Master Thesis

Flexibility in Supply Chain
A case study of ICA AB (Non-Food/Clothing) and sub-case of ZARA

Master Thesis within International Logistics and Supply Chain Management

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Abstract

**Problem** – The essential problem being analyzed in the research paper is the methods of improving supply chain flexibility under certain circumstances and constraints that are imposed on the company.

**Purpose** - The paper aims at providing suggestions on improvement of supply chain flexibility for ICA AB (Clothing) based on comparative analysis on sub-case study of ZARA. The major part of analysis is based on investigation of the relationship between supply chain characteristics and firm performance of both companies that is crucial for finding out areas for improvements for ICA supply chain.

**Design, Methodology and Approach** – The research is based on qualitative analytical approach using two basic case studies on Northern Europe’s leading retailer ICA AB and the largest international fashion retailers ZARA. The main idea of comparing these two retailers is that they have different supply chains in terms of its set up, responsiveness, postponement and level of flexibility. The main method of the research is comparative analysis of two supply chains based on literature review, personal interviews with companies’ representatives (Director of Logistics and Supply Chain Department, Supply Chain Manager – Operating and Category Manager Non-Food) and provided internal materials of the company.

**Frame of references** – Based on various sources of literature concerning supply chain flexibility, enablers for flexibility management in global supply chain, value chain flexibility, manufacturing flexibility, comparison between flexibility and adaptability in
supply chain and flexibility as a determinant of supplier selection. We, as researches, also included in the analysis how flexibility relates to company’s performance in the supply chain context.

**Research questions and Limitations** – In order to solve the problem in the research there are certain questions to be answered and supported in empirical study. The first question is how the supply chain looks like for the same products (textile products) in two different companies in terms of its flexibility. The second question is connected to enablers of the supply chain flexibility improvement in specific business environment, namely retailing, after comparative analysis of the aforementioned supply chains. The research provides limited number of suggestions in certain supply chain aspects for ICA AB. As concrete case studies were analyzed, wider and broader range of solutions of increasing supply chain flexibility could not be provided. It is necessary to take into account the fact that the focus company has its own position in the market, strategy, mission, financial strength and available resources.

**Conclusions** – The research paper includes the analytical review of theoretical base on supply chain flexibility and focuses on further understanding of it in textile industry. The paper provides suggestions on improvement of supply chain flexibility for fundamental case study of ICA AB (Clothing). These suggestions are given for improving the flexibility of supply chain in four areas after conducting the comparative analysis based on Model of Supply Chain characteristics and Firm Performance. The analysis was grounded on model modified by authors. While conducting the analysis the authors realized the necessity of dividing Firm Performance into two main types, such as Financial Performance and Non-Financial Performance. This can be considered as authors’ academic contribution and also has its practical implications. The comparative analysis was grounded on the main case of ICA AB and sub-case study of ZARA.
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1 INTRODUCTION

In this chapter the authors briefly present background related to the subject of this research. The problem definitions are given followed by the purpose of thesis, in addition the authors provide a focus and limitation in order to define the scope of the research and outline the study.

Flexibility is generally described as an adaptive response to environmental uncertainty. More specifically, it is a reflection of the ability of a system to change or react with little penalty in time, effort, cost or performance (Upton, 1994).

Supply chain flexibility is increasingly important as it brings a competitive advantage to the company in the highly volatile environment which at the same time leads to the success of the company. Increasing global competition, accelerating technological change and expanding customer expectations are creating a turbulent environment. Flexibility is a mechanism that enables firms to cope with this increasing uncertainty because it facilitates a quick response, which is strategically important as an order-winning criterion (Zhang, Vonderembse & Lim, 2002; Wang & Wei, 2007). The importance of flexibility in improving responsiveness as well as meeting customer demands is acknowledged by many authors (Fisher, 1997; Vickery, Calantone & Droge, 1999) and view it as a strategic edge of the company (Fantazy, Kumar & Kumar, 2009).

1.1 Problem definition

The essential problem being analyzed in the research paper is the methods of improving supply chain flexibility under certain circumstances and constrains that are imposed on the company. In order to solve the problem we have to have an in-depth understanding of flexibility from a supply chain perspective as our research is based on flexibility in supply chains.

Having analyzed the available literature we can state that authors mainly paid attention to manufacturing flexibility focusing relatively less on supply chain flexibility. Besides, very limited research was conducted in supply chains of textile products. According to the authors observations the apparel industry has been neglected in terms of supply chain management research (Bruce, Daly & Towers, 2004). During last few decades textile industry went through major changes such as price competition and global sourc-
ing. The fashion industry itself has prevalent features of high volatility of the market, short product lifecycles and high demand uncertainty which makes this field very important to analyze from the view of supply chain flexibility and the ability to respond quickly to the market.

1.2 Purpose of study

The research paper will include analytical review of theoretical base of supply chain flexibility and focuses on further understanding of it, in particular, supply chain flexibility of textile products. The academic contribution of the Master Thesis is considered the in-depth analysis of two fashion retailers (traditional and fast-fashion retailers) based on Supply Chain Characteristic and Firm Performance model and its modification according to results of analysis. The paper provides suggestions on improvement of supply chain flexibility for ICA AB (Clothing/Non-Food) based on comparative analysis on sub-case study of ZARA. The practical implication of the provided suggestions could be useful for other traditional clothing retailers if they find it feasible and implementable.

1.3 Focus and limitation

The research is based on qualitative analytical approach using two case studies of leading retailers ICA AB, as a fundamental case and ZARA, as a sub-case (supporting secondary case). Both of these retailers operate in selling apparel products in international markets, but at the same time they are different in their strategies and ways of approaching the market. ICA AB is the leading retailer in the Northern Europe focusing on FMCG (Fast-moving consumer goods) and Non Food products, whereas ZARA fully operates in Textile Industry. Both of these companies try to succeed in the market in different ways. The main idea of comparing these two retailers is that they have different supply chains in terms of its set up, responsiveness, postponement and level of flexibility. After interviewing ICA representatives it could be stated that there is much to improve in supply chain of ICA Special (e.g. Non Food, in particular, Textile products) to be flexible, more responsive and more oriented to the market. Therefore, the comparison of two supply chains will lead to improvements of ICA supply chain flexibility and provide the company with the strategic advantage.
The main method of the research is comparative analysis of two supply chains based on literature review, personal interviews with companies’ representatives (Director of Logistics and Supply Chain Department, Supply Chain Manager – Operating and Category Manager (Non – Food)) and available internal materials of the companies.

The research provides limited number of suggestions in certain supply chain aspects for ICA AB. As concrete case studies were analyzed, wider and broader range of solutions of increasing supply chain flexibility could not be provided. It is necessary to take into account the fact that the focus company has its own position in the market, strategy, mission, financial strength and available resources.

Most of our literature resources are written in English nevertheless there are several empirical studies and companies’ presentations that we have translated from Swedish into English, thus there is a slight possibility of translating the words and finding a little bit different meanings for them. However, when we are not sure of some meanings we consult the companies’ representatives.

Retailing companies in textiles which have the same or similar supply chain setup and operating under similar circumstances could imply the research results into their business practice.
2 LITERATURE REVIEW

This chapter provides literature review related to the subject of study. The theories derived from literature review frame the empirical study analysis. In this chapter the authors give the overview on concepts and types of flexibility, flexibility-uncertainty and firm-performance linkages.

The global market is becoming more volatile, complex, uncertain and turbulent. The growing trend of globalization creates opportunities for managers to conduct business operations widely beyond the organizational borders. Highly demanding customers, customized products, short lead times and product life cycle are main features of present business environment. In order to react efficiently and effectively to the aforementioned features, increase competitiveness of the company in the challenging business arena, supply chains need to be flexible and adaptive to a variety of uncertainties in the volatile market. As it is argued by several authors, flexibility has been proven to be a crucial weapon to increase the competitiveness of the company in volatile market (Upton, 1994; Geissbauer & Householder, 2011; Kumar, Shankar & Surendra, 2008; Yi, Ngai & Moon, 2011; Christopher, 2000; Chan, Wang, Luong & Chan, 2009).

Flexibility does not occur randomly. It is the strategic result of investments over years (Lao, Hong & Rao, 2010).

It is difficult to define the flexibility in a single sentence due to its complex nature and multidimensional characteristics. For successful implementation of supply chain management initiatives, flexibility is placed among the most important factors (Vickery et al., 1999; Rao and Wadhwa, 2002; Gosling, Purvis & Naim, 2010; Beach, Muhlemann, Price, Peterson & Sharp, 2000; Fantazy et al., 2009; Shukla, Deshmukh & Kanda, 2012; Stevenson & Spring, 2009; Graves & Tomlin, 2003).

2.1 Concepts and types of flexibility

In the recent years the research authors agreed upon existing literature on flexibility that emerged tremendously, especially the literature on manufacturing flexibility which appeared in the 1980s and 1990s. Kumar, Fantazy, Kumar & Boyle (2006) observe the flexibility perspectives from the point of view of global supply chain and characterized
the entire supply chain through five flexibility perspectives, such as product development flexibility, sourcing flexibility, logistics flexibility, manufacturing flexibility and information systems flexibility. Therefore, it is obvious that the flexibility concept is complex, multidimensional and very important as a key to success.

The generic principles of flexibility that could be applied to supply chains are the following:

1. Flexibility is multi-dimensional: being flexible in one dimension does not necessary mean that the unit of analysis will be flexible in another. Therefore, two supply chains could be equally flexible but in very different ways;
2. Different elements of flexibility are more important in certain environments than in others;
3. Flexibility is a capability that does not have to be demonstrated (Stevenson & Spring, 2007).

Sanchez & Perez (2005) provide in-depth classification of flexibility based on different aspects such as hierarchical aspects (flexibility at shop, plant or company level), functional aspects (flexibility in operations, marketing, logistics), strategic aspects (centered on the strategic relevance of flexibility), measurement aspects (focused on global flexibility measures vs context specific ones), object of change (flexibility of product, mix, volume) and time horizon aspects (long term vs short terms flexibility).

Flexibility may be defined as the ability to change or react with little penalty in time, effort, cost or performance (Upton, 1994). This definition reflects the ability of the company to react to uncertainty in the marketplace rapidly, effectively without significant loss in time, costs and efforts which basically leads to the company’s performance improvements in terms of operational, financial and organizational aspects.

Vickery et al. (1999) define five supply chain flexibilities. The authors suggested the flexibilities have direct impact on a firm’s customers. The five types of supply chain flexibilities are as follows:

- Product flexibility (ability to customized product for specific customer demand)
- Volume flexibility (ability to adjust capacity in order to meet changes in customer quantities)
- New product flexibility (ability to launch new or modified products)
- Distribution flexibility (ability to provide wide access to products)
- Responsiveness flexibility (ability to respond to target market requirements).

Duclos, Vokurka & Lummus (2003) and Coronado & Lyons (2007) analyze a vast range of literature on manufacturing flexibility, strategic flexibility and supply chain flexibility. Consequently, the authors identify six components of supply chain flexibility:

1. Operations system flexibility (ability to configure operations to react to emerging customer trends);
2. Market flexibility (ability to mass customize, build close relationships by designing and modifying products);
3. Logistics flexibility (ability to receive and deliver products cost effectively);
4. Supply flexibility (ability to adapt the supply chain according to the supply of product and customer demand);
5. Organizational flexibility (ability to match labor force skills to the customer needs and market requirements);
6. Information systems flexibility (the ability to build information system appropriately as it responds to changing customer demand).

Aforementioned six components are described in the Figure 2.1.

Figure 2.1 Components of Supply Chain Flexibility.
Adapted from Duclos, *et al.*, 2003.
Having analyzed the model of components of supply chain flexibility we can stress that organizational and operations flexibility function within information system flexibility which is a very important component that tightens up the whole system and enhances the overall performance.

2.2 Flexibility – uncertainty linkage

Uncertainty as a prerequisite of flexibility is agreed upon by many researchers. A different type of uncertainty requires a particular and different type of flexibility. Flexibility and uncertainty linkage is analyzed not only in supply chain flexibility, but also in manufacturing flexibility.

A vast range of literature on supply chain and manufacturing flexibility describes flexibility as a means to cope with or respond to uncertainties (Upton, 1994; Chopra & Meindl, 2001; Kesen, Kanchanapiboon & Das, 2010).

There is an inevitable interaction between the roles of uncertainty and flexibility in the supply chain. Stevenson & Spring (2007) attempt to provide means and its assessment of reducing supply chain uncertainty while at the same time imply strategy for the flexibility in supply chains. The means that were identified are the design of supply chains (for example, dual sourcing), collaborative relationships across the supply chain (‘soft’ factors such as trust and commitment, risk sharing, JIT deliveries etc), information sharing and inter-organizational information systems.

Unplanned changes, either originating internally or externally, are referred to as stimuli, i.e. the cause of the requirement for flexibility (Beach et al., 2000).

Uncertainty is tightly interconnected with supply chain flexibility and influences the level of flexibility in the supply chain of the company. Uncertainty can be categorized into different levels of influence, such as market or demand changes, progress of technology development, political and economical instability, rules and regulations of international trade, currency rates fluctuations and macroeconomic situation.
2.3 Flexibility - performance linkage

One of the key dimensions of supply chain performance is flexibility.

Several research papers address the issue of flexibility and its relevance to the firm’s performance. There are several authors that prove the existence of the relationship between flexibility and the performance by empirical studies as well as theoretical research where researchers have the similar argument that flexibility dimensions have direct effects on performance (financial - net profit, sales growth; and non-financial - lead time and customer satisfaction) (Fantazy et al., 2009).

Vickery et al. (1999) conduct the empirical study on the relationships between different dimensions of the supply chain flexibility and overall firm performance. The research proves that flexibility is related to all measures of business performance and more than that it is highly related to market share and its growth. What is important is that each of the supply chain flexibilities is related to at least one measure of total firm performance.

The study of Lao et al. (2010) examine the relationship between supply flexibility and supply management, and extended the concept of supply flexibility in terms of supplier flexibility and supply network flexibility on relevant supply chain performance measures. The authors conclude on the important role of supply network flexibility in supply chain performance improvement. In order to improve the supply chain performance of the company, the complexity of products and services should be considered. Thus, supply network should be designed in accordance with dynamic operations and market changes.

There are few models of supply chain flexibility and its correlation with firm’s performance proposed by researchers. To exemplify this, we include one of the research models below in a Figure 2.2.
Figure 2.2 Relationship between Supply Chain Characteristics and Firm Performance. Adapted from Sanchez & Perez, 2005.

The Figure 2.2 depicts the relationship between supply chain flexibility and firm’s performance. Authors analyze the supply chain characteristics from the perspective of dimensions of supply chain flexibility which influences directly the overall firm performance (Fantazy et al., 2009; Beach et al., 2000; Lao et al., 2010; Graves & Tomlin, 2003; Chan & Chan, 2010; Swafford, Ghosh & Murthy, 2008; Weber, 2002). This model combines in itself different characteristics, including uncertainty.

Supply chain characteristics relate to supply chain flexibility in both positive and negative ways. For example, supply chain flexibility is positively related to environmental uncertainty, mutual understanding among supply chain partners, technological complexity and supplier dependence. However there is one supply chain characteristic which is negatively relates to supply chain flexibility and this characteristic is interdependence. High level of inter-organizational relationships creates sharing of certain capabilities that leads to internal and external bonding. By this companies are rather limited in variety of alternatives under condition if company needs or wants to change something rapidly in a short period of time.

2.4 The Kraljic matrix

Peter Kraljic created his first approach in managing purchasing activities during 1980’s (Gelderman & van Weele, 2005) and his model appeared for the first time in the Harvard Business Review in 1983. The model broadly influenced professional purchasing.
It is nearly thirty years past after its introduction, but the Kraljic matrix is still the most popular and useful model used by companies around the world.

In his papers, Kraljic paid lots attention to the need of companies to achieve more effective supply management (Caniëls & Gelderman, 2005). He claimed that “purchasing must become supply management” (Kraljic, 1983, p.109). Kraljic (1983) states that supply management is relevant in the situation of complex supply market and high importance of purchasing.

Also, Kraljic matrix could help companies to improve flexibility of their supply strategies. The matrix is used as an instrument for assortment analysis in order to identify the level of supply risk and financial impact of each assortment group, thus the flexibility level of the whole supply chain could be increased.

“According to Kraljic (1983) a firms’ supply strategy depends on two factors: (1) profit impact and (2) supply risk” (Caniëls & Gelderman, 2005, p.141). The construction of the Kraljic matrix is shown on Figure 2.3.

![Figure 2.3 The Kraljic Matrix. Adapted from Basics in Supply Chain Management Course Presentation.](image)

Also, each part can be classified as “low” or “high” in the scale. As a result it is 2x2 matrix with a classification in four categories: strategic, leverage, bottleneck and routine items (Gelderma & van Weele, 2002). Each product category defines a specific strategy and major tasks regarding purchasing process (Caniëls & Gelderman, 2005). Besides resources allocation, it is also includes communication approach and suitable relationships with suppliers. According to the differentiation of the matrix quadrates it is possi-
ble to manage each supplier due to its needs, requirements and purchased goods’ specifications. Consequently, the recommendations which are based on the Kraljic matrix enable to achieve more effective management and improve the whole supply base (Caniëls & Gelderman, 2005). In the following paragraphs each block of the matrix is briefly explained.

- **Strategic items** are high in financial impact and supply risk. There are normally high-value goods with limited amount or even one supplier. The inventory level is kept in the lowest level, due to the high value (Gelderma...van Weele, 2002). “Strategic partners should be world-class suppliers – they are alert and high performing, not only in a technical but also in an economical sense. This means that strategic partners should meet external benchmarks with a more than satisfactory price performance” (Gelderma...van Weele, 2002, p.35).

- **Leverage items** have high profit impact and low supply risk. These items are rather similar to Strategic from the point of financial impact and importance to the organization, however low supply risk means that they are in abundant supply. “Partnership relationships with suppliers can be technology driven (joint venture, co-development, concurrent engineering) or driven by logistics (JIT management)” (Gelderma...van Weele, 2002, p.35).

- **Bottleneck products** are characterized by low financial impact and high supply risk. This kind of products usually shows a high level of supplier dependence, thus to avoid a huge deficit or overstock of goods managers should investigate alternative modes and suppliers.

- **Routine items** have low value and low supply risk. There could be any standardized products that sometimes cause the situation when their holding costs overweight the cost of the product itself. Furthermore, in a combination of low supply risk, this group of goods almost does not have any impact on company’s competitiveness.
3 METHODOLOGY

In this section the research strategy and research approaches used in the thesis are explained. The research and data collection methods as well as such aspects as validity and reliability of information used in the thesis are described with emphasis on in-depth understanding.

3.1 Research Strategy

The main interest of the research study is to conduct in-depth analysis on supply chain flexibility by comparing two case studies, one of which is taken as a main case study, e.g. Swedish retailer ICA AB, and supplementary case study of ZARA. We focus on supply chain characteristics; analyze them based on two case studies with relevance to supply chain for the Clothing product group. With accordance to comparative, qualitative study we apply the results of the analysis to ICA AB in order to enhance the flexibility and responsiveness within the supply chain.

There are different methodologies for research depending on authors’ choice about cases to study, methods of data collection and data analysis. In this research we use a qualitative study as a methodology. When researchers apply qualitative method it allows the subjects to be studied in order to give much broader answers to questions and it is possible to gain valuable insights which might have been missed by any other methods (Ewings, Powell, Barton & Pritchard, 2005). Qualitative researchers usually base their studies on limited samples of analysis units and in-depths understanding of the problem, in contrast to quantitative researchers who seek for large number cases and statistical significance. At the same time qualitative research is not only about generalization of results but also about gaining a greater understanding of research questions concentrating on finding the opinions and experiences of individuals so that subjective data can be provided, and it is concerned with questions of how and why.

As it is mentioned before we will use qualitative research method following with comparative research. We have used various data collection methods in order to ensure the reliability and validity of the research. Furthermore, we have conducted the interviews with companies’ representatives such as Director of Logistics and Supply Chain Department, Supply Chain Manager – Operating, Supply Chain Manager – Inbound Logistics, Supply Chain Manager in Clothing and Shoes, Category Manager (Non –
Food/Clothing), Purchase Strategy Manager, Design manager and Assortment manager. To base the research on data collection and analysis we also include both primary and secondary data.

### 3.2 Qualitative Research

Silverman (2000) states that qualitative research avoids statistical techniques and the mechanics of quantitative methods so to concentrate more on profound understanding by using the methods like interviews, recordings, notes, e-mails and feedback forms. Table 3.1 shows the comparison between qualitative and quantitative research methods.

<table>
<thead>
<tr>
<th>Qualitative</th>
<th>Quantitative</th>
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<tr>
<td>Soft</td>
<td>Hard</td>
</tr>
<tr>
<td>Flexible</td>
<td>Fixed</td>
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<tr>
<td>Subjective</td>
<td>Objective</td>
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<td>Political</td>
<td>Value -free</td>
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<tr>
<td>Case study</td>
<td>Survey</td>
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<td>Speculative</td>
<td>Hypothesis testing</td>
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<td>Grounded</td>
<td>Abstract</td>
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According to Zainal (2007) qualitative analysis observed data at the micro level while quantitative analysis observes patterns in data at the macro level.

The study methods are considered to be in-depth, longitudinal examination of a single analysis unit, such as case. We consider the starting point of analysis in October, 2011 when we had a retailing course in JIBS writing the report on ICA. The very first interview we conducted was in ICA Maxi Jönköping with sales manager. Thus, the end point of the whole analysis of case studies is in the middle of May, 2012 when we are to hand in the final version of Master Thesis.

We will gather the information through observations, personal interviews and by using the tools as phone, e-mail and internet. Furthermore, we will use company’s internal data, presentations and other informative materials.
3.3 Case Study

Case study research is composed of two main stages:

1. Explore a certain research subject
2. Offer the understanding this subject in a particular context.

‘Case studies are analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods. The case that is the subject of the inquiry will be an instance of a class of phenomena that provides an analytical frame—an object—within which the study is conducted and which the case illuminates and explicates.’ (Thomas, 2011, p.513).

We use the case study on Northern Europe’s leading retailer ICA AB and a sub-case on the largest international fashion retailer ZARA. Initially, we got interested in these two supply chains after we have had vast information on kind of unique, very responsive, fast and flexible supply chain of ZARA. Comparing this supply chain to more traditional one that most of the clothing retailers choose to operate in, gave us initial impetus to begin the research on this subject.

3.4 Collection of Data

Data is one of the most important aspects of any research studies. Real-time and concise data makes the research more valid and reliable and provides opportunity to apply its comprehensive results in the subject area. Researcher can choose any kind of research methodology; however, every research is based on data which is interpreted within human activity in the meaningful context so that the researchers can base their decision-making on this interpreted data, e.g. information. We use two main sources of data collection, namely the primary data from the interviews and company presentations as sources of primary data.
Neville (2005) presents the definitions of three main types of interviews in his published booklet:

1. *Structured interviews* involve the use of questionnaires for the respondents based on the same set of questions.

2. *Semi-structured interviews* consist of a list of topics and areas to be covered but at the same time the interviewer may add some additional questions or areas depending on the situation and the flow of conversation.

3. *Unstructured interviews* are considered as informal conversation when the interviewer wants do discuss in-depth a particular theme with another person in a spontaneous way. Although interviewer does not have a predetermined list of questions, there is a pre-decided range of topics to cover.

We apply all aforementioned types of interviews. In the beginning when we conducted the first personal interview, we lacked the information regarding the specific aspects of supply chain of ICA AB, thus we used unstructured type of interview. After we had the initial data on supply chain like the sourcing process, planning process of budget, resources and assortment, operating IT system that enables the company to visualize the physical supply chain, make orders, distribute the quantities etc., the specific questions arose during the interviews. Therefore, we apply structured and semi-structured types of interviews to get more precise information on the supply chain aspects.

In the beginning of interview session we have got information on a general terms and more specific information onwards. The structure of set interviews was very effective as information was delivered starting from the broader issues to more narrow and specific ones considering clothing in particular. Accordingly, we conducted eight face to face interviews with ICA representatives at ICA Special (Non-Food) Headquarters in Gothenburg, Mejerigatan 1. Also, we had one telephone interview with Design Manager due to the reason that she was not available for personal interview on scheduled day.

Most of the interviews were scheduled by ICA Logistics and Supply Chain Director. We were advised to have meetings with relevant Supply Chain, Sourcing and Design representatives, and the sequence of the meetings was based on the progress of Master Thesis. All interviews had 3 to 4 hour duration which gave us an opportunity to get in-depth information on the research issues.
3.4.2 Secondary data

Secondary data is collected data that has already been published. Mostly we use books, journal, booklets, periodicals and websites. Secondary data could be of less validity, but still it is important in order to broaden the knowledge and have a firm platform to base our assumptions on.


3.5 Validity and reliability

Validity is one of the major aspects in the research that makes it trustworthy and scientific. By using primary data the research can improve the validity and become logical and acceptable. In this research we improve the validity by well-organized and properly constructed questions that are relevant to our research objectives and purpose.

Reliability is assurance that the research is enough true to believe in. The primary data is one of the main sources of information that improves the reliability of the research paper. The fact is that real facts that are involved in the internal structure of the company can be nowhere shown or published. These facts are the “internal and personal” experience of the company. Information that we obtained from the interviews of ICA AB was vast and not always considering supply chain flexibility, sometimes the complementary data was provided to get the general overview of the company’s operations. Thus, we included the information that is necessary for the analysis and that is compati-
ble with the Master Thesis topic. In case if the information presented in Power Point slides or communicated to us during the interviews was not clear we did not hesitate to contact the company via e-mail to ask for further explanations and if the questions were too broad to answer by e-mail we always used them during the following meetings.

Nevertheless, we use a range of secondary data sources so that we can combine it with the interview data in order to confirm the answers again. Due to the fact that the primary data is not available for our sub-case, we can only rely on secondary data, but only with the condition - it should be vast enough. To conclude it would be noted that this research has high level of validity and reliability.

When we were ready with preliminary list of suggestions for Supply Chain improvements in ICA we sent it to Logistics and Supply Chain Director and Manager - Operating in order to receive the feedback and comments. ICA representatives were very satisfied and impressed by the provided suggestions. Besides, ICA offered us an opportunity to present our research results to the company’s Management Team.

The important aspect to be emphasized is that one of the Thesis authors has working experience of four and half years in RIMI Baltic and RIMI Latvia in the administration office which is located in Riga, 161, Deglava Street. RIMI Baltic is one of the leading retailers in Baltic States (Latvia, Estonia and Lithuania) and starting from the year of 2006 Rimi Baltic is a subsidiary company of ICA AB. Four years of experience in Central Sourcing Department of Non-Food products, in particular Clothing and Footwear (Men’s, Women’s and Children’s Clothing and Footwear) had given a valuable insight into the practical issues being handled in the company in the process of planning, sourcing, merchandising and post-sales management. Due to this fact it was easier to interview ICA representatives and understand information provided to us as many internal procedures are common within ICA AB and RIMI Baltic. The areas of improvement that the Thesis authors suggest in this Master Thesis are the results of conducted interviews with ICA AB and the professional experience of one of the master Thesis authors. In addition we would like to stress that half a year of professional experience was gained in RIMI Latvia by the same author of Master Thesis. During this rather short period of time in Category Management Department the Thesis author had experienced the Category Management of Food Products. It gave the valuable experience to the Thesis author and the ability to differentiate the complexity, uncertainty and the required
level of flexibility in order to handle the sourcing and management of different product categories. Owing to the fact that ICA AB pursued its interest in increasing the flexibility in Supply Chain of Non-Food products, in very particular Clothing, Master thesis authors were very keen in analyzing the Flexibility in Supply Chain of these product category groups. It is worthwhile to state that the professional working experience of Thesis author was much longer in Non-Food / Clothing comparing to Food products, therefore, it was also one of the reasons to initiate the writing the Master Thesis on particularly these product category groups. Furthermore, clothing product groups deserve a special attention due to the uncertain demand and volatility in the market.
4 EMPIRICAL STUDY

This chapter presents an empirical study. The authors depict the issues related to the subject and include the industry profile, the overviews of the business and textile industry trends and the detailed explanation of companies’ operation in many perspectives based on such aspects as Supply Chain, Suppliers and Sourcing Process. The main objective of the chapter is to present the case studies as a whole.

4.1 Textile industry in a global context

The clothing industry is one of the most challenging industries in the globalized world. In recent decades the shift of the textile production is oriented to the developing and emerging market. It creates new opportunities to operate in these markets as well as be cost efficient, but at the same time it leads to challenges for quick and accurate response to the customer’s demands and needs. Long distances create long lead times and complicated supply chain network, but there are ways to deal with. The major requirement to operate successfully under these pressures is the integration and verticalisation of the companies that have one common objective within tight collaboration. Thus, companies try to speed up their supply chains, processes and systems which should be connected in the supply chain in both directions upstream and downstream.

MacCarthy & Jayarathe (2009) have evidence for the fact that global supply networks pose significant challenges for quick and accurate response in the clothing sector. The challenges relate to ensuring the right volume and mix within retail stores from a globally dispersed supply network.

The traditional clothing markets are characterized by two fixed seasons per year is being affected by the changing customers’ preferences, so by that it creates necessity to split the fixed season to shorter time periods in order to be able to refresh ranges, styles and colors rapidly according to instantly emerging customer demand.

“In previous years, fashion retailers have relies on forecasting future trends instead of using real-time data to assess the needs and wants of the consumers, it has been suggested that this process can start some 18 months before a product is to be sold” (Hayes & Jones, 2006).
One more distinctive characteristic of fashion market is that there is no ‘a fashion trend in one place any more’ (Rigby, 2005, p.1). Fashion retailers are forced to follow up the trends worldwide as there is no one single trend all over the world. And more company expands in the other markets, more it needs to follow the customer’s demands in dispersed regions. It is rather challenging to have the golden rule of supply chain as “7R” (right materials/products, right quantity, right condition, right time, right place, right cost and right customers) (Langley, Coyle, Gibson, Novack & Bardi, 2009). There is tendency for many fashion retailers to realize that the closeness to the market is more important than cost efficiency and they move the production closer to the markets.

The challenges of the fashion market lead to new rapid product introduction, market intelligence, staged postponement, network planning and network capability.

4.1.1 Globalization in the clothing industry

MacCarthy & Jayarathne (2009) stress on clothing manufactures migration from the developed to less developed countries, and exemplifies this migration to the countries like China, India, Indonesia, Bangladesh and Pakistan. The tendency of changes in world exports is related to moving production to the Far East countries which is depicted in Figure 4.1.

![Figure 4.1 Clothing exports of selected regions and economies by destination. Source: WTO, International Trade Statistics 2011, Merchandise Trade.](image)

“Although textiles and clothing production has migrated substantially from the developed to less developed economies it is still a significant industry in some Western coun-
tries. In 2006 there were over 2 million people employed in the combined textile and clothing industry across the EU. Although there was a 5% drop over a one year period (2005-2006), this still represents a substantial employment sector” (MacCarthy & Jayarathne, 2009, p.3).

Tokatli (2008) has called special attention that manufacturing is of high quality in countries like India, Morocco and Turkey, and manufacturing firms are now perfectly capable to produce tailored clothes with quite high flexibility and speed.

“All of these phenomena are important in understanding current and emerging supply chain structures in the clothing sector that are based on global supply but often supplemented by local supply where desirable” (MacCarthy & Jayarathne, 2009, p.3).

To sum up, the managers of companies operating in fashion industry have to bear in mind the importance of ability to be flexible in sourcing, because the industry itself is volatile and uncertain, so the fashion retailers have to balance the global sourcing with local supply in order to secure the products to be delivered on time according to current demand.

4.1.2 Fast fashion

“Fast Fashion and market responsiveness seem to be inseparable. However some firms selling fast fashion can respond quicker to market need than others. Firms that respond quickly to customer needs are seen as trend setters. Market responsiveness includes not only introducing new fashionable apparel influenced by trends, but having the right amount of product in each individual store” (Mihm, 2010, p.57).

Figure 4.2 ‘Lean’ retailing-apparel supplier relations.
Source: Dicken, 2011.
Figure 4.2 shows lean manufacturer-retailer system which is different from a traditional system. In this new system deliveries of new items or replenished ones are very frequent according to real time information on sales. In this case much smaller quantities are delivered as it is needed and a very little back-up stock is held by the retailer. In the past when the market was dominated prevalently by the mass market retailers long production runs of standardized garments at low cost was demanded. As in the current decades market has become more differentiated with more frequent changes in fashion production, manufacturers have been forced to react much more quicker to the demand of retailers. Under this circumstance the time is as important as the cost.

Fast fashion concept is mainly related to the quick response considerations. Fast fashion retailers are inspired by the most promising and attractive trends observe at catwalks and by signals taken from consumers. Then they transform the cues into products that can be immediately delivered to the customers.

This type of fashion retailers avoids long planning process for seasonal collections. They synchronize operational processes; maximize the speed and responsiveness in their supply chains. Fast fashion retailers supply chains are also defined as ‘super-responsive’ or ‘rapid-fire’ supply chains, as they maintain a high level of flexibility and involve increased integration within the whole supply chain. “The “fast fashion” retailers have influenced consumer expectations for speed, variety, and style at low prices and have found it necessary to make changes to speed up the production cycle” (Walters, 2006, p.257).

Table 4.1 Comparative benchmark of Traditional and Fast-Fashion retailer

<table>
<thead>
<tr>
<th></th>
<th>Time to Market</th>
<th>Different products manufactured per year</th>
<th>After season sales</th>
<th>Average markdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional retailer</td>
<td>6 – 12 months</td>
<td>2 000 – 4 000</td>
<td>30 – 40%</td>
<td>30%</td>
</tr>
<tr>
<td>Fast-Fashion retailer</td>
<td>2 – 5 weeks</td>
<td>~ 11 000</td>
<td>15 – 20%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Adapted from Fast Fashion Retailing, On-line Presentation, 2011.
Fast fashion retailers have “five fingers touching the factory and five fingers touching the customer” (Tokatli, 2008).

Fast fashion retailers could be divided into two categories in regard to owning the factories and this division is shown in the Figure 4.3. There are some retailers that have no manufacturing competency of their own and other ones that own factories.

![Figure 4.3 Fast fashion retailers categories based on factories ownership.](image)

Retailers that do not have factories do not manufacture their own clothes and outsource the production to other firms; furthermore, this type of retailers is considered as key drivers of the globalization in the whole clothing industry.

Production is generally carried out in smaller batches in order to avoid oversupply and by doing this it creates the opportunity to be able to deliver rapidly highly demanded styles to the customer (The Economist, 2005 June 18). Most lines are replaced so quickly and not repeating the same styles and with this retailers create a scarcity value (The Economist, 2005 June 18; Strategic Direction, 2005; Carruthers, 2003). Tokatli (2008) explains a climate of scarcity as a message that if the customer does not buy the product now, he/she will lose his opportunity to buy it tomorrow.

Companies operating in fast fashion segment are developing rapidly, open dozens of new stores, provide regular and uninterrupted supply of actual products and by this constantly attract new customers.

“Fast fashion chains have grown faster than the industry as a whole and seized market share from traditional rivals. In the challenging European retail climate, these companies are expending their sales and profits over 20 per cent per year” (Sull & Turconi, 2008).
4.2. Case studies

Flexibility is an important aspect in retail, in particular clothing, because it deals with a degree of postponement and supplier and transportation capacity commitments (Smith, 2008).

The empirical study is based on qualitative analysis of two case studies. One case study ICA AB is taken as a fundamental, exploratory case which will be provided with the suggestions for supply chain flexibility improvements after conducting the in-depth analysis of the supply chains based on five supply chain characteristics (environmental uncertainty, mutual understanding, interdependence, technological complexity and supply dependence). The other case study is chosen as a supporting base for a comparative analysis. The other company is chosen to be as fast fashion retailer with higher degree of flexibility and responsiveness which will help us to find out areas for ICA AB supply chain improvements. The case study that will support the analysis is based on ZARA. We have chosen two very distinctive case studies because our analysis is based on comparison of two different supply chains that will benefit us when we compare both more responsive and traditional supply chains.

We assume that it would not be so productive to compare similar supply chains with many common features in their structure. We find it very practical to analyze the differences between both supply chains in order to come up with relevant and well applicable solutions for supply chain improvement for ICA AB. Initially, our interest in investigation ICA Clothing comparing to ZARA was based on the following issues:

1. ICA Non-Food including Clothing is placed to be fourth in Sweden according to the turn over (million SEK) in 2010 (Figure 4.4).
2. Rather low index of clothing customer satisfaction according to survey made between 2008 year and 2012 year conducted by marketing company (Figure 4.5).

From the Figure 4.4 it is evident that customers buying children clothes are more satisfied than adult clothing buyers. Even though the increase in customer satisfaction index
is noticed, 53-63% of customers being satisfies with clothing purchased in ICA stores is still low and needs to be improved. So that in order to improve this situation re-considering of operation and especially supply chain is vital.

4.2.1 ICA AB Profile

ICA AB (Aktiebolag/Ltd.) is a joint venture 40% owned by Hakon Invest AB, Sweden and 60% by Royal Ahold NV, the Netherlands. According to a shareholder agreement, they share control of ICA AB. It is a private company limited by shares and the shares are not traded publicly.

ICA AB as a joint venture is based on business agreement in which Hakon Invest AB and Royal Ahold NV agreed to develop a new entity (ICA AB) and new assets by contributing equity. These business parties exercise control over ICA AB and consequently share revenues, expenses and assets.

The ICA Group is one of the leading retail companies of Northern Europe, with 2,123 of its own and retailer-owned stores in Sweden, Norway, Estonia, Latvia and Lithuania. ICA Group includes ICA Sweden, ICA Norway, Rimi Baltic (RIMI Eesti Food, RIMI Latvia and RIMI Lietuva), ICA Real Estate and ICA Bank which offers financial services to customers in Sweden. Around 50,000 people work at ICA – in offices, logistics and in the stores (ICA Annual Report, 2010).

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of stores 31 December 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>1,334</td>
</tr>
<tr>
<td>Norway</td>
<td>550</td>
</tr>
<tr>
<td>Estonia</td>
<td>82</td>
</tr>
<tr>
<td>Latvia</td>
<td>111</td>
</tr>
<tr>
<td>Lithuania</td>
<td>46</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,123</td>
</tr>
</tbody>
</table>

Figure 4.6 Large store network in five countries. Source: The ICA Group’s Annual Report, 2010.
The bricks-and-mortar retailer ICA Sweden operates around the country in cooperation with independent retailers that own, manage the stores and have agreements with ICA Sweden, which coordinates purchases, supports retailers in improving sales and efficiencies, and is responsible for logistics and joint-marketing communications. ICA Sweden operates four different formats of 1 334 stores in Sweden, such as ICA Nära, ICA Supermarket, ICA Kvartum where all these three formats are owned by store-keepers and ICA MAXI Stormarknad owned by both store-keeper for food products and ICA AB for Non-Food including clothing. The summarized information on stores formats is depicted in the table below (Table 4.2).

Table 4.2 Formats of ICA stores

<table>
<thead>
<tr>
<th>ICA Sweden, 1 334 stores</th>
<th></th>
</tr>
</thead>
</table>
| **ICA Nära** (704)     | Small stores providing a narrow range of products, high quality fresh foods and making it convenient for customers living in residential areas.  
Very limited assortment of socks and other basic clothing goods. |
| **ICA Supermarket** (436) | Stores with wide assortment for different occasions. Provide high level of service and offer a wide range of fresh foods.  
Broader range of basic clothing articles including socks, underwear and lingerie (comparing to ICA Nära). |
| **ICA KVANTUM** (117)   | Introducing this format of ICA stores is made to be a leader among local supermarkets. Provide a big assortment of fresh foods, including specific product lines for allergy sufferers, organic food and local products.  
Wide assortment of clothing products is offered to customers. |
| **ICA MAXI Stormarknad** (75) | “Everything in good prices in one store”. Wide variety of foods and non-foods. Long store hours, provide parking area.  
Provide customers with wide assortment of all types of clothing products that are planed and managed by ICA AB. |

Adapted from The ICA Group’s Annual Report, 2010.
The main idea is to cover various customer needs and that is why ICA has built up many different formats.

**4.2.2 ICA Supply Chain in Non-Food**

ICA Group retail chain stores offer a vast range of different product categories mostly specialized in food and meals. However, as our research is concentrated on non-food (clothing) there are the following categories to mention: household products, cleaning and homecare products, lamps and electrical equipment, home textiles, toys and baby care accessories, books and cards, clothing (men’s, women’s and children’s), footwear, festivity goods, bags and leather, sport equipment, home technology, DIY (Do It Yourself), garden and barbequing products, recordings and batteries. The presence of the categories depends on stores format and location.

There are three central warehouses for non-food goods located in Borås, Västerås and Växjö as shown in Figure 4.7.

![Figure 4.7 Location of Central Warehouses.](image)

Each warehouse handles different types of goods, for example, textile goods are stored in Borås; warehouse in Växjö operates with furniture storing and other food and non-food products are transported to warehouse in Västerås.
After goods are delivered to the central distribution centers they are transported to regional warehouses which are located in Årsta, Borlänge, Umeå, Kungälv and Helsingborg. All central and most regional warehouses of ICA are private, and one public warehouse which operates in Umeå provides rented space to store ICA’s goods in it.

ICA has sourcing offices in Hong Kong, China and Vietnam as an organization’s and supply chain’s facilitators for non-food products. The main purpose of establishing offices in these countries is to monitor technological, labor and general state conditions in the factories that produce ICA’s corporate brand products. Being present on site has benefited ICA in terms of ensuring social responsibility, quality control of products and improves supply chain coordination to enhance overall performance of the company to run successful business.

4.2.2.1 Suppliers of ICA AB

In order to operate in global environment ICA has very tight relationship with its suppliers. Like we mentioned before, the company want to keep its high quality level and it means to have good and open relationship with the suppliers. ICA has small local suppliers that deliver directly to independent stores and in this case they have trustful and close relationship with these suppliers.

The company has own audit program, called “ICA Social Audit”, where audits supervisors visit suppliers. The main objective is that auditors try to help suppliers to meet the company’s requirements and make sure that there are no any illegal acts. Figure 4.8 is based on information about ICA’s suppliers and their geographical dispersion.
We have marked red Asia as a main region for supplier location for Clothing category.

Quality is an important issue for the entire clothing industry and there are many different standards and quality certifications to be acquired that impact on whole supply chains. ICA does business around the world and that’s why it is essential for them to find suppliers that can meet ICA’s high quality standards. The company has requirements on their suppliers and subcontractors, to be certified according to third party standards. ICA also has very stringent requirements on environmental work and social responsibility, and the company expects their suppliers to take care of these issues.

ICA Global Sourcing represents a complex multi-geographical structure of sourcing. For Clothing categories ICA’s suppliers are concentrated in Asia (China, Bangladesh, India, Vietnam and Pakistan) which gives a sourcing share of 90%. Local suppliers provide ICA only 10% of clothing assortment. The main ICA’s objective of sourcing department is to change the proportion between local suppliers and suppliers from Far East. ICA wants to decrease the percentage of goods sourced from Far East up to 80-85%.
4.2.2.2 ICA Sourcing Process

“Long development, procurement, and production leadtimes resulting in part from a widespread reliance on overseas suppliers have traditionally constraint fashion retailers to make supply and assortment decisions well in advance of the selling season, when only limited and uncertain demand information is available” (Caro, 2005, p.94).

Traditional fashion retailers apply push strategy in their supply chains which is categorized by planning the collection long in advance before the selling season begins. The main prevalent features of traditional retailers are well in advanced planned budget and category and assortment planning based on sales forecasts. Nowadays there is a tendency of replacing the traditional push-model retailers with fast fashion retailers with its pull approach. Thus, fast fashion retailers are able to respond rapidly to the shifts in the market within a matter of few weeks, versus an industry average of six month (Sull & Turconi, 2008; Barnes & Lea-Greenwood, 2010; Crawford, 2000).

ICA AB as most of the traditional clothing retailer is following the market, including fast fashion retailers, and trying to copy already produced and launched goods.

The figure below shows the general components of ICA Planning, Design and Sourcing process. This process takes place once in three months which means that ICA plans its assortment on quarterly basis.

![ICA Planning, Design and Sourcing Process](image)

Figure 4.9 ICA Planning, Design and Sourcing Process.
Source: Company’s Internal Material.

The sourcing process starts with Financial planning that includes category split, store split and commodity split. After finalizing the budget the Category planning takes place. It consists of yearly category planning, assortment matrix and high level S&OP. The next step in the planning process is the Design which is characterized by provision of pattern, sketch and consumer pack. One of the time consuming stages is Sourcing. It consists of five sequential steps that begins with supplier management and is followed
by product specification and inquiry formation, negotiation, sample handling and product test/quality control inspection. The output of this stage is product and price estimation which is followed by Administration of finalized data. The main components of this activity are validation of item information which consists of the creation of items that are ordered by stores and development of planograms. In the mean time the consumer price is defined by calculated combination of list price and retail price. The final stage of the whole process is Assortment Planning with the following steps: product type, product forecast and product lifecycle.

Taking into account the information on timeline of activities involved into Planning, Design and Sourcing process for textile products sourced from Asia, given by Director of Logistics and Supply Chain Department, Supply Chain Manager – Inbound Logistics and Supply Chain Manager in Clothing and Shoes, we found out that the whole process might take up to one year. Thus, the process includes a big number of steps starting from setting the budget and financial targets up to the beginning of sales of delivered products and at the same time these activities are parts of fundamental stages of Planning, Design and Sourcing model.

We figured out that it takes approximately four month from Mass production activity until the Final inspection and Quality control is done. Furthermore, the Transportation (delivery) process is also time-consuming due to the long geographical distance and lack of proximity to the end customers market. Therefore, it creates a fundamental base for one of our suggestions.

4.2.3 ZARA Profile

One of the successful fast fashion retailers is ZARA, a subsidiary of the Spanish INDITEX GROUP (Industia de Diseño Textil), that creates a sense of exclusivity and scarcity by producing apparel in small batches (Jacob & Mamgain, 2011). ZARA has become an international fashion retailer with stores in 77 countries from Japan to Venezuela with a strong presence in Europe. ZARA brand contributes 64,6% to total sales and ZARA turnover in 2010 was over €8,088 million (INDITEX). ZARA produces yearly about 10 000 – 11 000 of different lines and managers choose the best selling items from that range twice a week (Carruthers, 2003). “Working alongside the market specialist and production planners, the designers of each ZARA’s collections keep in
touch with market developments, to create around 40,000 new designs every year, of which around one-quarter are manufactured” (Kumar & Linguri, 2006, p.82). The fact is that these significant results have been achieved without a traditional marketing department and with minimal expenditures on advertising. ZARA spends only 0.3% on its advertising as opposed to 3-4% of traditional retailers (Tokatli, 2008; Carruthers, 2003; Gallaugher, 2008; The Economist, 2005 June 18; Cheng, Hines & Grime, 2008). ZARA does not invest in press promotional campaigns or television advertisements but instead focuses on in-store and point-of-sales promotions. ZARA delivers its brand images through shop windows and broadens its base of customers depending on word-of-mouth. ZARA locates its stores on some of the most up-market where is high traffic in the city (Sull & Turconi, 2008).

ZARA continuously analyzes its value chain and tries to control as many sections of it as possible. The essential consequence is that ZARA is an integrated retailer and controls the whole way of its products from design decision stage to point of sale. It makes ZARA unique for its way of operating in highly volatile fashion industry in a customer responsive manner.

ZARA's success is based on its unique customer focus or what is called "market orientation". The company which bases its business on market orientation principles does one or all of the below mentioned activities (Strategic Direction, 2003):

- fosters a culture with high levels of responsiveness to market information and continuously creates added customer value
- focuses on market information gathering and gathers information from the whole market about customers and competitors
- coordinates inter-departmental responses to market information (Strategic Direction, 2003).

ZARA ability to offer products to customers in very short lead times creates world-wide interest from researchers and ZARA rivals. There are two to five weeks from design to delivery of new products to all ZARA stores at least twice a week. Thus, the store assortment turns more frequently than the assortment of traditional retailers (Caro, Gallien, Diaz, Garcia, Corredoira, Montes, Ramos & Correa, 2010). One of senior executives of ZARA states that ZARA objective is not for customers to buy a lot, but create
frequency of store visits by customers having offered a perception of new garments every time customers enter the store.

Customers of ZARA like the result of high velocity operation and they queue up in long lines at ZARA stores on delivery days of new products. This phenomenon is known as “ZARAmania” (Walker, Bovet & Joseph, 2000).

ZARA supply chain should be designed according to its business concept in order to support operational activities of all the stages starting from the design till point of sales.

4.2.4 ZARA Supply Chain and Sourcing Process

ZARA’s method of purchasing and delivering its products is very different from traditional methods that most of the fashion retailers in this industry use.

ZARA uses 300 in-house designers and relies heavily on store managers’ input. By using information technology the store managers are good at detecting what the customers are looking for or asking for. This collaborative effort between store managers and the company designers leads to a significant industry record, e.g. newly designed products are placed in the stores within two weeks. It is important to note that ZARA employees help forecast fashion trends and this also gives ZARA a competitive advantage in speed (Mihm, 2010). Speed is not only the main enabler for ZARA to be so successful. Big quantities of neutral fabric in four colors are stocked beforehand at production facilities (Walters, 2006). Fabrics mainly come from Spain, the Far-East, India and Morocco (Folpe, 2000). They can be dyed quickly in order to speed up the production of best selling colors while a certain amount of fashion like basic T-shirts are ordered from other sources whereas the vast majority of products are produced in Europe at facilities that ZARA owns. All of the fast fashion clothing goes via ZARA’s own distribution centers helping to consolidate shipping. Thus, ZARA applies JIT methods and is able to ship textile goods within 24 hours in Europe and 48 hours to Asia and the US (Mihm, 2012; Kumar & Linguri, 2006; Ferdows, 2003; Caro, Gallien, Diaz, Garcia, Corredoira, Montes, Ramos & Correa, 2010).

ZARA however also sources its basic products from Far-East countries and rely on local production network in order to cut down on lead times. Approximately 75-80% of all products are manufactured in Europe whereas remaining 20-25% of basic products are
sourced in Asia (Barrie, 2004). Up to 97% of products are produced for the global market with the helpful feedback from the stores managers who help to drive new designs. It is up to store manager to control the stock and re-order the best-selling items while the slow movers are returned to the logistic center and distributed to different areas (Barrie, 2004; Caro, Gallien, Diaz, Garcia, Corredoira, Montes, Ramos & Correa, 2010).

Strict control of ZARA supply chain plays a very important role to deliver products in a responsive way and bring success to ZARA.

The factors on which ZARA responsiveness is based on combination of its own manufacturing and local flexible capacity, postponing some production phases such as dyeing, reserving unspecified capacity from suppliers to allow changes at the last moment, an efficient logistics system, efficient store concept and operations management (Kaipia & Holmström, 2007).

ZARA carries out all the operations in one place located in La Coruna headquarters, Northwest Spain. Tight collaboration within department of design, production and marketing creates an environment for quick decision making and shortens delays (Strategic Direction, 2005; Cane, 2007).

The firm is able to be responsive through a combination of vertical integration, JIT manufacturing and customized logistics (Gallaugher, 2008). Consequently, the high level of responsiveness decreases the failure rates of ZARA’s new products that is reported to be only one percent which is much lower than the average in the industry of ten percent (Kumar & Linguri, 2006).

ZARA has divided demand of its products into two categories – certain demand and uncertain demand – and applies different operations for each of them. ZARA designs and manufactures about half of the seasonal quantity before the selling season starts. By this ZARA is able to complete part of the work in advance in designing a seasonal collection, manufacturing and delivering it to the stores. For the part of its volume that is produced in advance, ZARA can manufacture larger production batches by using remote manufacturing and other low-cost solutions. On contrary, within the season speed, flexibility and responsiveness are required and used by ZARA. Flexibility is prevalent in each phase of ZARA’s supply chain in order to be able to respond to changes in end-
customer demand and tastes. What is noteworthy about the approach used by ZARA is the fact that the responsiveness is required for only half of the volume which does not include the collection of basic styles with a certain demand (Kaipia & Holmström, 2007).

ZARA owns almost all its stores which are 90% of its all. ZARA has deliberately retained ownership of its stores in order to avoid tensions between corporate management and franchises. Store managers are also considered as the first link in the chain. “The stores act as ZARA’s “eyes and ears” (Cane, 2007, p.6; Sull & Turconi, 2008, p.8). The store managers constantly talk to customers and try to find out what they like, why they bring garments back and forward this information on daily-weekly basis to ZARA marketing managers in Spain.

To explain further and help to visualize the sourcing process and activities that it includes we show the following Figure 4.10.

![Figure 4.10 ZARA’s Sourcing process and its activities. Adapted from Retail at the speed of fashion, p.6.](image_url)
Besides point-of-sales data is being gathered automatically, store personnel around the world are in frequent contact with product managers via phone (Ferdows, 2003). Fabric which comes from Spain, India, Morocco and Far-East countries is cut and colored at the company’s factories. When information is gathered from stores, production managers decide how many garments to make and which to send to stores. Eventually, the fabric is send to local shops to be assembled before shipping it around the world. This unique combination of up-to-date information sharing and collaborative production means that ZARA works with a minimum stock of ready products and still have new designs in its store two times a week which is in contrast to traditional retailers that spend long time of six weeks (Folpe, 2000).

Store managers have to comply with strict ordering deadlines when schedules for delivery are regimented. Store managers who fail to order by the deadline receive only replenishment items but not new designs (Kumar & Linguri, 2006).

With regard to pricing policy ZARA system of price fixing is different from the usually applied by the other industry actors that use traditional cost plus margin pricing system (Mazaira, Gonzalez & Avendano, 2003). “ZARA’s pricing differs across country markets. It sets prices according to individual market conditions, rather then using cost plus margin as its basis (which is the formula used by most of its competitors)” (Kumar & Linguri, 2006, p.82).

Inventory control phase which includes management of fabrics of stock, dyeing and finishing if required and production helps to optimize and determine how many of which items in which sizes should be delivered to stores during twice-a-week shipments, ensuring stores are stocked with just what they need. Outside the distribution center in La Coruña, fabric is cut and dyed by robots in 23 highly automated factories (Gallaugher, 2008).

Having analyzed the vast information used for empirical part, we found out several similarities in supply chain set up of both companies ICA and ZARA and also multi-faceted differences that gave us a unique opportunity to compare and draw the possible solutions in order to improve the supply chain flexibility for the main case study of ICA AB.
5 ANALYSIS OF THE EMPIRICAL STUDY

This chapter presents the analysis of an empirical study. The analytical part will be based on using the framework of references and the methods mentioned in the Methodology chapter.

5.1 Comparative analysis of ICA AB and ZARA based on the Model of Supply Chain Characteristics and Firm Performance

After giving broad introductory information of ICA and ZARA business profiles along with Supply Chain and Sourcing process description, a further comparative analysis should be conducted in order to identify the possible areas of improvement based on in-depth study of both cases. The previous chapter (Empirical study) was a presentation of collected information relevant to the further investigation which is based on analysis of Supply Chain Characteristics and their relationship with Firm Performance.

When analyzing two companies that are very distinct in their business operations and supply chain in particular, it is essential to base the analysis on the one ground, providing one common base; so we, authors, have chosen the research model with its supply chain characteristics as a base of comparative analysis. It is vital to bring very different features to one base in order to lay a firm foundation for the conducted analysis.

5.1.1 Environmental uncertainty

Both companies ICA AB and ZARA encounter and cope with the uncertainty in completely different ways – traditional way of the fashion retailer and the responsive way. ICA relies on sales data in order to make forecasts for the next seasonal clothing collection whereas ZARA tries to eliminate the uncertainty by following the customers demand right on the sales floor. By interacting with the customer, asking their feedback right on the shop floor it reduces the uncertainty level for the clothing collection to be produced. However, such flexibility level requires the appropriate Supply Chain, Logistics set-up and Proximity to the market.

It takes approximately one year in advance for ICA to deliver the planned clothing assortment for the current season and this is made of forecasted quantities based on retrieved sales data from the database. The prognosis of different styles is based on trips to fairs in London, Amsterdam, Berlin and other, browsing the internet daily, getting in-
formation on fashion trends from fashion magazines and visiting all the possible stores very frequently. It creates a sense of the demanded trends of the fashion market which will be designed and ordered from ICA suppliers.

ICA does not provide the suppliers with the necessary materials (fiber, supplementary resources and the like) stocked in advance for the production, whereas ZARA keeps the basic materials in stock. Keeping the materials stocked helps to decrease the production time by reacting quickly to the needs with the ready materials to be used for the production. ICA can not offer its suppliers this possibility of providing them with the materials so the suppliers are responsible for obtaining the necessary resources of production on their own.

If we consider the ownership of the stores the uncertainty increases when it comes to non-owned stores. ICA owns the NON-Food section, including the clothing, only in ICA MAXI stores. The other formats are owned by the Store-keepers and it is actually the major source of the uncertainty for ICA AB. ICA can plan the needed order quantities only to the stores where it owns the clothing. The other formats ICA Nära, ICA Supermarket where is the narrow assortment of clothing (socks, underwear, lingerie and the like) and ICA KVANTUM where the clothing assortment is rather broad, ICA competes with other suppliers on gaining preferences for the orders. In these circumstances it is quite hard for ICA to plan the necessary quantities with its suppliers as they can not anticipate the demand from these store formats. In ZARA’s case, the company owns 90% of their stores and only in the less known markets it does not (Sull & Turconi, 2008). In fact, it eliminates the uncertainty when it comes on what styles and how many to send to their stores. ZARA can decide the order amounts and the styles to be sent to their stores with the lesser degree of uncertainty relying mostly on the feedback and observations of the stores managers. This tight cooperation between the headquarters administration and the stores managers is very essential when it comes to deciding the variety of styles to purchase for exact stores in the particular regions.

With the regard to owning the manufacturing facilities, it is noteworthy to add that it does not completely eliminate the uncertainty and makes the supply process more flexible. ZARA owns its factories and ICA does not. However, ICA had made the strategic decision of locating their administration offices in China and Vietnam (Honk Kong, Shanghai, Guangzhou, Ho Chi Minch City). ICA Global Sourcing offices help to coor-
dinate the processes that include manufacturing, sourcing and quality control. It is very important to have a representative office close to the manufacturing / supplier base. ZARA however is an owner of manufacturing facilities and is in a sense tightened up with the invested capital and production. In case if it makes the decision to move the production from these countries where it owns the facilities, it would not be done that fast and easy.

5.1.2 Mutual understanding

Extent to which company and its customers understand each other priorities, goals, products and embedded processes plays very important role in the common structure of supply chain and business in general. Supply chain organization processes with the commitment of the partners and mutual understanding may impact the responses to environmental uncertainty and increase the supply chain flexibility. Better coordination and planning is based on mutual understanding of the goals and strategies of all the partners involved in the supply chain.

“Inter-organizational transactions are based on mutual trust, whereby the parties share a unit bonding” (Sanchez & Perez, 2005, p.688). As a commitment increases each entity in the supply chain should see an opportunity of the reduction of their individual risks.

The mutual understanding of the departments of general business operations of ICA is on a high level. The design, purchasing, logistics departments, ICA Global Sourcing offices work with the clear understanding of the importance of the satisfied customer. All the parties involved in the internal business structure and also suppliers understand the vitality of the ordered goods to be delivered on time. Suppliers of ICA understand the needs of the customers and what ICA offers to the customers: the right product in the right time of the season with the right quality in the right cost. The mutual understanding of each other needs and requirements is vital for the successful business of both parties – ICA and its suppliers.

ZARA also aims at the satisfied customer by offering the changing variety of clothing on basis of high frequency of deliveries. Commitment of ZARA supply chain partners and understanding the importance to react quickly is essential for ZARA business model in order to bring successful results. Stores employees are considered as main observers of the demand, namely, more frequently and less frequently purchased clothing
items. The integration of the partners involved in the supply chain is the means of the reciprocal understanding, commitment and trust.

5.1.3 Interdependence

Interdependence of the supply chain partners might have two different outcomes. The higher is the interdependence of the partners, the higher level of the mutual understanding should be reached. From the other hand, being too much dependent on the other party in the supply chain might reduce the supply chain flexibility. For example, high technological solutions create the environment of very close interconnectedness, and in case of the radical change it is very hard to change the supplier when the certain conditions emerge for this action to be taken.

ICA’s level of interdependence with its suppliers is on the medium level. According to ICA representatives, there is no too big interdependence between ICA and the suppliers. ICA helps the suppliers to meet the requirements of corporate social responsibilities imposed by the company and the overall concerns of the society. ICA controls the fulfillment of the criteria that are imposed to the suppliers. The right labor conditions, the right state of the factories and other conditions should correspond to the requirements set by ICA AB.

Regarding the design of the clothing to be produced, suppliers are also involved in this process by offering the styles they have. Not only ICA defines the styles it wants to be produced, supplies also give their opinion and input to the design selection process. However, the purchaser is the one to take the last decision whether to buy the certain style or not.

ICA mostly follows the “phase-by-phase, department-by-department” consequence method in the planning-sourcing-delivering process. Each department is performing its role one after the other. According the Director of Logistics and Supply Chain Department, there is no such combination of tight and common integration within departments in the decision-making process.

ZARA, in turn, is highly interdependent with the partners involved in the supply chain. Tight collaboration within department of design, production and marketing, including active demand-seeking store managers, makes the environment of joint decision making. “These multifunctional teams plan, monitor, and control all movements of materi-
als, components, and finished products for their product group – including their sales and inventory at every retail shop” (Ferdows, 2003). The environment of working in complete collaboration and integration creates better generated solutions for the decision-making.

5.1.4 Technological complexity

“The degree of technological complexity may also influence the company’s need for flexibility” (Sanchez & Perez, 2005, p.688).

Technological enhancement of the company should be on the same level as the company’s needs and requirements so that it can enhance the business operations. Too sophisticated technology that is not relevant to the needs of the company may only hinder the supply chain operation processes. The technological setup developed for the requirements of the company should support the company and promote its growth and flexibility, but never hinder it. In other words, the role of IT is to support and not to impede the process.

ICA uses technology system settings that used to support the Food categories and main adjustments had to be implemented in order to meet the needs of the Non-Food product categories, Clothing in particular. Also totally different technology program tools were implemented to support specifications for the Non-Food, product categories, including Clothing. ICA uses a common data base for the Clothing products and almost all the needed attributes of information are visible to the company’s staff. Data base is a common platform for the visibility of orders, goods in store and stock, and furthermore, the tool of the sourcing-delivering steps is there to be followed. It makes easy for Category Managers or Logistics managers to follow the delivering process and react on the articles that are delayed or have any other issue to be concerned of.

However, ICA representatives of Supply Chain and Logistics department (Director of Logistics and Supply Chain Department, Supply Chain Manager – Operating, Supply Chain Manager – Inbound Logistics, Supply Chain Manager in Clothing and Shoes) admitted that the IT system does not fully support the needs of information to be retrieved from the data base for the Clothing product category groups (combination of the assortment of different sizes and colors of garments to be viewed by separate units). Therefore, ICA launched a new project in IT to create the IT system that will be “archi-
tected” in-house in order to support the information specifications for the Non-Food goods, including Clothing.

The responsiveness in the supply chain does not indicate the level of technological complexity. IT is a critical component of thoughtful management, but can never be a substitute for it.

The relative absence of highly sophisticated “information technology infrastructure” creates the environment of in-depth control exercised at ZARA. It was agreed by many articles’ authors that ZARA runs an information intensive business with remarkably little information technology (Strategic Direction, 2005; Tokatli, 2008; Walker et al., 2000; Mihm, 2010; Kumar & Linguri, 2006). A number of crucial activities are accomplished without much help from high technological devices. For instance, production requirements for new and existing garments are distributed to factories without using any kind of “smart” supply chain optimization software (McAfee, 2004).

The stores act as information gathering terminals, provide feedback to the design teams and report the trends demanded by customers. Store managers monitor the intensity of sales of merchandise and transmit this information along with customer requests to the headquarters (Folpe, 2000). All of ZARA’s stores are electronically linked to the company’s headquarters located near La Coruna. This technological connection defines Zara’s IT infrastructure as relatively simple and means that its IT expenditures are as much as five to ten times lower than that of ZARA’s rivals (Kumar & Linguri, 2006; The Economist, 2005 June 18).

5.1.5 Supplier dependence

Unless the company has a rather rare opportunity to be self-sufficient, in general mostly companies depend on one or more suppliers. Dependence can be either from the buyer’s side or else from the supplier’s side.

“Supply chain flexibility is positively related to higher levels of perceived supplier dependence in the supply chain” (Sanchez & Perez, 2005).

If we compare ZARA and ICA in terms of supply in general sense, we should take into consideration that the clothing design, manufacturing and logistics are handled in-house at ZARA, whereas ICA outsources the manufactured products mostly from Asian coun-
tries. So we can assume that ICA in a sense is more dependent on its suppliers as it relies on products that are placed for the deliveries mostly from Asian countries. However, it is worthwhile to emphasize that there is no a major supplier or a number of them, that ICA depends on, and at the same time there is no supplier dependence too.

5.2 Relationship between Supply Chain Characteristics and Firm Performance (Financial and Non-Financial Performance)

All the above mentioned characteristics analyzed for both cases ICA and ZARA provide a very clear overview on how the companies operate and what are the main areas of the distinctive features. Also it gives a firm foundation for the constructing the clear picture of the traditional clothing retailer and customer-demand responsive fast fashion retailer. Supply chain characteristics, such as environmental uncertainty, mutual understanding, interdependence, technological complexity, supplier dependence have its influence to determining level of the supply chain flexibility and, hence, firm performance.

Conducting the comparative analysis based on theoretical framework presented in the second chapter, we found out that Supply Chain Characteristics influence not only the Supply Chain flexibility, but also have an impact on Firm Performance in terms of Financial and Non-Financial Performance. We find it important to specify what kind of performance is meant so we proposed the division based on financial-related aspects and non-financial ones. Financial performance involves, for example, net profit performance (NPP) and sales growth performance (SGP). On the other hand, non-financial performance includes, for instance, customer satisfaction performance (CSP) (increased customer satisfaction index) and improved lead time performance (LTP). Enhanced customer satisfaction performance is based on higher degree to which customers are satisfied with the relation of products availability, quality of products and price of products. LTP could refer to time period when the order is received until it is delivered and it can be increased or decreased if the company improves its operational activities based on suggestions in the following part of the thesis.

We, as the authors of the research, elaborated the optional model which includes division of Firm Performance into two areas Financial and Non-Financial Performance. The following Figure 5.1 depicts this division.
Figure 5.1 Relationship between Supply Chain Characteristics and Firm Performance (Financial Performance and Non-Financial Performance).
Modified by Master Thesis authors.

Supply Chain Characteristics has higher or lower degree of impact on two types of performance. Thus, conducting the further analysis by providing suggestions for improvements, we will identify what Supply Chain Characteristics could be enhanced and to what degree it influences the whole Firm Performance.

We, as authors of this research paper, do not aspire to find or create one-best-fit model of flexibility for the companies. ZARA is right for the high basic-fashion and ICA’s model fits its business model. The fact is that when we analyze “ZARA’s approach”, we can find the areas in which ICA can do better and be more flexible in its supply chain for the sake of more satisfied customer and enhanced business operations.

5.3. Suggestions for the Improvement of ICA Supply Chain Flexibility

During the analysis of theoretical base of flexibility, conducting interviews with companies’ representatives and obtaining information about both case studies from secondary data sources we came up to certain areas for supply chain improvement in ICA AB.

These areas include supplier base / production movement closer to the market, forecasts sharing, cooperation within departments and redistribution of slow-movers.
5.3.1 Moving Supplier Base / Production Closer to the Market

One of the most time consuming stages in the whole ICA’s process of planning and delivering products is Sourcing. It consists of five sequential steps that starts with supplier management and is followed by product specification and inquiry formation, negotiation, sample handling and product test/quality control inspection.

As we already know after the analysis of ICA operations in its Sourcing process, nowadays company sources around 95% of products from China using The Global Sourcing offices which are located in Hong Kong, Shanghai, Guangzhou and Ho Chi Minh City. The main reason why the company works with China and its manufactures is that the level of prices is relatively low which gives an opportunity to save money. "In China, price and quality are excellent but in terms of the fast fashion, some of these things are too far away for what the market is demanding" (Rigby, 2005, August 30, p.1). At the same time, due to rather long transportation time ICA can not reduce lead times and refresh collections very often. So, at present time managers are thinking about the possibilities to decrease the percentage of sourcing from China up to 80-85% which means that the company will become closer to producers and partners. Thus, manufactures could supply ICA with new products quickly and it will minimize the stock as a whole.

"Textile production isn't all about China. We've worked out that there are 150 low-cost exporter countries in the world" (MacCarthy, C., Mulligan, M. and Rigby, E., 2005, August 30, p.2). There are some directions where ICA can move with its Sourcing process, for example Eastern European countries, India and Turkey which first of all will definitely decrease lead times and stores could receive shipments in a few days in contrast to several months when they are coming from China. Referring to A.T.Kearney Global Management Consulting Firm “a typical blouse costs Pounds 6,50 to manufacture in China against Pound 7,00 in Eastern Europe, Pounds 8,00 in Turkey and Pounds 10,00 in the UK” (Rigby, 2005, August 30, p.1). According to Hochman (2005) there are three main constraints – capacities, lead times and sea freight that will not disappear, but only create more attention for managers.

“Turkey has emerged as the second most important individual clothing supplier to the EU after China, with 14 per cent of EU clothing imports” (Dicken, 2011, p.328). The clothing and textile industry has a long tradition in the countries of Eastern Europe. For
example, Turkey, as one of important trade markets in Europe now is not only among the top markets for clothing produced in Western Europe, but also among the top suppliers of textile for Western and Northern Europe. “According to a report published in the November 2004 issue of Turkish Time and written by Musa Demir, a foreign trade expert with Turkey’s Foreign Trade Undersecretariat, the country’s share of global textile exports — most of which are destined for the European Union, which Turkey aspires to join — increased and making it the 10th-largest textile exporter” (Rodie, 2006). Thus, it could be stated that Turkey is quite developed country in this field and could provide its partners with technologically developed production equipment and high quality finished products. “Turkey’s textile and apparel manufacturers have made significant investments in machinery, with imports totaling US$1.4 billion in 2002 and US$1.7 billion in 2003” (Rodie, 2006).

Thus, as ICA has different products starting from basic items and up to basic-fashion items, we suggest the company to divide the assortment and decide which product categories should be moved for production closer to the market and which of them should still be produced in China. The Kraljic Matrix could be used as an instrument for assortment analysis in order to identify the level of supply risk and financial impact of each assortment group (Figure 5.2).

![Figure 5.2 The Kraljic Matrix.](image)

Adapted from Basics in Supply Chain Management Course Presentation.

Division of products according to the Kraljic Matrix helps the company to see areas of improvements in assortment planning, supplier selection and financial impacts. Block
named ‘Strategic products’ includes items that have a large financial impact on the organization; there are normally high-value goods with limited amount or even one supplier. ‘Leverage items’ are rather similar to Strategic from the point of financial impact and importance to the organization; however these products have a low supply risk which means that they are in abundant supply. Assortment which belongs to ‘Bottleneck’ block has low financial impact on the company and at the same time high supply risk. Purchasing of these kind of products usually shows a high level of supplier dependence, thus to avoid a huge deficit or overstock of goods managers should investigate alternative models and suppliers. The last block in the Matrix consists of ‘Routine items’ with low financial impact and low supply risk. There could be any standardized products that sometimes cause the situation when their holding costs overweight the cost of the product itself.

Thereby, we try to divide Clothing assortment of ICA according to the Kraljic Matrix in order to identify which assortment group production could be moved closer to the market in order to improve the whole sourcing process, increase customers’ satisfaction and raise total sales. This division is depicted in the Figure 5.3.

Figure 5.3 ICA assortment division according to The Kraljic Matrix.
After building the matrix it became visible that each assortment group has different purchasing strategy and rather different financial impact. As long as ICA does not concentrate on pure fashionable goods, thus Strategic block consists of so called basic-fashion items that differ from basic collections by the range of specific colors and models. So, we suggest ICA to move the production of this group of textiles closer to Europe because of its rather high demand and the necessity of being available in the stores in a right amount almost every season. In this way, the company will be able to refresh collections more often, which in turn could increase customers’ interest to the products and its variations, as well as enhance sales accordingly. It should be noted that in a short-term the relocation of production partners could become costly, but in a long-term ICA will be able to earn these money by increased frequency of shipments and decreased lead times.

Leverage block consists of very basic collections of T-shirts (black and white), socks, tights, underwear and children clothing that, in turn, have rather high financial impact on the company. As these collections are basic with quite predictable demand it would not be necessary and profitable to move the production from China to Europe. The fact is that, these products could be ordered in big batches based on rather even demand and it does not require quick reactions due to quite precise forecasts for this assortment. The same happens to Seasonal products as they are usually ordered in advance and only once a year, which means that there is no need to move the production closer to the market.

Bottleneck block includes shoes, as these products have low financial impact on the company and high level of supplier dependence. We, as the authors of the research, suggest ICA not to move the production of this category group to be in close proximity to the market, due to the fact that the shoes assortment is not get an essential financial impact comparing to other product categories.

Thus, it could be noted that all the activities towards the relocation of supplier base / production will have impact on both financial and non-financial company’s performance. First of all, it is rather costly, but at the same time the company will be able to get more through the reduction of lead times and such improvement in non-financial performance as increased customers’ satisfaction.
5.3.2 Sharing Forecasts with Suppliers

Sometimes suppliers and retailers viewed themselves as adversaries. Retailers order what they want with the only priority of lead times, suppliers prepare future orders based on the history of past shipments, safety stock, min-max inventory level or simply the ability to fulfill a purchase order when it arrives, so they do not cooperate with each other in order to know more recent information about sales and current stock accordingly.

It seems to be clear that both suppliers and retailers would benefit with information sharing, including sharing of forecasts. Terwiesch, Ren, Ho and Cohen (2003) state that a key element in supply chain coordination is the information about demand forecasts which is shared among the whole chain. For example, by collaborative effort focusing on sharing POS data with suppliers, retailers could get an advantage of accurate shipments according to quick changes in consumer buying behavior and demand.

By sharing the information throughout the demand chain partners could increase sales, improve inventory control with the reduction of unnecessary stock, increase planning time and avoid bullwhip effect. As we found out during the research ICA sometimes faces such problem as manufacturers’ unavailability to provide the company with the materials or products which have been ordered already, so by this lead times could be increased dramatically. Thus, accurate order forecasts sharing could improve the whole demand chain by better reaction of suppliers and manufacturers on the needs of end customers. The fact is that, when retailer is able to procure the products needed to meet the end customer demand, suppliers will be ready with their raw materials or finished products in order to fulfill the PO, so the service level and lead times will be improved together with the raise in sales for all members of the demand chain.

One of the instruments that could be used for collaborative interactions within the whole supply chain is ORACLE. Using ORACLE the company is able to get a holistic overview on the whole planning process that allows it to see the activities of all trading partners, control the number of steps in the chain, identify unexpected cases and react on it quickly. ORACLE is a complete solution for the effective and efficient management of supply chain including all the stages from the design of the product to its appearance on the shop shelf. This is particularly very useful and suitable tool to be implemented by
ICA taking into account the present circumstances and current projects related to IT process improvements.

Thereby, collaboration in forecasts sharing makes forecasts more flexible, immediately visible and actionable. So, the information about any deficit or shortage of raw materials / products is available and could be shared among all demand chain partners in order to make a complete order in time. Otherwise, without order forecasts collaboration, retailers could know about materials shortage only when the order has been already received and delivered to the warehouse.

Thus, collaboration in information sharing could decrease a technological complexity of supply chain. As a common IT system is used by the company and its partners, it will support the development and the growth of flexibility in the whole supply chain. At the same time positive changes in this area will lead to the firm performance improvement including both aspects financial and non-financial. Firstly, the implementation of new IT tool will be costly which would create a negative financial effect in a short-term. On the other hand, the company will be able to cooperate better with partners so it would improve demand forecasting, degree of customers’ satisfaction and would lead to positive impact on non-financial performance. Therefore, it could be concluded that in a long-term the company would be able to balance impacts on both financial and non-financial performance by increasing sales (financial impact) through better forecasting and improved customers’ satisfaction (non-financial impact).

5.3.3 Closer Cooperation within Departments (Store managers, Finance department, Design managers, Supply Chain managers and Logistics)

Collaborative effort in information sharing is important not only in forecasting activities, but also on every level of operations starting from information gathering and design of products and following by supply chain and logistics decisions.

As we know after conducting several interviews with ICA representatives almost all activities within the whole Sourcing process are strictly divided among departments which means that there is no any effective cooperation in each stage of the process. For example, after the Design department gathered the information about trends from different available sources the next stage starts with making sketches of products and place pat-
terns that were made on products. The only departments which are involved in the work on this moment are the design team and purchaser.

In turn, we would like to suggest ICA to build wider internal integrated network in order to involve more departments into planning process. It would be better if the whole process starts from the information about products that come directly from stores then it is processed and combined with the information gathered from other sources. Later, designers together with purchasers and financial managers could start the development of products considering available resources and company’s budget. Then in a tight cooperation with Supply Chain department and Logistics managers should be decided if the product fits all the transportation requirements and could be delivered easily in a right amount in the right time.

Thus, the collaborative effort among all the departments which starts with an effective information sharing will lead to common unified solutions that makes the whole process more flexible and actionable in case of any changes or unexpected situations. As it was stated in many information sources in order to make the supply chain agile, as ZARA does it, the future supply chain manager will need to work in cross-functional global teams.

According to theoretical framework, closer cooperation within departments could increase a mutual understanding in the company, as by building tight relationships among departments customers’ needs would be identified and satisfied in more efficient and effective way. Mostly, improvements in company’s mutual understanding have an impact on non-financial performance due to the development in internal cooperation. However, financial performance could be enhanced as well by making unified solutions which lead to more efficient budget planning and its usage on each stage of design / sourcing process.

**5.3.4 Delivery to Other Stores**

Local store managers of ZARA “re-order the best-selling items while the slow movers are returned to the logistics center and forwarded to a different area” (Barrie, 2004, p.18). This method is good in order to increase sales in the appropriate region and reduce or totally avoid the markdowns.
It is practically possible for ICA as information on sales is visible using the data base system. Clothing Category Managers can check monthly (or even more frequently; in addition, it can be done for the seasonal items in the end of the season) the remaining stock in the stores and identify the slow-movers for the further distribution to the regions where these clothing items are selling better. It of course does not necessary mean that all the quantity should be redistributed to the other regions, the part of the quantity can still remain in the store. Redistribution is also practiced by other retailers, for example Wal-Mart.

Redistribution will provide increased sales of goods with the initially set price as it will eliminate markdowns. The transportation of the goods should be synchronized with the delivery of other goods, but not on the account of empty trucks transporting only these clothing items. For example, when the truck delivers the goods to the store, on its way back to the Distribution Centre the truck can be filled with the slow-moving clothing items and be distributed to the other stores in the same regional area or even to farther ones.

Figure 5.4 Redistribution of slow-moving goods.

The above depicted Figure 5.4 demonstrates the redistribution of clothing products among the stores located in one region or neighboring regions. This process should be properly planned and monitored according to the sales of the stores.
In order to prove whether redistribution of the clothing products is efficient and effective method for ICA, the authors try to analyze this matter from two perspectives taking into account the assumed conditions that facilitate the redistribution process.

The preliminary condition is the overstock of slow moving textile goods (for example, men’s jeans) in certain ICA store, namely ICA MAXI Jönköping. In order to find out what would be an effect of redistribution of this clothing article to the other store, for example ICA MAXI Göteborg, we take the distance, the type of textile goods and assumed quantity into consideration.

First of all, we calculate the net transportation, administration and handling costs in case if the transportation is handled by company’s own truck. The estimated costs include the following areas:

- Distance between two ICA MAXI stores located in Jönköping and Göteborg is approximately 150km. According to the information provided by the experienced truck driver, the diesel engine capacity of 1,9 - 2L driving in the highway takes 6 - 7L per 100km, whereas it takes 8 - 9L per 100km driving in the city. So, as the distance we mention between stores is a combination of highway on a larger degree and city roads, the average could be taken as 8L per 100km. Diesel price per one liter in Sweden is up to 14,00 SEK (dated 10 May 2012). So in total the fuel costs are as follows: 12L x 14,00 SEK = 168,00 SEK.
- Salary of a truck driver. It takes approximately 2 hours to drive this distance one way, so it can be assumed that the driver’s monthly salary is 40 000,00 SEK, thus it takes up to 1818,00 SEK per 1 working day. The hourly wage is roughly 227,00 SEK. Thus, 454,00 SEK is calculated as driver’s salary for two hours.
- Amortization of the vehicle (a truck with the dimensions of 6,00m x 2,5m x 2,00m). Given roughly the 40 000,00 EUR (356056,00 SEK, currency exchange rate dated on 10 May 2012) as a price of the truck which is supposed to be in use for 5 years with a 20% of yearly amortization (8 000,00 EUR per year). Daily amortization is 22,00 EUR (196,00 SEK, currency exchange rate dated on 10 May 2012) per day.
- Administration and handling costs are very approximate 100,00 SEK, which will include the administration of the return invoice issuance and any addition handling costs (packing, unpacking, displaying in the store etc).
To sum up, the total transportation, administration and handling costs are approximately 918,00 SEK (168,00 SEK + 454,00 SEK + 196,00 SEK + 100,00 SEK = 918,00 SEK).

If the slow-moving item is men’s jeans for the price of 150,00 SEK with an assumed margin of approximately 30%, then 45,00 SEK is profit that the company accounts on. We would like to stress in this part of the thesis, that the margin number is a very rough, absolutely assumed and has no relevance to the actual margin of ICA. It is just an assumption and not more than that.

For example, even if 100 pairs of jeans are to be sold with the redistribution for the initially set price of 150,00 SEK, the net sales are 15 000,00 SEK, where the profit reaches 4 500,00 SEK (100 pairs x 150,00 SEK = 15 000,00 SEK).

So, even if we reduce the cost of total transportation, administration and handling, the company gains are obvious, namely, 3 582,00 SEK (4 500,00 SEK – 918,00 SEK = 3 582,00 SEK).

The calculation shows that under these circumstances the company starts to gain profit if it transports more than 21 pairs of jeans. If ICA decides to start sales with the discount of 30%, in this case the company does not earn anything. In addition, ICA usually offers high discounts on sales for the overstocked clothing items, like 50-80%, so, in order to get rid of stocks, the company sells the clothing items with a significant financial loss. Even with the sales discount of 50%, the company loses 30,00 SEK of the each pair of jeans it sells. This calculation applies to this specific example.

So the conclusion is that it is very effective and efficient to redistribute the higher value clothing items. Thus, the authors of master thesis do not recommend to redistribute the articles that are not high-value and of high margin, especially if these articles are not having sufficient stock level (for instance, it could be the product category of socks, tights, stockings, underwear, lingerie).

The second option which is shown below describes the situation from a different perspective – in case if the company uses 3PL for redistribution of goods. This is more applicable and feasible for ICA because the company uses third-party logistics providers for the transportation services.
Due to the fact that the master thesis authors are not allowed to disclose the actual sensitive information of ICA, the data used for the calculation is taken from the publically available source of information (Swedish Competition Authority Report) that is published in July, 2003 and provides data for transport prices and transport costs.

All costs, including fixed costs, variable costs, costs of personnel, administrative costs and also the profit margin, set by hauliers in Sweden are indicated as 101,00 SEK per 10km (Lundvall, 2003). It accounts for 1515,00 SEK for the distance of 150km (10,1 SEK x 150km = 1515,00 SEK).

It is 1,65 times more expensive comparing to the first option which shows that all costs are accounted for 918,00 SEK in case if company uses its own truck. The second option shows that ICA should transport at least 34 pairs of men’s jeans in order to start getting the profit under the situation and assumed conditions described above.
6 CONCLUSIONS

The essential problem being analyzed in the research paper is the methods of improving supply chain flexibility under certain circumstances and constrains that are imposed on the company. In order to solve the problem we conducted an in-depth analysis of flexibility from a supply chain perspective as our research is based on flexibility in supply chains.

The research paper includes analytical review of theoretical base of supply chain flexibility and focuses on further understanding of it, in particular, supply chain flexibility of textile products. The paper provides suggestions on improvement of supply chain flexibility for fundamental case study of ICA AB (Clothing). These suggestions are given for different areas based on a range of Supply Chain Characteristics. The comparative analysis was grounded on the main case of ICA AB and sub-case study of ZARA.

The major part of analysis is based on investigation of the relationship between Supply Chain Characteristics and Firm Performance of both companies that is crucial for finding out areas for improvements for ICA supply chain. When analyzing two companies that are very distinct in their business operations and supply chain in particular, it is essential to base the analysis on the one ground, providing one common base; so we have chosen the research model with its supply chain characteristics as a base of comparative analysis.

While conducting the analysis based on the Model of Relationship between Supply Chain Characteristics and Firm Performance, we realized the necessity of dividing Firm Performance into two main types, such as Financial Performance and Non-Financial Performance. This can be considered as our academic contribution and also has its practical implications.

Supply Chain Characteristics has higher or lower degree of impact on two types of performance. Thus, conducting the further analysis by providing suggestions for improvement, we identified what Supply Chain Characteristics could be enhanced and to what degree it influences the whole Firm Performance.
During the analysis of theoretical base of flexibility, conducting interviews with companies’ representatives and obtaining information about both case studies from secondary data sources, we came up to certain areas for supply chain improvement in ICA AB. These areas include supplier base / production movement closer to the market, forecasts sharing, cooperation within departments and redistribution of slow-moving goods.

Supplier base / production movement closer to the market can be suggested as an improvement of supply chain flexibility of ICA by taking into account the structure of clothing assortment. The Kraljic Matrix could be used as a method for assortment analysis in order to identify the level of supply risk and financial impact of each assortment group. We divided Clothing assortment of ICA according to the Kraljic Matrix into four blocks in order to identify which assortment group production could be moved closer to the market thereby to improve the whole sourcing process, increase customers’ satisfaction and raise total sales.

The second area of improvement for ICA AB concerns information sharing among the demand chain partners which in turn would increase sales, improve inventory control with the reduction of unnecessary stock, increase planning time and avoid bullwhip effect. One of the tools that could be used for collaborative interaction within the whole supply chain is ORACLE. It is a complete solution for the effective and efficient management of supply chain including all the stages from the design of the product to its appearance on the store shelf. This is particularly very useful and suitable tool to be implemented by ICA taking into account the present circumstances and current projects related to IT process improvements.

The third area to bring benefits to the company is Closer Cooperation within Departments including Store managers, Finance department, Design managers, Supply Chain managers and Logistics. Collaborative effort in information sharing is important not only in forecasting activities, but also on every level of operations starting from information gathering and design of products and following by supply chain and logistics decisions.

Delivery to other store or so called Redistribution of slow moving goods is regarded as the forth area of improvement. This method is feasible in order to increase sales in the appropriate region and reduce or totally avoid the markdowns. In order to prove whether
redistribution of the clothing products is efficient and effective method for ICA, the authors try to analyze this matter from two perspectives taking into account the assumed conditions that facilitate the redistribution process. For the calculation and suggestion itself we take into consideration the distance between stores, the type of textile goods and assumed quantity. Comparing two options of company using its own trucks or hauliers, it is more efficient to redistribute goods by utilizing company’s transportation vehicles.

The positive changes in all the aforementioned areas are related to Supply Chain Characteristics that influence company’s supply chain flexibility, which in turn lead to enhanced firm performance both in terms of financial and non-financial performance.

**Future Research**

This study has a quite explorative approach, investigating one industry, namely retailing, based on fundamental case study and sub-case. It also has a great deal of practical implication as we have considered ICA’s interests to get benefits of our master thesis. It would be interesting to conduct a research in different industries with analysis based on model created and suggested by us. We assume the further research to be conducted in industries such as automobile, agriculture, furniture industries and the like. We are certain that the suggestions we generated would not be commonly used and applicable for newly researched industries. Therefore, we find it challenging for a researcher to find out more supply chain characteristics that would actually bring a different perspective of analysis. More supply chain characteristics would make the analysis base more broad and therefore more specific and precise.

Although there were several attempts to create a mathematical approach in order to measure and quantify the regression of supply chain flexibility and firm performance, it still has many gaps and irrelevances. Consequently, it would be useful for the further research to identify the most critical supply chain characteristics which influence the regression on a higher or lower degree.
REFERENCES


APPENDICES

Appendix I: Abbreviations

AB: Aktiebolag
CSP: Customer Satisfaction Performance
DIY: Do It Yourself
EU: European Union
EUR: Euro
FMCG: Fast Moving Consumer Goods
IT: Information System
JIBS: Jönköping International Business School
JIT: Just-In-Time
Km: Kilometer
L: Liter
LTP: Lead Time Performance
M: Meter
NPP: Net Profit Performance
PO: Purchase Order
POS: Point Of Sales
SEK: Swedish Krona
SGP: Sales Growth Performance
SKU: Stock Keeping Units
S&OP: Sales and Operation Planning
3PL: Third Party Logistics
Appendix II: Interview Questions for Director of Supply Chain and Logistics Department and Supply Chain Manager – Operating

1) How does the process of planning, ordering, delivering and distribution happen? (Activity wise and time wise)

2) What are the departments involved in this process?

3) What is the role of every department?

4) What is the degree of integration within departments?

5) What does ICA outsource and has in-house?

6) What is the IT system in your company and is it appropriate? Does it support your business?

7) When the orders are made are the manufacturers always ready with the necessary materials for the production?

8) What is the percentage you source from the Far-East countries and local suppliers?
Appendix III: Interview Questions for Design Manager

1) What does the phase 3 “Design” in Process overview consists of?
2) Who is involved in designing process for the better outcome?
3) How long time does “Design” phase take?
4) What is the yearly planned timeline for the Clothing to be delivered to the stores? (In other words, a plan of time for a year, including Design phase?)
5) When are the samples from the suppliers sent?
6) How do you collect information on trends?
7) Do you take into consideration supplier-offered designs?
   (If yes, how do you balance supplier-offered designs with your requested designs?)
8) In case, if the sample that was sent does not correspond to what you expected – how do you manage this situation? (Improve the “state” of the sample / reject it / contact with the other supplier etc.)
9) To what degree customer is satisfied with the clothing purchased in ICA store (may be some survey done, or questionnaire etc.)?
10) How many different lines do ICA has for clothing a year (SKU)?
Appendix IV: Interview Questions for Supply Chain Manager and Supply Chain Manager of Clothing and Shoes

1) According to the process overview, could you please explain the sequence of these activities and how long time each activity takes to complete?

2) Why the sourcing is placed before assortment planning?

3) What does the abbreviation “VP”, “TM” and “BP” mean?

4) Could you show the graph of delivery process as a whole Supply Chain of Clothing category, so that we can visualize it?

5) What are the logistics and transportation activities/actors/places involved into the delivery process? (the whole chain starting from the manufacture / supplier to the store; hubs, DC / warehouse?)

6) As far as we know, there is a certain range of colors and sizes you already define for the particular seasons. Could you please explain in details what is it about and why the selection is exactly as it is?

7) How flexible is Supply Chain in ICA Clothing?

8) Which factors contribute to / hinder the flexibility of ICA Clothing Supply Chain?

9) What do you consider as main reasons for improving the supply chain in order to be flexible?

10) What is the degree of involvement in the below-mentioned characteristics that influence Supply Chain Flexibility and Company's performance:
- Environmental uncertainty
- Mutual understanding
- Interdependence
- Technological complexity
- Supplier dependence?

11) How do you see the future of the ICA Supply Chain in Clothing?

12) To what degree customer is satisfied with the clothing purchased in ICA store (may be some survey done, or questionnaire etc.)?
Appendix V: Interview Questions for Purchase Strategy Manager
Non-Food

1) What is the approximate percentage you purchase from Far-East countries and Local suppliers? Could you also give a percentage of goods you source from each country?

2) How big is the market share of ICA clothing in Sweden?

3) Do you have any current projects or ideas of moving the manufacturer’s base closer to the customer?

4) Are there any aspects that are similar to Zara’s way of purchasing/manufacturing/distributing?

5) What is the yearly planned timeline for the Clothing to be delivered to the stores? (In other words, a plan of time for a year?)

6) Which countries are involved in the common sourcing for Clothing? (The whole ICA group as consolidated orders or just ICA Sweden orders?)

7) As far as we know, ICA plans Clothing on quarterly basis (Q1, Q2, Q3 and Q4), RIMI Baltic purchases on 2 seasons basis (AW – Autumn/Winter and SS - Spring/Summer). How does ICA Norge purchasing system work and are there any common system to work as one whole purchasing group? If it is not created yet, is it possible to do it for Clothing, taken into account the difference in customer preferences (market demands)?