



Benefits of Efficient Consumer Response in the fashion Industry

A systematic literature review

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DEGREE THESIS	
Arcada	
Degree Programme:	International Business
Identification number:	8573
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Title:	Benefits of Efficient Consumer Response in the fashion industry
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<p>Abstract:</p> <p>In the past retailer, supplier and manufactures have individually focused on their own business activity rather than working together toward a common goal for their marketing and logistic activity. Along came Efficient Consumer Response (ECR) and introduced a more holistic vision of marketing and logistic activities in the supply chain. The ECR stands for a seamless and accurate flow of information that focuses on the consumers actual demand and uses that information to drive the flow through the channel. The main aim of this study is to find out benefits of using ECR in the fashion industry focusing on the retailer and the manufacturer. The chosen method is a systematic literature study where a total of 14 articles was read, and the final selection resulted in 6 articles where collected information was analysed from earlier studies to be able to answer the following research questions: What are the benefits of ECR in the fashion industry for the manufacturer and the retailer? This study will not research the food or grocery market, challenges of ECR or how to implement ECR. The result is based on ECR 4 areas of benefits: supply chain management, time-based competition, inventory management and delivery service. The result show that ECR is most beneficial for the retailers and bring more pressure to the manufacturer. The manufacturer may however receive smaller orders from the retailer but a continues one, which is a benefit. The retailer again has the benefits of ordering based on demand, which means less loss. There are also obvious benefits in using ECR, because responding fast to consumer adds value and does promote consumer satisfaction. ECR also supports sustainability because of the information sharing in the supply chain by producing based on the real demand which results in less wastage and helps with the energy saving.</p>	
Keywords:	Benefits, Efficient consumer response, ECR, Supply chain management, Fashion industry,
Number of pages:	38
Language:	English
Date of acceptance:	

CONTENTS

1	INTRODUCTION	6
1.1	PROBLEM STATEMENT	7
1.2	AIM OF STUDY	7
1.3	DEMARCATION	7
1.4	DEFINITIONS	8
2	THEORY	8
2.1	THE FASHION INDUSTRY	9
2.1.1	<i>Time based-competition</i>	9
2.1.2	<i>Fast fashion</i>	9
2.2	SUPPLY CHAIN MANAGEMENT	10
2.2.1	<i>The three flows of the Supply Chain</i>	10
2.2.2	<i>Material flow</i>	11
2.2.3	<i>Information flow</i>	11
2.2.4	<i>Delivery services</i>	12
2.3	INVENTORY MANAGEMENT	12
2.3.1	<i>Inventory management and sustainability</i>	13
2.4	EFFICIENT CONSUMER RESPONSE (ECR)	13
2.4.1	<i>ECR and the benefits</i>	15
2.4.2	<i>Information Technology</i>	17
3	METHOD	18
3.1	QUALITATIVE RESEARCH METHOD	18
3.2	SYSTEMATIC LITERATURE STUDY	18
3.2.1	<i>Inclusion and exclusion criteria</i>	19
3.2.2	<i>Data search and search strategy</i>	20
3.2.3	<i>Quality evaluation</i>	22
3.2.4	<i>Ethical aspects</i>	22
4	RESULTS	23
4.1	IDENTIFIED BENEFITS	25
4.2.1	<i>Benefits related to Supply Chain Management</i>	27
4.2.2	<i>Benefits related to time-based competition</i>	28
4.2.3	<i>Benefits related to inventory management</i>	28
4.2.2	<i>Benefits related to delivery service</i>	28
5	DISCUSSION	29
5.1	DISCUSSION OF RESULTS	29
5.1.1	<i>Supply chain management</i>	30

5.1.2	<i>Time based competition</i>	31
5.1.3	<i>Inventory management</i>	32
5.1.4	<i>Delivery service</i>	33
5.2	DISCUSSION OF METHOD	33
6	CONCLUSIONS	34
6.1	LIMITATIONS OF THE STUDY	35
6.2	SUGGESTIONS FOR FUTURE STUDIES	36
	References	37

Figures

Figure 1. Demand change model.....	10
Figure 2. Quick Response (QR).....	14
Figure 3. The search strategy presented as building blocks.....	21

Tables

Table 1. Number of hits per keyword.....	21
Table 2. The chosen selection of articles was performed in the following steps.....	22
Table 3. Summary of articles.....	24-25
Table 4. Different types of benefits categorized.....	26
Table 5. Specific results about which benefits have been identified.....	26-27

1 INTRODUCTION

This study expands upon benefits on Efficient Consumer Response (ECR) in the fashion industry focusing on the manufacturer and the retailer. In the fashion industry the forecasting of demand is very difficult and has been a challenge because of long lead times, short selling seasons and unpredictable demand that makes the forecasting incorrect (Wang 2018 p. 9).

When talking about supply chain management the focus is on the whole value chain that is used in delivering products and services to the end consumers (Finne & Sivonen 2008 p.108). According to Christopher (2016 p. 3), the definition of supply chain management means the management of upstream and downstream relationships between the suppliers and the customers to deliver a better consumer value at less cost to the supply chain. Here the aim is to look at the whole supply chain and the emphases is placed on the process thinking with the focus on the consumers perspective.

Although the concept of supply chain management is quite old the focus has undergone many changes during the years. The main shift can be seen in the importance of information, information system in managing the operations and the importance of processes. Also, in retailing the supply chain management and the partnership philosophy has been applied. (Finne & Sivonen 2008 p.108)

In the past retailer, supplier and manufactures have individually focused on their own business activity rather than working together toward a common goal for their marketing and logistic activity. This narrow vision led to low profitability and low efficiency. Along came Efficient Consumer Response (ECR) and introduced a more holistic vision of marketing and logistic activities in the supply chain. The ECR stands for a seamless and accurate flow of information that focuses on the consumers actual demand and uses that information to drive the flow through the channel. (Reyes 2005 p.374)

This topic was chosen because of the revolutionary development of supply chain decision making and creating consumer value in the information system. The purpose of the study is to deepen the readers understanding on benefit of ECR in the fashion industry, focusing

on the manufacturer and the retailer and can be seen as a usable study for continues re-search study.

1.1 Problem statement

As the information flow takes place between actors in the supply chain and delivery service in real time, demand and supply tends to be more accurate. This is a relevant topic because the accuracy of the demand effects many aspects of the supply chain and there is a need for an updated holistic view on benefits of ECR in the fashion industry focusing on the manufacturer and the retailer. The needed knowledge within the area is spread out in many studies and therefor make the finding of material challenging. However, by undergoing a systematic literature review and analysing previous studies the finding of the most relevant studies and insight can be concluded.

1.2 Aim of study

The main aim of this study is to find out benefits of using Efficient Consumer Response (ECR) in the fashion industry. By analysing the insight of previous studies and find relevant facts about the topic the following research questions can be answered: *What are benefits of ECR in the fashion industry for the manufacturer and the retailer?*

1.3 Demarcation

This study is about benefits of Efficient Consumer Response (ECR) in the fashion industry, focusing on the manufacturer and the retailer. The study will be a systematic review on research done on the related topic. This study will not research the food or grocery market, challenges of ECR or how to implement ECR and will only use studies that are done in English.

1.4 Definitions

ECR - Efficient Consumer Response stands for a seamless and accurate flow of information that focuses on the consumers actual demand and uses that information to drive the flow through the channel. (Reyes 2005 p.374)

QR- Quick Response is a method that enables retailers or manufacturers to share their inventory needs almost in real-time. For the retailers, quick response helps to communicate the need for goods on the shelves and to consumers demands. In the case of manufacturers, it helps in the assembly line. (Finne & Sivonen 2008 p.108).

POS – Point of Sales is a critical piece of purchase and refers to the place where a consumer executes the payment for goods or services and where sales taxes may become payable. (Storhagen 2018 p, 274)

EDI - Electronic Data Interchange is the electronic interchange of business information using a standardized format; a process which allows one company to send information to another company electronically rather than with paper. (Storhagen 2018 p, 275)

IT- Information technology is the use of any computers, storage, networking, and other electronic data. (Storhagen 2018 p, 274)

Forecasting- Forecasting is a technique that uses historical data as inputs to make informed estimates that are predictive in determining the direction of future trends. (Investopedia 2020).

2 THEORY

The following chapters present a theoretical frame of references for the subject area of the thesis. The purpose of this chapter is to give the reader an introductory overview of previously done research results and define common terminology. The theory presented is considered critical knowledge for understanding the work. The chapter begins with a general introduction to the fashion industry, time-based competition, and fast fashion. Goes then on to explain about supply chain management and the three flows of the supply chain and delivery service. Continues then to explain about inventory management and

goes on to cover Efficient Consumer Response (ERC) and benefits of ERC in the fashion industry. Finally finishing the chapter with Information technology.

2.1 THE FASHION INDUSTRY

According to Lo et al. (2008 p. 595), in the recent years the fashion industry has faced more and faster change because of the different variations of global economic environments. With the consumer need for variety the fashion industry is at the forefront of emerging industries. The fashion industry consists of development and continues growth because of the variety of products and the short product cycle which makes the forecasting difficult. That can be seen as evidence of fashion industry rapidly developing in the market and that fashion enterprises should react faster to stay in the game. (Wang 2018 p. 9)

2.1.1 Time based-competition

According to Christopher (2016 p. 135), time is a valuable factor in the purchasing behaviour in all consumer markets. Apart from the importance of the quality and the price an industrial retail buyer chose the supplier that has the shortest lead time. Also, in consumer market the consumer chooses to buy from brands that are available at the time, this shows that time is an increasingly sensitive matter. The importance of *cost of time* can be seen in the buying behaviour were as before the price was the most important factor. (Christopher 2016 p. 135) Quick response (QR) is the main thought of fast fashion were the speed to transform can be seen in the production of fashion (Wang 2018 p. 9).

2.1.2 Fast fashion

Fast fashion can be described as a strategy that is used by the high fashion retailers (Wang 2018 p. 9). The characteristics of (see Lo et al. 2008 p. 597), the fashion industry included short life cycles, high volatility, low predictability, and high impulse purchasing. With fast fashion, new trends will be transformed by the fashion retailers without putting any time on the design process but instead a fast speed into production. Since the trend of the fashion culture has moved from designer ready to fast fashion a powerful race among several big brands such as the Spanish Zara and the Swedish H&M can

be seen. Although fast fashion is provided in big volumes with cheap price and the latest trends it is also highly unsustainable. (Wang 2018 p. 9)

2.2 SUPPLY CHAIN MANAGEMENT

When talking about supply chain management the focus is on the whole value chain that is used in delivering products and services to the end consumer (Finne & Sivonen 2008 p.108). According to Christopher (2016 p. 3), the definition of supply chain management means the management of upstream and downstream relationships between the suppliers and the consumer to deliver a better consumer value at less cost to the supply chain. The aim is to look at the whole supply chain and the emphases is placed on the process thinking with the focus on the consumers perspective (Finne & Sivonen 2008 p.108).

2.2.1 The three flows of the Supply Chain

Although the concept of supply chain management is quite old the focus has undergone many changes during the years. The problem has been discussed previously by (e.g., Christopher 2016 p. 3) about the phrase “supply chain management” should rather be called “demand chain management” as a more proper name to reflect the fact that the chain should be driven by the market, not by the suppliers. The main shift can be seen in the importance of information and information system in managing the operations and the importance of processes. Also, in retailing the supply chain management and the partnership philosophy has been applied (Finne & Sivonen 2008 p.108). There are three main flows in supply chain management (see *Figure 1.*) the material flow, the information flow, and the capital flow (Reyes 2005 p.348).

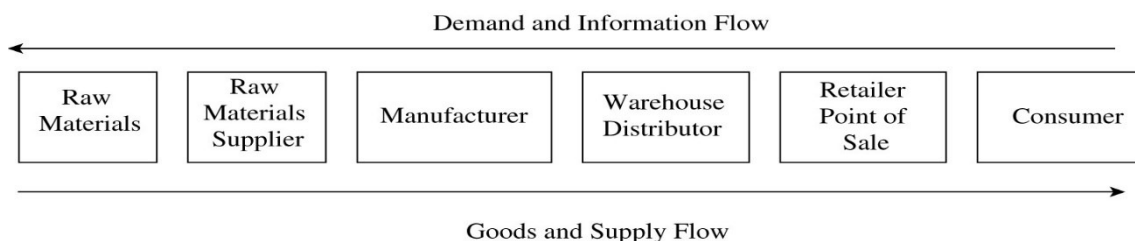


Figure 1. Demand chain model (Reyes 2005)

2.2.2 Material flow

In the supply chain the main aim is to keep the material flow from the beginning to the end consumer. This will prevent unnecessary inventory and help the parts move through the supply chain as quickly as possible. The goal is to achieve a continuous and no interrupted supply chain. It is important that the parts and components are delivered on time in the right amount at the exact point they are needed. It can however be difficult to see the end-to-end flow in the supply chain which can end up in unnecessary build up inventory. Management strategies require a more holistic look at understanding the flows. Logistics is about material flow and information flow where next a closer look will be taken on the information flow. (Harrison 2019 p. 14)

2.2.3 Information flow

When the focus is on the information flow, time spent between the actors in the supply chain to exchange information is a critical factor for a more efficient outcome (Storhagen 2018 p, 271). In addition, transparency of information in the value chain is a fundamental element in efficient retail operations (Finne & Sivonen 2008 p. 223). Information sharing has been proven to be one of the most important elements in the supply chain. The strategy of managing integrated supply chain among partners is the information sharing. A significant effect can be seen in the lack of knowledge sharing between members in the overall performance. One of the main benefits of sharing information is the reduced need for inventory and gives the result that the supply chain can achieve better performance in terms of financial returns, service level and time.

With the information flow between the manufacturers and the retailers the manufacturers can use the information about the inventory level of the retailer and manage the frequency, timing of the shipment and the quality rather than wait for the order placement or feedback from the retailer. (Mukaddes et al. 2012) According to Finne & Sivonen (2008 p. 223), information sharing, and joint processes require new solutions that enable automating and streamlining many activities in the value chain.

2.2.4 Delivery services

Customers expect flexibility, availability, customisation, shorter lead time and for the service to be easy and workable. This expectation puts retailers and manufacturers in competition for a smoother operation. Shopping convenience is an important factor in the choice of delivery methods. The two factors of delivering convenient service for the customer are time saving and effort minimisation that end up in customer satisfaction. (Wang, Y. 2018 p.17)

2.3 INVENTORY MANAGEMENT

According to Li (2014 p. 19), inventory is the material stock that runs through the supply chain and is an important asset for companies. The Inventory management can be explained as its basic, the process of managing, tracking, and maintaining an optimal inventory level. Inventory management supervises the flow of goods from the manufacturer to the warehouses and from there to the point of sales. The key function is to keep a record for new or returned items as it enters or leaves the warehouse. The better a business controls their inventory the better they can save money in their business operations. Overstocked business has money tied up in inventory that limits the cash flow and effect the profit margin. However, businesses that do not have enough inventory will lose sales and that will affect the customer service. (Inventory management 2021)

Wen et al. maintain that the inventory management is important and critical for the fashion retailers and can improve the competitiveness of the retailers specially in the fast changing and unpredictable fashion market by providing better customer service with minimum inventory related cost.

With the help of inventory replenishment strategy, the time to place an order and the quality to be ordered will be decided. The collected information from the market is an efficient utilization and is crucial in making a quality inventory decision. The RFID technology is an efficient inventory management and information collection tool that is being used in the fashion retail industry. A workable and automated inventory management

system is very important due to highly volatile consumer demand and short selling season where leftover inventory is very common and unsustainable. (Wen et al. 2019 p. 40)

2.3.1 Inventory management and sustainability

Also, the environment aspect of sustainability which refers to pollution of the eco-system in the supply chain of the fashion industry has undergone many changes comparing to the traditional supply chain. One of the many key solutions for a more sustainable inventory management is keeping low stock level because producing only on demand is more sustainable. A good example of this is the application of Artificial Intelligence (AI) for H&M that has helped the company to be more sustainable by avoiding the problem of over production and wastage. The advanced software and AI help with a more accurate supply chain activity in relation to the demand. This has helped to maintain a lower inventory level, reduce markdowns, less warehousing and less transport with the outcome of saving energy usage. (Nayak. R 2020)

2.4 EFFICIENT CONSUMER RESPONSE (ECR)

Quick response (QR) is originated in United States in 1985 and has attracted attention in the retail industry and is one of the first partnership trends that has spread widely (Finne & Sivonen 2008 pp.108-110). According to Storhagen (2018 p. 271), the original concept of QR was for the supplier and the distribution to work together to achieve higher consumer value. In other words, a maximum consumer satisfaction with the lowest cost. Number of Apparel manufacturers and retailers started to find ways to compete against growing imports.

A summary of a documented report was done by Kurt Salmon on the average lead time in the apparel industry from raw material to the consumer was 66 weeks while only 11 weeks were taken up in the processing and the rest of the time went to waste. This report was evidence of needing a more efficient operating practice. The importance of QR approach was to relay on the information system to see the processes and create a shared practice. This would improve demand forecasting and follow up in orders and lead to reduced product stockouts. (Finne & Sivonen 2008 pp.108-110)

According to Suri (2020 p. 12), there are obvious benefits in using the QR, because responding fast to consumer does promote consumer satisfaction and there is nothing like a happy consumer. The QR report also introduced barcodes, container labels and electronic data interchange message. The role of technology was essential as it helped efficient information exchange between the members of the supply chain. (Finne & Sivonen 2008 pp.108-110)

The problem has been discussed previously (e.g., Choi & Sethi 2010 p. 4), the QR is mainly used in industries such as the fashion industry where market demand is highly volatile, the replenishment lead time is long, and the product has a short life cycle. A Good example of vertically integrated chains following the QR principle is Zara and H&M were responding quickly to market trends and consumer demands in a short time and a short lifecycle.

The information and ideas are collected from trends, exhibitions, competitors and from consumer demands and preferences. Thanks to the QR (*see Figure 2.*) demand is more correct and large part of the production can be manufactured during the season. The fashion industry prefers out of stock situation than overstocking and this approach can be seen in companies such as Zara and H&M. Their fashion-oriented consumers know which day the new models will arrive to the store and if they do not make it in time the product can be sold out. (Finne & Sivonen 2008 pp.108-110)



Figure 2. The Quick Response Code (2021).

Efficient Consumer Response (ECR) was originally called the Quick response (QR) and is a continues development on what it stemmed from. In year 1986 the textile industry looked for a way to achieve the consumers accurate demand and also reach the international market. (Storhagen 2018 p, 271)

The U.S. grocery retailer and the manufacture, founded in 1992 a working group to study the principle of trade in retail sector in the supply chain where the aim was to find other approaches to a more cost saving and improving competitiveness in the industry. In the working group was Kurt Salmon who had also been associated and active in outlining the QR principal in the clothing industry. In 1993 the observation of the work was completed into a report called Efficient Consumer Response: Enchasing consumer value in the grocery industry. The report received extensive attention and was considered a cost saving potential among the retailers and the manufactures.

Although the ECR report and the principal had been prepared in the United States it did not take long before the concept was adopted in Europe as well. The idea was to expand the US model into European circumstance and start a collaboration beyond national boundaries. The ECR Europe was established to coordinate projects and act as a shared forum for organizations. (Finne & Sivonen 2008 pp.110-111)

2.4.1 ECR and the benefits

In the past retailers, the suppliers and the manufactures had individually focused on their own business activity rather than working together toward a common goal for their marketing and logistic activity. This narrow vison led to low profitability and low efficiency. Along came ECR and introduced a more holistic vision of marketing and logistic activities in the supply chain. The ECR stands for a seamless and accurate flow of information that focuses on the consumers actual demand and uses that information to drive the flow through the channel. (Reyes 2005 p.374)

The view of the content ECR differs depending on the company and individual in different roles. For some ECR stands for seamless effort in logistics and for others a way to perform assortment planning in a consumer-oriented manner. Others see it as a shared development forum for the whole industry to unified standards and practices. ECR is a

combination of different management disciplines that are combined and adapted into an integrated framework (Finne & Sivonen 2008 pp.112-114). According to Reyes (2005 p. 345), ECR has been defined more in the sense of a system or philosophy rather than a particular concept and stresses the complete vertical integration of the marketing channels.

The parties in the retail value chain work in a close collaboration so, the focus is on the whole retail chain. The ECR aim is to have the retailers and the manufactures work together to maximize consumer value and minimize cost were planning starts from the needs and behaviours of the final consumer. The ideal has been to minimal disturbance while having a high-quality product flow through a paperless and mainly automated supply chain from the point of production line up to the checkout point. The goal of having a low inventory and a high availability of an integrated and optimised supply chain. (Finne & Sivonen 2008 pp.112-114) In practice (cp. Storhagen 2018 p. 272), replace stock with information. Also, reducing extra time and cost from the chain while maintaining good product and operational quality.

The ECR principles requires that the consumers need must be fulfilled faster and better at all times. This helps to offer higher quality product with larger assortment and better service at better price (Finne & Sivonen 2008 pp.112-114). To be able to achieve this win-win-win partnership, the marketing, production, and logistics need an accurate up to date information exchange between them constantly. To ensure that the right product is at the right place at the right time the product should flow from the production line to the consumer in the most efficient way.

According to a study done in Europe 1996 conducted by Cooper & Lybrand, ECR could lower the costs of retail value chain by 5.7% when calculated in terms of consumer prices. Increased sales and profitability in the whole product category can be seen in the suppliers that are advanced users of ECR model. Open Information sharing and closer partnership relationships are also benefits of ECR. The framework of ECR include the main categories: demand management, supply management, enabling technologies and later was also added integrators. It is a collaborative forecasting and planning as well as cost, profit, and value measurement. (Finne & Sivonen 2008 pp.112-114)

2.4.2 Information Technology

ECR is about capturing a continuous information flow within the supply chain in real time. This means with the help of barcode readers the information of the product that the consumer is buying in the cashier will be registered, centralized, and shared through something called Point of Sales (POS). POS is a critical piece of purchase and refers to the place where a consumer executes the payment for goods or services and where sales taxes may become payable. This current information will help the production prepare and produce what the actual demand is. In other words when a shop is selling blue shirts more than other coloured shirts the production will get the information in real time and start to produce more of the blue shirt with a manual order placement or the system can place an automatic order placement. This gives the upper advantages to the actors in the supply chain to react faster and use the time more efficiently. (Storhagen 2018 p, 274)

According to Storhagen (2018 p.275), a well-designed Information Technology (IT) support is an essential part of ECR. Combining existing technology with new needed investments allows for an efficient and workable system. The existing technology can mean barcodes on products and transport packages, payment cashiers with barcode readers in the shops and Electronic Data Interchange (EDI) to transfer the information to the manufacturer.

From the IT point of view a full-fledged application will go through a certain process. Starting by having barcodes and article number on each product and when a product is being bought from the cashier by the consumer a barcode reader is being used. The given information from the barcode reader is shared through EDI. The product inventory has detail article information and when reaching the reorder point an automatic order placement will be done which will then be followed by a new delivery. This way the shop does not need to place routine orders and instead the manufacturer will have the responsibility of the shop never being out of stock.

The big flow of information given through the products to the manufacturer and the distributor must be handled in a systematic way. There is a need of an effective planning tool and decision making. The production and the distribution system must be fast and flexible

to meet the demand of big or small orders. Also, the time specification of delivery with high quality and zero error increases. (Storhagen 2018 p, 275)

3 METHOD

This chapter covers the method part of the thesis. Starting with a general introduction to qualitative research methods, then continues to explain and motivate the chosen method and research approach for the thesis.

3.1 Qualitative research method

In this study a qualitative research method is used. This means working with non-numeric data such as words, images, videos, audio records (Saunders & Thornhill 2019 p 175). According to Blaxter et al. (2010 p.65) qualitative research is to gather and analyse as many different data related to the subject as possible. The qualitative research method was used to select and form a literature study. This method is suitable and was chosen because the purpose of the thesis requires a method that explains a phenomenon in its context which is the characteristics of qualitative research. With the help of a qualitative approach, the research question of the thesis is expected to be answered in a satisfactory manner.

3.2 Systematic literature study

The chosen method is a systematic literature study, where collected information are analysed from earlier studies within the area. This is a qualitative research method. A systematic literature study consists of a systematic search, analysis and placing together literature in a specific order (Forsberg & Wengström 2008 p. 34). With this method the research question “*what are benefits of ECR in the fashion industry for the manufacturer and the retailer*”, is expected to be answered. According to Forsberg & Wengström (2008 p. 32), a systematic literature study includes six steps:

1. Clearly formulated questions
2. Description of the approach

3. Inclusion and exclusion criteria
4. Presentation of selected studies
5. Analysis
6. Result and discussion

The following section presents inclusion and exclusion criteria, data search and search strategy, choice of articles followed by quality evaluation and ethical aspects.

3.2.1 Inclusion and exclusion criteria

With the help of inclusions and exclusion criteria the chosen studies are going to be researched in a systematic literature study. (Forsberg & Wengström 2008 p. 32). The inclusion criteria for this thesis are finding the relevant studies as following:

1. Articles that are published in scientific journals and peer-reviewed will only be used to increase the reliability of the study.
2. Articles that are available in full text will be used so a proper analysis of the studies can be carried out
3. Article published between 2005 and 2022 will only be used to map the latest studies done on the subject.
4. Articles published in English, will only be used due to the Author language skills
5. Articles related to the subject benefits of ECR in the fashion industry

The exclusion criteria for this thesis are the following:

- ... are not scientific
- ... are not peer-reviewed
- ... are not available for free
- ... are written before year 2005
- ... are other languages than English,
- ... are not relate to the subject, benefits of ECR in the fashion industry

3.2.2 Data search and search strategy

Data search

The data collection began with a test search of various databases to get an overview of earlier studies in the subject and test which keywords are working. The preliminary literature search used the databases ProQuest, Academic Search Complete (EBSCO), Emerald Insight and ScienceDirect. Also, Google Scholar was used. The most relevant studies were found on ProQuest and Emerald Insight databases.

Search strategy and keyword

The main keywords used relevant to the purpose of the thesis were: “Efficient consumer response”, “ECR”, “fashion”. Quotation marks are used when two or more words belong together and a search for an exact phrase is needed like “Efficient consumer response”. Also, the combination of words with the Boolean operators AND, OR were used. The search command OR finds results that have either word A or word B and gives a broader result (Forsberg & Wengström 2008 s. 86). When using OR it is best to put all of the words divided by OR within parentheses. Here the key words that were combined with OR are (“efficient consumer response” OR ECR) to widen the search. The Boolean operator word AND was used to find different combinations of search terms and means that both words have to be included and thus narrows the search. Also the search with (*) truncation was done which means that words are shorten and the ending of the word is replaced with a symbol. Then different forms of the same word are included in the results, e.g. cloth* = clothing OR clothes. Also the (benefit* OR advantage*) was used. Using NOT was used to exclude food or grocery from the search (“efficient consumer response” OR ECR) AND (benefit* OR advantage*) AND (fashion OR cloth* OR apparel) AND “supply chain” NOT (food OR grocer*) however this is risky as it may exclude relevant results and is generally not recommend the use of NOT.

When searching for studies different search concepts were combined. This search strategy was used in this thesis. The strategy includes visually building up the search in so called “building blocks”. The search strategy is presented as building blocks (*see Figure 3*). (Forsberg 2016).

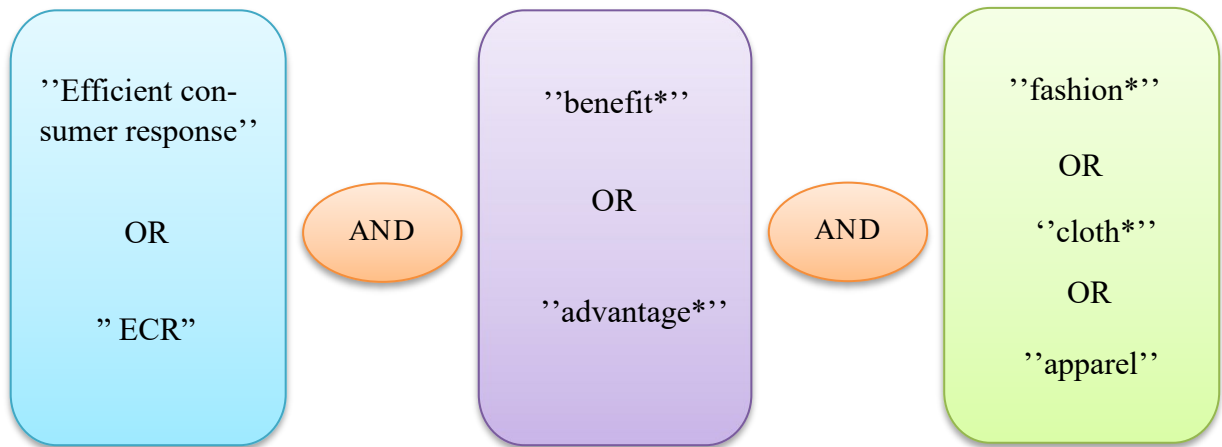


Figure 3. The search strategy presented as building blocks. (Forsberg 2016)

The table below (see Table 1) presents the number of hits per search with different keywords and combination of keywords related to the topic of the thesis. These searches have the following filters: published between the years 2005 and 2022, articles, peer reviewed and available in full text, in English and in having abstract. The filters are based on the previously mentioned inclusion and exclusion criteria of the thesis.

Table 1. Number of hits per keyword

Keyword	Emerald Insight	ProQuest ABI/INFORM
"Efficient consumer response"	36	18
ECR	20	92
("efficient consumer response" OR ECR)	2	95
"supply chain management" AND fashion AND ECR	139	145
("efficient consumer response" OR ECR) AND (benefit* OR advantage*) AND (fashion OR cloth* OR apparel) AND "supply chain" NOT (food OR grocer*)	72	49

Table 2. The chosen selection of articles was performed in the following steps:

Step 1)	The first selection included articles where the title was linked to the purpose of the thesis. The title of these articles has some of the keywords.
Step 2)	Systematic review of the article summary. Only article that summary clearly addressed the subject of the study; Efficient consumer response (ECR) in the fashion industry was included in the following step.
Step 3)	The articles were read and reviewed as a whole to ensure that it follows the inclusion criteria. In this step the individual article is also examined to determine whether it derives relevance to the purpose of the study and an assessment is made regarding the articles added value for inclusions. This review includes quality review on accordance with the predetermined quality criteria terms of reliability.

3.2.3 Quality evaluation

Quality evaluation is an important process to achieve a reliable result and has a direct link to the final value of a literature study. Good quality evaluation should review individual studies to ensure that the results are reliable, representative, and relevant. In this case it means critically reviewing the purpose of the study, the approach, the selection, and the interpretation. In this thesis the quality evaluation is carried out through the following six control questions. (Forsberg & Wengström 2008 pp. 125, 157, 206)

1. Does the study have a well formulated question with a clear purpose?
2. Is the method suitable to fulfil the purpose of the study?
3. Is the sample sufficient to achieve a representative result?
4. Is significant information reported?
5. Is it likely that unwanted or irrelevant factors may not affect the outcome?
6. Are the statistical methods suitable?

3.2.4 Ethical aspects

When doing a systematic literature study ethical aspects must be considered (Forsberg & Wengström 2008 p. 77). The responsibility of the researcher is to ensure that the survey taken is of good quality and that it follows the ethical guidelines (Condex 2019a). In this thesis the only studies used is peer reviewed studies. With collegially reviewed studies is

meant, studies that have been carefully reviewed from different perspective and meet scientific criteria (Codex 2019b). According to Codex (2019b) peer review is “what makes it research”.

Some general rules must be followed when doing a report on research. The researcher must; honestly present the methods and the results, not lie about his research, or take results from others, strive to carry out research without harming people, animal, or environment. (Vetenskapsrådet 2017)

4 RESULTS

This chapter presents the results of database search and the articles witch the literature study is based on. The included articles were found during the reported search and meet the inclusion criteria.

A total of 14 articles was read, and the final selection resulted in 6 articles (*see Table 3*). All the selected articles that were chosen addressed in the summary the subject of the study and had to do with ECR or QR in fashion industry. The articles that were not included did not meet the inclusion criteria of the study and were not included. An example of articles that were not included were research that focused on ECR in food and grocery or how to implement ECR. Several of the found articles in the search had a broader purpose than this study and were not found relevant. All articles were quality reviewed according to the quality assessment template presented on the quality evaluation chapter on page 22. Methods of both qualitative and quantitative types were used in the selected articles. The aim, method, and result in (*Table 3*) for the selected articles are a direct quotation of the studies.

Table 3. Summary of articles

Author and year	Aim	Method	Result
Freitas et al. (2018)	“The study proposes a classification of the different types of motivators, barriers and benefits existing in the processes of adoption of collaborative initiatives between companies within the supply chain.”	“The study uses a systematic review of the literature, focusing on five initiatives: Quick Response (QR), Efficient Consumer Response (ECR), Continuous Replenishment Program (CRP), Vendor Managed Inventory (VMI), and Collaborative Planning, Forecasting and Replenishment (CPFR).”	“The study shows some important points like the concept of service level that differs according to the objective of each company, being more related to objective aspects (efficiency) or more subjective aspects, related to the need of the consumers (effectiveness). Information and communication technologies, with the reduction of costs, are no longer a barrier and are a driving force in the development of collaborative initiatives. Supply chain management is already enabled through modern information technologies and its success is based on people, remembering that cultural and behavioural barriers are much more difficult to transpose than physical barriers.”
Choi et al. (2010)	“The study looks into quick response in supply chain system such as collaborative planning, forecasting and replenishment and vendor management inventory.”	“The study has used a systematic literature review with the focus on the innovative measures associated with QR.”	“The study shows that many innovative technologies and channel coordination schemes that have discussed in the paper may become usual and common business norms in the future. However, the ever-changing business environment will call for newer and more innovative measures as time evolves.”
Reyes et al. (2005)	“The purpose of the study is to collect, categorise and merge the existing knowledge of ECR. The paper explains the ECR strategies, definitions and initiatives that were found in the academic literature.”	“The study has used a systematic literature review.”	“The study presented ECR literature and complications by classifying the literature according to categories. Also addressed gaps for further studies.”
Tsan-Ming Choi (2018)	“The study explores the make-to-order quick response fashion supply chain with a risk averse retailer.”	“The study built a formal analytical model, (Lo, Hong et al. 2008) deriving the optimal solutions and conducting analytical and numerical studies, a number of important insights have been generated and summarized.”	“The paper assumes all agents in the fashion supply chain have symmetric information, and the retailer can implement the contracts by setting the respective contract parameters with full information. However, in reality, it is not necessarily true and hence they admit that the information symmetry assumption is one critical limitation.”
Wen et al. (2019)	“The study examines the operational models on FRSCM in the mainstream OR literature.”	“The study has used a systematic literature review.”	“The paper examines the most recent literature that applies OR techniques and models to improve FRSCM decisions and updates the most advanced knowledge for the four FRSC core members. Future research opportunities are proposed.”

Lo et al. (2008)	“The study has integrated the typical management information system (MIS) development procedure with that of an e-fashion SCM multi-agent system.”	“The study has used related research and reports from different countries have been thoroughly surveyed in order to find possible IT and non-IT methods for use in the SCM of fashion retailers.”	“The study show that the system can easily assist fashion retailers in integrating different Web-based software such as PDM, ERP, EDI, Illustration, Graphics, and CAD.”
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4.1 Identified benefits

A total of 6 research articles with different perspective, approaches and purposes were chosen to answer the research question of the study. The included articles show several benefits for ECR and QR. This study only includes benefits that are relevant to ECR in the fashion industry, focusing on the manufacturer and the retailer. The identified benefits are 4 areas of benefits that are categorised and the number in the parentheses shows in how many studies different types of benefits were found (*see Table 4*). The results in the studies chosen shows which benefits have been identified in the articles found (*see Table 5*). The result also shows that there are many different types of benefits in ECR of the fashion industry for the manufacturer and the retailer. The four areas of benefit identified are:

- **Supply chain management**, identifies the benefits in demand predictivity, relationship improvement and better planning
- **Time based-competition**, identifies the benefits in improvement of product cycle, reduced cycle time and increased competitiveness
- **Inventory management**, identifies the benefits in cost reduction, sales increase, profit increase and reduce inventory level
- **Delivery service**, identifies the benefits in customer responsiveness and customer satisfaction

Table 4. Different types of benefits categorized

Categories	Identifying the benefits
Supply chain management	<ul style="list-style-type: none"> - Demand predictivity (3) - Relationship improvement (5) - Better planning (2)
Time-based competition	<ul style="list-style-type: none"> - Improvement of product cycle (3) - Reduced cycle time (3) - Increased competitiveness (2)
Inventory management	<ul style="list-style-type: none"> - Cost reduction (2) - Sales increase (1) - Profit increase (2) - Reduced inventory level (4)
Delivery service	<ul style="list-style-type: none"> - Customer responsiveness (1) - Customer satisfaction (3)

Table 5. Specific results about which benefits have been identified in the articles found

Author	Heading	Identifying the benefits
Freitas et al. (2018)	Collaborative initiatives: Motivators, barriers, and benefits.	<ul style="list-style-type: none"> - Better inventory management - Better demand predictability - Better planning - Improvement of product cycle - Relationship improvement - Reduced cycle time - Reduce inventory level - Better level of customer service - Better customer responsiveness - Sale increase - Profit increase - Increased competitiveness
Choi et al. (2010)	Innovative Quick Response Programs	<ul style="list-style-type: none"> - Better demand predictability - Better inventory management - Better planning - Increased competitiveness

Reyes et al. (2005)	Efficient consumer response	<ul style="list-style-type: none"> - Reduce inventory level - Improvement of product cycle - Relationship improvement - Better inventory management - Better level of customer service - Sale increase - Profit increase - Reduced cycle time - Cost reduction - Customer satisfaction
Tsan-Ming Choi (2018)	Impacts of retailer's risk averse behaviours on quick response fashion supply chain systems	<ul style="list-style-type: none"> - Relationship improvement - Better demand predictability - Better planning - Reduce inventory level - Improvement of product cycle - Reduced cycle time - Increased competitiveness
Wen et al. (2019)	Fashion retail supply chain management: A review of operational models	<ul style="list-style-type: none"> - Reduce inventory level - Relationship improvement
Lo et al. (2008)	A framework of E-SCM multi-agent systems in the fashion industry	<ul style="list-style-type: none"> - Customer responsiveness - Customer satisfaction

4.2.1 Benefits related to Supply Chain Management

According to Reyes et al. (2005 p. 5), enabling technologies can help to facilitate interaction among the supply chain partners to coordinate activities. Reyes also, highlights the importance of the technologies to achieve a seamless integration within the company, meaning between various in-house actors both in the retail and in the manufacture.

Choi (2018 p. 251) identifies that in context of the supply chain of the fashion industry quick response is a well-established program to deal with risks. This means that among the various demand predictivity the decision making for the retailer lowers the risk when using ECR. This however may not be in short term beneficial for the manufacturer but the close relationship with the retailer bring continues and long-term profit also for the manufacturer and that will also lower the risk for the manufacturer. The outcome of this is also a more sustainable operation because the production is more accurate and based on the real demand.

4.2.2 Benefits related to time-based competition

Wen et al. (2019) argues that in fashion industry, the production schedules of the manufacturer is according to the retailers, while the customer demand effects the ordering strategies of the retailer.

One of the main benefits of ECR is according to Freitas et al. (2018), reduced cycle time and lead time. This important factor also means companies that implement a collaborative initiative increase their competitiveness.

4.2.3 Benefits related to inventory management

In the supply chain the main aim is to keep the material flow from the beginning to the end consumer. This will prevent unnecessary inventory and help the parts move through the supply chain as quickly as possible. Wen et al. (2019 p. 40) maintains that inventory management is important and critical for the fashion retailers.

Freitas et al. (2018), claim that better inventory management can reduce inventory level in the supply chain as a whole through collaborative initiatives, while reducing stockouts and increasing inventory turnover. A good inventory management system can improve the competitiveness and profitability of the retailers specially in the fast changing and unpredictable fashion market by providing better customer service with minimum inventory related cost (Wen et al. 2019 p. 40).

According to Freitas et al. (2018), ECR is most beneficial for the retailers and bring more pressure to the manufacturer. The joint planning result in more flexibility and adaptation to possible changes in demand patterns and will therefore have an effect on best sizing of stock in the supply chain.

4.2.2 Benefits related to delivery service

Reyes et al. (2005), examines that one of the most important objectives to ECR strategy is to quickly respond to the costumers needs at the lowest price. This factor is important

for all of the members in the supply chain. The relationship between information and responsiveness is crucial.

Freitas et al. (2018), further examines that the benefits of ECR has an effect on greater customer responsiveness where a quicker respond to the market need is done by adopting ECR.

5 DISCUSSION

This chapter consist of discussion and result of the study including the chosen method. The results of the study will be discussed with the theory presented in an earlier chapter. By analysing findings from previous studies in the field this study shows the importance of ECR in the fashion industry, focusing on the manufacturer and the retailer and identifies different areas of benefits.

5.1 Discussion of results

The research show that when actors in the supply chain of the fashion industry collaborate and have a good information flow a better outcome appears for all parties. This show that there are many benefits related to ECR information flow for the upstream and downstream supply chain. A workable and automated inventory management system is also very important due to highly volatile consumer demand and short selling season where leftover inventory is unprofitable and unsustainable. The discussion is presented and categorised according to ECR 4 areas of benefits mainly for the manufacturer and the retailer:

- Supply chain management
- Time-based competition
- Inventory management
- Delivery service

5.1.1 Supply chain management

When talking about the supply chain management the focus is on the whole value chain that is used in delivering products and services to the end consumer (Finne & Sivonen 2008 p.108). This requires that the supply chain has a smooth way of communicating both for the manufacturer and the retailer.

According to Reyes et al. (2005 p. 5), enabling technologies can help to facilitate interaction among the supply chain partners to coordinate activities. In most of the studies reviewed the emphases were on the interaction between the different partners in the supply chain. Reyes et al., however, also highlights the importance of the technologies to achieve a seamless integration within the company, meaning between various in-house actors both in the retail and in the manufacture. This is a very logical factor that needs to be more emphasised on. Before it is possible to achieve a good interaction between the different actors in the supply chain, there needs to be a seamless interaction within the company and technology is one part of that.

In addition, transparency of information in the value chain is a fundamental element in efficient retail operations (Finne & Sivonen 2008 p. 223). Information sharing has been proven to be one of the most important elements in supply chain. The strategy of managing integrated supply chain among partners is the information sharing. A significant effect can be seen in the lack of knowledge sharing between members in the overall performance.

Although the relationship between the manufacturer and the retailer has developed and is much closer than before, the comparison between benefits varies for the manufacturer and the retailer. The manufacturer may receive smaller orders from the retailer but a continues one, which is a benefit. The retailer again has the benefits of ordering based on demand, which means less loss.

Choi (2018 p. 251) identifies that in the context of the supply chain of the fashion industry quick response is a well-established program to deal with risks. This means that among the various demand predictivity the decision making for the retailer lowers the

risk when using ECR. The connection can be seen in, the lower the risk is the less is the loss. This however may not be in short term beneficial for the manufacturer but the close relationship with the retailer bring continues and long-term profit also for the manufacturer and that will also lower the risk for the manufacturer. The outcome of this is also a more sustainable operation because the production is more accurate and based on the real demand.

5.1.2 Time based competition

According to Christopher (2016 p. 135), time is a valuable factor in the purchasing behaviour in all consumer markets. Apart from the importance of the quality and the price an industrial market retailer chose the manufacturer that has the shortest lead time. Also, in consumer market the consumer chooses to buy from brands that are available at the time, this shows that time is an increasingly sensitive matter. Here the relationship between time and buying behaviour can be seen. This, however, brings more pressure to the manufacturer.

Wen et al. (2019) argues that in the fashion industry, the production schedules of the manufacturer is according to the retailers, while the customer demand effects the ordering strategies of the retailer. On the other hand, the fashion retail supply chain coordination contract could be influenced by the manufacturer for inventory decisions of the fashion retailers. Customer demand could then be affected by the retailers through strategic pricing, selling and return policies.

The characteristics of (see Lo et al. 2008 p. 597), fashion industry included short life cycles, high volatility, low predictability, and high impulse purchasing. With fast fashion, new trends will be transformed by the fashion retailers without putting any time on the design process but instead a fast speed into production. Although fast fashion is provided in large volume with cheap price and the latest trends it is also highly unsustainable. (Wang 2018 p. 9) One of the main benefits of ECR is according to Freitas et al. (2018), reduced cycle time and lead time. This important factor also means companies that implement collaborative initiative increase their competitiveness.

5.1.3 Inventory management

According to Li (2014 p. 19), inventory is the material stock that runs through the supply chain and is an important asset for companies. Wen et al. (2019 p. 40) maintains that the inventory management is important and critical for the fashion retailers.

In the supply chain the main aim is to keep the material flow from the beginning to the end consumer. This will prevent unnecessary inventory and help the parts move through the supply chain as quickly as possible. The goal is to achieve a continuous and not interrupted supply chain. It is important that the parts and components are delivered on time in the right amount at the exact point they are needed. It can however be difficult to see the end-to-end flow in the supply chain which can end up in unnecessary build up inventory.

Freitas et al. (2018), claim that better inventory management can reduce inventory level in the supply chain as a whole through collaborative initiatives, while reducing stockouts and increasing inventory turnover. A good inventory management system can improve the competitiveness and profitability of retailers specially in the fast changing and unpredictable fashion market by providing better customer service with minimum inventory related cost (Wen et al. 2019 p. 40).

ECR is most beneficial for the retailers and bring more pressure to the manufacturer. As the problem has been discussed previously (e.g., Freitas et al. 2018), when the responsibility for the retailer inventory is given to the manufacturer, who then can schedule their production based on the needed demand of the customer which will then maintain adequate inventory level at the retailers and the manufacturer's inventory. The joint planning result in more flexibility and adaptation to possible changes in demand patterns and will therefore have an effect on best sizing of stock in the supply chain.

It is also interesting to see that although ECR was originally established to increase sales and add efficiency in the supply chain, actually also supports sustainability because of the information sharing and the transparency in the supply chain by producing

based on the real demand which results in less wastage that will in order help with saving energy.

5.1.4 Delivery service

Customers expect flexibility, availability, customisation, shorter lead time and for the service to be easy and workable. This expectation puts the retailers and the manufacturers in competition for a smoother operation that then end up in customer satisfaction.

Reyes et al. (2005), examines that one of the most important objectives to ECR strategy is to quickly respond to customers needs at the lowest price. This factor is important for all of the members in the supply chain. The relationship between information and responsiveness is crucial. Companies that collect information related to customer and internal service/quality information were found to be more responsive. This discussion shows that there is a link between improvement in operational performance and responsiveness.

Freitas et al. (2018), further examines that the benefits of ECR has an effect on greater customer responsiveness where a quicker respond to the market need is done by adopting ECR. Suri (2020 p. 12) also states that there are obvious benefits in using ECR, because responding fast to consumer does promote consumer satisfaction and there is nothing like a happy consumer.

5.2 Discussion of method

This thesis was carried out with the help of a systematic study. Since some of benefits of ECR have been studied from before, the chosen approach adapted well to answer the research question and thereby could well meet the reliability and the validity of the study. The method was well suitable to the purpose of the work and the research question could be answered.

There were however some challenges that appeared during the data collection process although the chosen method proved to be suitable for the study. When conducting the

literature study, it was a challenge to limit the number of relevant studies found during the search. Some of the original demarcations like the time period had to be changed during the preliminary search. In the beginning the database gave too many hits when searching with the different keyword, but despite this it was difficult to find articles that was strongly related to the research question. This challenge led to more time than expected on the searches and different combinations of keywords had to be tested. More relevant hits were found when the limitations of database were added after the search of the keyword than before the search of the keyboard. In the original search process the time limitation was from 2010-2022 but had to be extended to 2005-2022 to find more relevant articles.

Some of the articles had different methods and the purpose was broader than the purpose of this study. This made it difficult to clearly compare the results from each other. The presented way of the results was different from each other and that may have had an effect on which article had an influence on this study. Although the search process was more time consuming than originally expected I was able to review the individual studies to ensure that the results are reliable, representative, relevant and I am satisfied with the chosen articles and the result.

6 CONCLUSIONS

The aim of this study was to examine the benefits of Efficient Consumer Response (ECR) in the fashion industry. The research question that this study intended to answer was: *What are benefits of ECR in the fashion industry, for the manufacturer and the retailer?*

By analysing the insight of previous studies, the results report that there are different types of benefits in ECR for fashion industry that could be identified both for the retailer and the manufacturer. Although the relationship between manufacturer and the retailer has developed and is much closer than before, the comparison between benefits of ECR in the fashion industry varies for the manufacturer and the retailer. ECR is most beneficial for the retailers and bring more pressure to the manufacturer. The manufacturer may however receive smaller orders from the retailer but a continues one, which is

a benefit. The retailer again has the benefits of ordering based on demand, which means less loss.

Information sharing has been proven to be one of the most important elements in the supply chain. The strategy of managing integrated supply chain among partners is the information sharing. Before it is possible to achieve a good interaction between the supply chain, there needs to be a seamless interaction within the company and technology is one part of that. The relationship between information and responsiveness was found to be crucial. Companies that collect information related to customer and internal service/quality information were found to be more responsive. There are also obvious benefits in using ECR, because responding fast to consumer adds value and does promote consumer satisfaction.

ECR also support a very relevant topic such as sustainability, although it was originally established to increase sales and add efficiency in the supply chain it actually also supports sustainability because of the information sharing and the transparency in the supply chain by producing based on the real demand witch results in less wastage that will in order helps with the energy saving.

6.1 Limitations of the study

The study was interesting to conduct however, there were some challenges along the way. Different kind of search keywords had to be tested during the data collection and they resulted in either too broad or too narrow search. The keywords gave a better result when some of the limitations in the database were added after entering the search word rather than before the search word. Some of the original demarcations like the time period had to be changed during the preliminary search and the articles found were not all clearly related to the study. Although the search process was more time consuming than originally expected I am satisfied with the study.

6.2 Suggestions for future studies

The study had relatively broad perspective on benefits of ECR in the fashion industry, focusing on the manufacturer and the retailer. It would have been interesting to study more about the benefits of ECR in other specific industries like the beauty industry, and possibly a comparison between the traditional way and using ECR. This is a suggestion for future studies. This study can also be supplemented with a more in-depth search on the relationship between ECR and various economic factors like revenue and expenses.

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