corrections can be avoided (Weele, 2014).

Due to that the new process facilitates more time spent on value-adding activities instead of extensive administration, the waste of underutilised people will decline. Buyers can focus on their main abilities, namely to look out for trends and select a good assortment, instead of spending time on administration. The buyer assistants can get more time to for example take part in supplier meetings instead of the time-consuming non-value adding work with the registration file as well as increase the supplier evaluation and development. There is also more clearly determined division of responsibilities, which Weele (2014) argues to be one of the most important aspects of the purchasing process.

Moreover, the issues connected to insufficient statistical support when making decisions on assortment and when evaluating suppliers can be reduced by using the EDI-solution supplier's business analytics tool. With this tool, the case company can measure and analyse both sales and supplier performance which will give thorough statistics that can be used when making product selection and when conducting supplier evaluation. This can help the case company to get a more optimal assortment, which increase sales and to get a foundation for supplier development, meaning that supplier performance can be improved. As discussed by Mantrala & Rao (2001) the forecast-driven supply chains in fashion retail is highly dependent on selecting the right assortment which is why it is believed that better tools for optimising assortment is going to increase the profitability.

Overall, the new suggested ordering process reduces the amount of non-value adding activities and the wastes discussed above. By doing so, it is believed that the process lead time will be reduced significantly. The shortening of lead times and creating a more lean supply chain has been deemed as some of the most important challenges within fashion retail (Christopher & Peck, 1997; Shephard & Pookulangara, 2014). Therefore, it is argued that the new ordering process is suitable for handling these challenges and create a competitive supply chain for the case company. A shorter process lead time will also result in that the case company and its supply chain can be more responsive and flexible towards consumers. Flexibility and responsiveness are, according to Castelli & Brun (2010), crucial factors for the success or failure of an actor within the fashion industry. Therefore, since the new process will contribute to shorter lead times and increased flexibility, the chances of business success at the case company will increase with the new process in place.

9. Conclusions

The purpose of this study was to suggest a new ordering process for the case company that would increase efficiency and reduce the amount of non-value adding activities. In order to do so, the current state of the case company's ordering process as well as the ordering processes of the Danish and online retailer has been presented in the form of flowcharts explaining the activities, the input and output to the activities and the actors responsible for each activity. The flowcharts also include the information and material flows in the processes.

When analysing the case company's current ordering process, five types of waste have been identified, i.e. waiting, extra processing, corrections, underutilised people and transportation. The process involves several manual activities and requires a significant amount of administrative work from both suppliers and from the case company. The amount of manual work required is believed to be one of the main reasons why the case company experiences several problems throughout the ordering process and at the DC. Another consequence of the manual administration and the corrections that occur is that it affects the lead times. Achieving short lead times and ensuring that products are available at the right time is highly important for actors in the fashion industry.

When investigating how other retailers in the fashion industry work with their ordering processes, it was found that they differ significantly compared to the process identified at the case company. The Danish retailer has a clear focus on developing efficient processes and has few non-value adding activities in their ordering process. One reason for this is that they have a lot of trust in their relationship with their suppliers and therefore performs a limited amount of extra processing and control in the ordering process. This differs from the ordering process observed at the online retailer. The online retailer has a process that is quite similar to the one of the case company, in terms of manual information flows, creating the order more than once and performing extensive control activities throughout the process. and for good receival.

In accordance with the purpose of this study, a new ordering process has been suggested that is believed to increase efficiency and reduce non-value adding activities. Activities that are considered as waste have been removed or simplified and a process is suggested that allows for shorter lead times, better flexibility and automation. Thus, new ordering routines and a more standardised process have been developed. The suggestion of a new ordering process includes the utilisation of an EDI-solution provided by a supplier that is already an established EDI-solution supplier in the industry. With their solution, it is possible to simplify the EDI-integration with suppliers as the case company only needs to make one integration towards the EDI-supplier, who is responsible for the integration towards all the external suppliers. It is believed that the EDI-solution supplier will be able to support not only ordering but also the rest of the ordering function, i.e. expediting, follow-up and evaluation.

With the suggested new process in place at the case company, it is believed that improvements such as simplification and automation of the process can be made. The increased automation of the process is believed to minimise the faults throughout the process and thus minimise the

waste of corrections, underutilised people, extra processing, waiting and transportation. This, together with the removal of non-value adding activities, lead to that there will be a significant reduction in the ordering lead time. It will also reduce the workload for the buyers and they will thereby be able to handle the large supplier base in a more efficient way.

10. Discussion

Below follows a discussion regarding the future state drawing of the ordering process where personal reflections are included. This discussion includes the authors recommendations for how the suggested future ordering process should be implemented and what the case company needs to change to facilitate successful implementation as well as what risks and generalisations that needs to be taken into consideration.

10.1 Implementation of the New Process

When the case company begins to implement the new process, it is suggested that focus should be on implementation of one EDI message at a time. Furthermore, it is proposed that the case company initially focus on implementation of the PRICAT message to eliminate the registration file and the many problems related to it. As described previously, several suppliers expressed strong dislike for the registration file and some of them were even threatening to stop delivering to the case company because of the extensive work required for filling in the file. Hence, elimination of the registration file as a consequence of implementation of the PRICAT message should initially be seen as the main priority for the case company. If both the case company and the EDI solution supplier prioritise this implementation, it is believed that the PRICAT message could be in place within a couple of months. When the PRICAT message is in place, more messages can be implemented one step at a time, such as the ORDERS message and the ORDRSP message, leading to an increase in automation of the process.

By implementing one message at a time, it is possible for the case company to ensure that the new messages are working and that the functionality is in place. Thus, it is possible to continuously ensure error-proofing throughout the implementation process.

During the implementation phase, it is not only getting the technical processes in place that will be of great importance for the case company. It is also important for the case company to work on communicating to all the employees within the buying organisation that they will need to change their current way of working. It will be important to communicate what is going to change and why so that all employees are prepared for the changes when the new process is being implemented. Moreover, the case company needs to negotiate with the suppliers so that they understand what implications the new process will have on them and agree to integrate towards the EDI-solution supplier.

It is also of importance for the case company to develop an implementation plan and have clear deadlines and requirements agreed upon together with the EDI-solution supplier. Some requirements that need to be put in place is not only a time frame for the implementation of each message but also requirements on functionalities such as functionality for handling product hierarchy that suits the case company’s existing information systems.

10.2 Assumptions and Risks Concerning the New Process

For the new process to be implemented, it is assumed that all suppliers are willing to pay the fee required to use the EDI supplier’s solution. This is regarded problematic by the authors

since the supplier base is very diverse and some suppliers are basically one-man companies that might not have the possibility to pay this extra cost. Although, when the suppliers pay the fee to the EDI solution supplier, they will most likely raise the price on their products to compensate for the extra cost. Therefore, a risk is identified that the case company will face price raises when implementing the new process. This will thus be an important factor when negotiating future agreements with the suppliers. A recommendation is that the case company argues that even though a new direct cost will occur when implementing the EDI-tool, there are significant savings to be achieved indirectly when the amount of manual labour and the amount of corrections are minimised. It is still believed by the authors that the total supply chain cost will be decreased due to the increased overall efficiency.

Another risk that has been identified is that the automation of processes might lead to loss of control over the processes. This is mainly a concern rooted in the insecurities against information systems and their trustworthiness. One way to avoid loss of control over the processes is to, as previously suggested, focus on implementing one message at a time.

Moreover, the new process entails that the case company partner with the EDI solution supplier. Connected to this, several risks have been identified. One risk is that the case company becomes dependent on the EDI solution supplier and it is therefore important to look into the company's goals and financial situation before going into a collaboration of this kind with them. It is thus suggested that the case company performs further investigation to evaluate this risk and the suitability of using the EDI-solution supplier.

If it is possible for the case company to avoid or mitigate these risks and they are aware of the generalisations made, it is believed that the new process will allow for a more efficient process with shorter lead times and fewer errors needing corrections. Thereby, the case company will, compared to the current process, get a more efficient ordering process with a reduced number of non-value adding activities.

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Appendix 1 - Interview Guide for Case Company Employees

Introduction

-Describe your role at the case company
-Describe your role in the ordering process (from deciding what to buy to delivery at the DC)
-How would you characterise the fashion industry? What are some important factors? How does that affect the case company?
-What is your overall strategy/focus? (example short lead times, low costs, low stock levels, high availability, high quality, sustainability?

The ordering process

-Could you please explain how the ordering process for external fashion suppliers is conducted? (Activities, resources, actors involved).
-What factors affect the order size, frequency etc? How do you make these decisions?
-What type of expediting is conducted? Proactive/reactive? By whom is it performed?
-Which documents are needed to create an order?
-What type of information is communicated throughout the ordering process?
-What are the lead times to perform each activity? In between each activity?
-What initiates the ordering process? Forecasting, Seasons, Re-order point?
-What are the most time-consuming activities in the process?
-What technologies/information systems are in place to facilitate the ordering process today?
-What type of information is included in the order document? Would it be possible to see a copy/example of your orders?

External suppliers

-How many external suppliers do you have? In total/that you are responsible for?
-Where are they located?
-How are the suppliers evaluated? How often?
-What type of information is shared with the suppliers today?
-How do you share information with your suppliers? How often?
-How do you communicate with your suppliers?
-How would you characterise your relationship with the suppliers? Close relationships/partnership, transactional?
-What kind of feedback do you receive from the suppliers?
-To what degree can you influence your suppliers? Lead time, packaging, delivery requirements etc.
-Are you a big/small customer to your suppliers?
-Do you have any information about what other customers your suppliers are working with? Do you know how they work differently with other customers?

Positive/negative effects of the current ordering process

-Do you have any examples of suppliers where the collaboration works well/not so well?
-What are the most common problems/bottlenecks throughout your ordering process?
-Do you have any KPIs/performance measurements? At the DC, buying organisation, supplier evaluation etc
-What are the biggest deviations in the process today?
-How do you register/follow up deviations?
-What do you think are the biggest issues connected to the ordering process with external suppliers today?
-How do you think the current ordering process can be improved?

Regarding the development of EDI systems

-How far have you come in the current development phase?
-What do you want to achieve with the new process?
-How do you involve the suppliers in the development phase?
-How much data are you willing to share with the suppliers?
-Which processes do you wish to automate?
-Is it possible to get an overview of the different information systems and how they interact with each other?

Appendix 2 - Interview Guide for External Suppliers

Introduction

-Could you describe your role at XX.
-What role do you have in the order fulfilment process with the case company?
-How long have you worked with the case company?
-What type of products does the case company buy from you?
-Is the case company a big or small customer in terms of volumes purchased?
-How would you describe/characterise the fashion industry? What are the most important factors and what challenges do you face as a supplier?

Supplier Meeting

-Who is involved during the meeting?
-How do you affect the order decision making?
-What documents are generated during the meeting?

Order treatment

-Could you describe how you handle an order from the case company?
-How does this process differ from other customers?
-What is your opinion of the case company's current ordering process?
-What type of communication do you use with the case company?

If EDI: What messages do you use? Does it differ between the case company and other customers?

Order fulfilment/Delivery

-If use XDP: How did you move over to the XDP-flow?
-What was needed in order to move to the XDP flow?
-What is your opinion on the XDP flow?

-Do you send despatch advice messages?
-How do you receive feedback from the case company when there has been over deliveries, faulty deliveries or late deliveries?

-Do you need a delivery window of several months? Why?
-How many months do other customers give in delivery windows?
-How do you plan deliveries within the delivery window?

Other

-Would you like to have more information shared between you and your customers? What type of information? What would you use it for?
-Do you see an increase in the demand for value-adding services such as price labelling, adding security tags etc?

-What is your opinion on performing value-adding services for your customers? Is that something you are able to do today?

-How do you think the ordering process with the case company could be improved?
-What do you think are the biggest issues/bottlenecks with the current ordering process?
-How does the case company's ordering process differ from your other customers?

Appendix 3 - Interview Guide for Similar Retailers

Introduction

-Could you describe your role and responsibilities at XX?
-How would you characterize the fashion industry? What requirements does this put on XX as a retailer?
-How would you describe XXs strategy and how do you differentiate yourself from other fashion retailers?
-How many external fashion suppliers do you buy from today (approximately)?
-Could you (briefly) describe your supply chain structure? (Distribution centres, warehouses, material flows etc)

The ordering process

-How do you make decisions on what to buy, quantities, sizes etc? What information do you
-Could you describe your ordering process (from order specification to delivery at warehouse/DC)? Which functions are involved and which systems/resources enables the process?

-Which documents are sent between you and your suppliers?
-Do you manage the communication with suppliers via EDI?
    -If YES: Which messages do you use? (PRICAT, ORDRSP, DESADV etc.)

-What activity/activities is most time-consuming in the ordering process?
-Which are the most common problems in the process?
-What do you see as the main improvement area in your ordering process?
-How do you work with suppliers regarding delivery windows?

Suppliers

-What kind of relationship do you have with your suppliers? Partnership, arms-length, short-term, long-term?
-Do you share information such as forecasts or point-of-sales data to suppliers?
    -if YES: how often is the data shared?
-Do the suppliers perform additional services for you such as labelling, specific packaging etc.?
-How do you evaluate your suppliers? How often?
-Are there any areas for improvement in the industry as a whole in order to increase supply chain efficiency? For example more developed technology, better communication, more sustainable/long-term relationships.

Appendix 4 - Interview Guide for EDI-solution Supplier

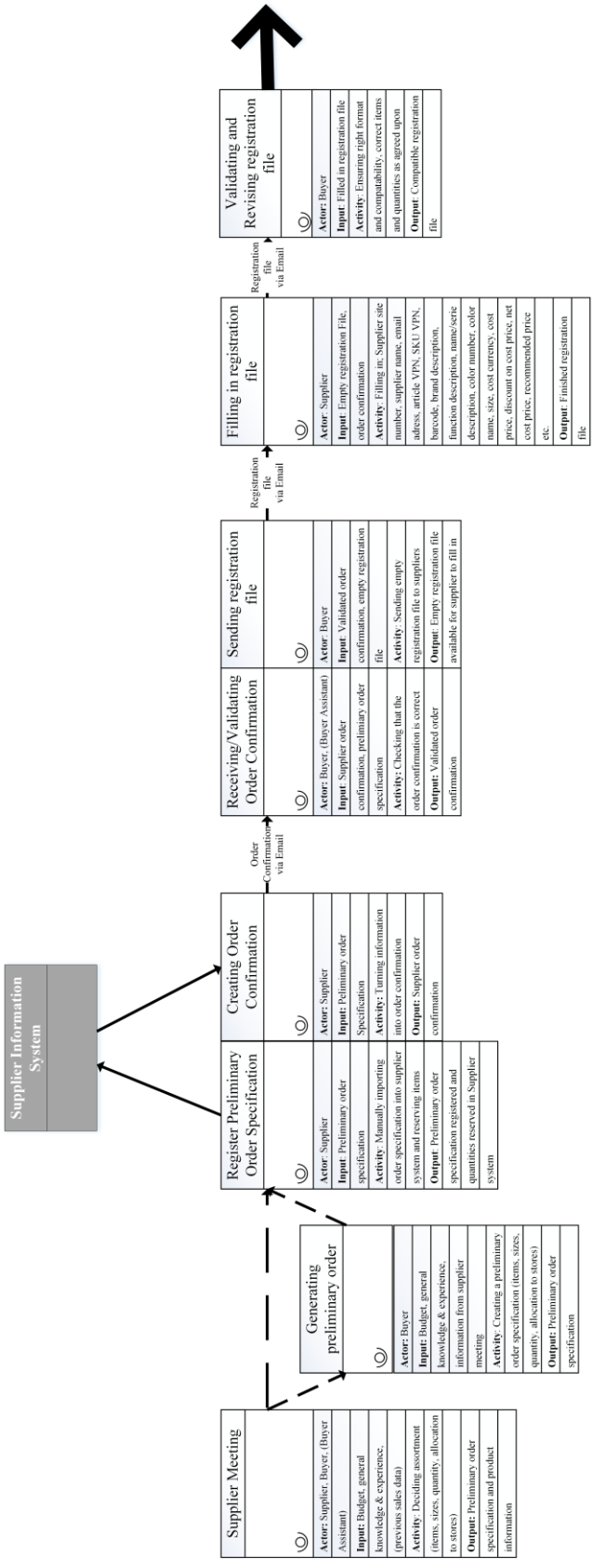
Introduction

-Could you please describe your company and EDI-solution?
-What type of customers do you have?
-What has your conversation with the case company included so far?
-What can you do to simplify the case company's ordering process?
-What is the most common EDI set up for retailers today?

EDI solution

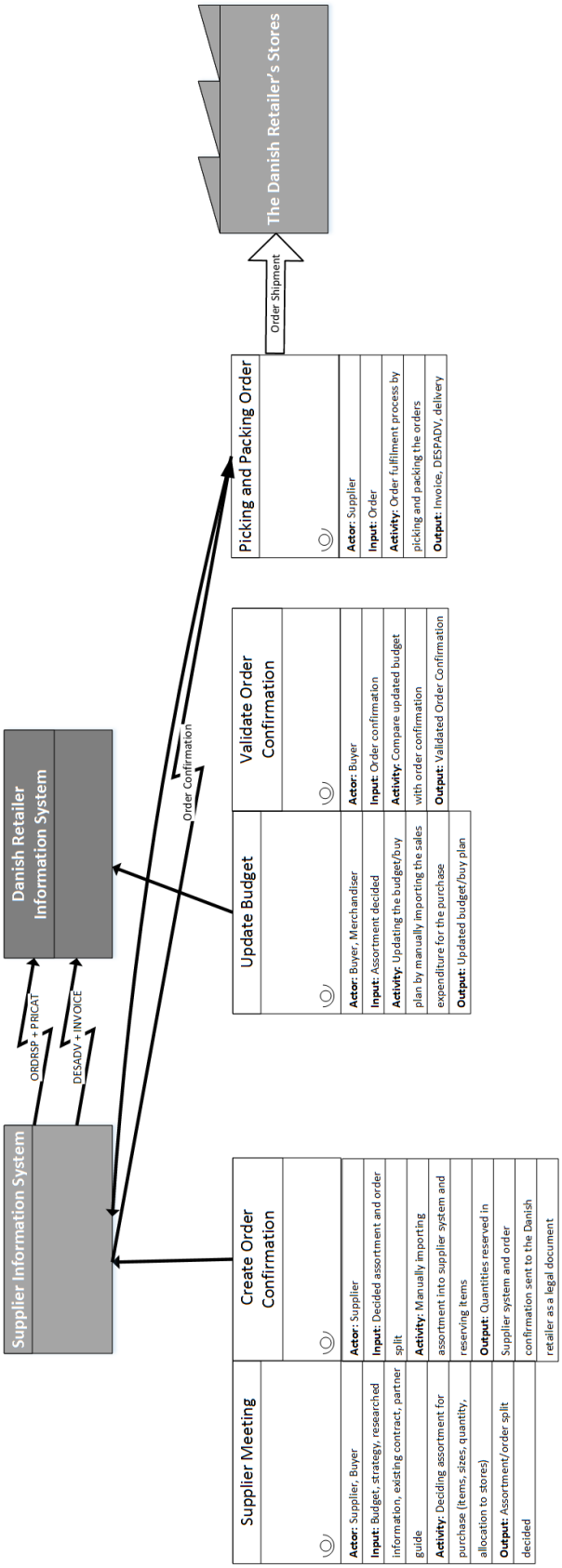
-What would the difference be if the supplier or the retailer creates the order? What messages are sent?
-How would it work if the order is created in your order tool?
-Could you tell us more about the EDI tool? What formats can be used and how is it translated?
-Are the messages automatically or manually released into the supplier's and retailer's systems
-What are the costs of using the EDI solution? Fixed/variable costs?
-Do you have any reference customers that use your system successfully today?
-What changes need to be made at the case company to be able to use the EDI solution?
-How long do you estimate it will take to implement such a system with the case company and its suppliers?

Appendix 5 - The Case Company's Current Ordering Process

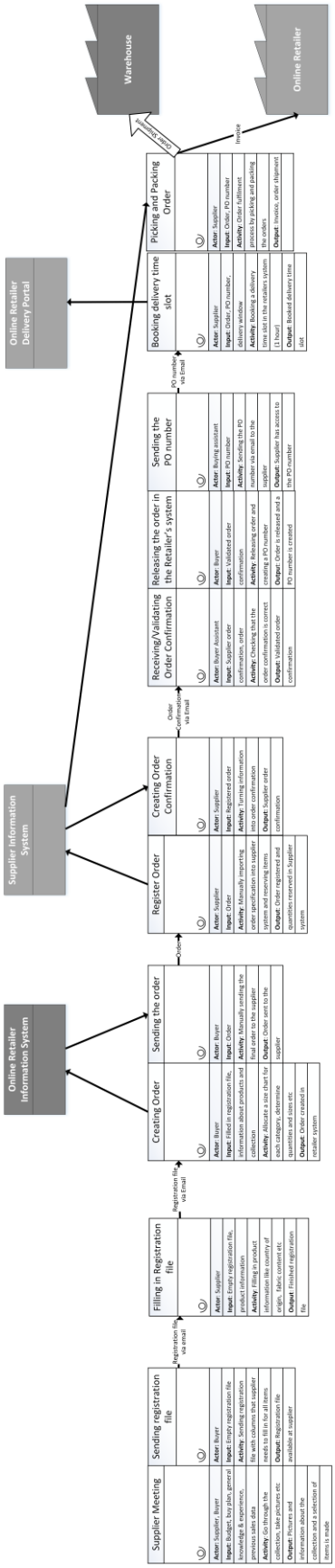


Case Company Article System
Article registration system where all article data is stored.
Case Company Allocation System
Prepares the order and allocates articles to stores
Case Company Ordering System
Where order is confirmed and created
Case Company information system
Where pdf-file can be created
Case Company Delivery System
Where delivery reports can be created and used instead of pdf-order
Case Company Supplier Portal
Supplier Information System
Distribution Center
The Case Company
Register Article Data
Actor: Buying assistant
Input: Compatible registration file
Activity: Transferring data from the registration file into the case company's systems to register articles
Output: Registered articles in information system
Creating Order Outline
Actor: Buying assistant
Input: Compatible registration file
Activity: Transferring data from the registration file such as delivery date, item number, quantities etc
Output: Registered articles and PO number
Confirm the Order
Actor: Buying assistant
Input: Compatible registration file, PO number, article data
Activity: Transferring data from the registration file into the case company's systems such as delivery time fence
Output: Registered order
Creating Final Order
Actor: Buying assistant
Input: Compatible registration file, article data and PO number
Activity: Filling in quantities and allocations to each store to finalize the order
Output: Finished order with PO number
Creating pdf-order or report
Actor: Buying assistant
Input: Order information in systems
Activity: Creating order as pdf or excel-file when it can not be sent through EDI
Output: Order and PO number
Picking and Packing Order
Actor: Supplier
Input: Order, PO number
Activity: Order fulfilment process by picking and packing the orders
Output: Invoice, delivery response/notification, delivery
EDI: ORDERS
EDI: DESADV + INVOICE
Order
Order
Delivery Notification in supplier portal
Invoice via supplier portal
Order with PO number via email
Order Shipment
Invoice

Appendix 6 - The Danish Retailer´s Ordering Process



Appendix 7 - The Online Retailer's Ordering Process



Appendix 8 - The Suggested New Ordering Process