LAPIN AMK
Lapland University of Applied Sciences

Improving Supply Chain in North -American Liner Board market through Demand Chain Management

Case of Metsä Board

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Master´s Thesis of the Degree Programme in International Business Management
Master of Business Administration

TORNIO 2014

ACKNOWLEDGEMENTS

I want to express my gratitude to Metsä Board and my mentor Matti Ketonen from the great opportunity to carry out this thesis. Special thanks for guiding and encouraging all the way of the project, and fully supporting in every way. Moreover, the thesis supervisor, The Principal lecturer Anthony Okuogume from the Lapland University of Applied Sciences, has had remarkable impact on the thesis process by providing valuable advices, feedback and advising comments. Furthermore, I would like to thank all interviewed persons from the Norwalk US office and KemiArt US Inc. and their positive and co-operative attitude against the study.

Finally, this research would not have been possible without the support and encouragement of my family and friends.

Keminmaa 28th of May 2014

Auli Sakko

ABSTRACT

LAPLAND UNIVERSITY OF APPLIED SCIENCES

Degree programme: Master´s	Thesis of the Degree Programme in International Business Management
Writer(s): Auli Sakko	
Thesis title:	Improving Supply Chain in North-American markers through Demand Chain Management – Case Metsä Board
Pages (of which appendices):	92 (5)
Date: 28 May, 2014	
Thesis instructor(s):	Anthony Okuogume

The objective of this thesis research is to explore the US customer demand and seek better customer and market understanding, and consequently, facilitate implementing the optimal stock levels in the market. Additionally, this thesis investigates which improvements are necessary for utilizing the common stock supply model in the US, and how the maximal availability is achieved for the US customers. The case company, Metsä Board is a leading folding boxboard company in Europe and one of the world´s leading producers of white-top kraft liners.

The research method in this thesis is qualitative. The theoretical framework was created through relevant literature, articles and studies dealing with Supply Chain Management and Demand Chain Management. The empirical part of the study builds on the semi structured interviews made among management level employees in the USA. In addition, the empirical data draws from the writer´s own experience and observations, especially during the working period in the US and the customer meetings.

Highly dynamic and seasonable nature of the business postulates maintaining the stock in the market to serve the highly demanding customers and serve fast deliveries. The common stock enables the company to offer good availability with ready-made products. However, finding the most optimal safety stock levels to serve the real market demand is challenging due to almost non-existent forecasting. The corrective proposals presented on the basis of this research concerns additional supply options to taking into use to support the common stock supply model.

Chapters 5.2.2, 7.1 and 7.2 containing empirical information are not published with their full contents in the Library version, since these chapters contain confidential information.

Keywords: Supply chain management, Demand chain management, Board, Supply model, Forecasting

CONTENTS

1 INTRODUCTION

The background and the motivation of this research are discussed here. In addition, the research objectives and questions and the structure of the thesis are illustrated, as well as the research methodology of this thesis research.

1.1. Background and Motivation

In order to be successful in today´s business environment, companies need to be able to develop their core competencies, such as supply chains and to be flexible in applying them. Dynamic industry is always under pressure due to global competition, and forces companies to seek continually new markets and methods to strengthen their competitiveness (Langabeer & Rose 2001, 3). Companies' business strategies are increasingly customer focused, where the customer demand has become the core of the company's business strategy. Intense competition in the business increases customer´s demands, e.g. for high-quality, improved service and shortened lead times, where the availability and delivery accuracy play critical roles. Moreover, companies have realized that in order to remain competitive in the global markets, the critical focus is to create and fulfill customer demand. Therefore, companies need to understand the market demand and the customer expectations better than earlier. Consequently, the nature of the business is transforming from production-focused business to customer-oriented business (Hilletofth 2011, 193-194). In order to be able to provide value, companies need to focus on drivers and key activities which transforms the products into markets and customers through services – the supply chain (Langabeer & Rose 2001, 5).

Lambert, Cooper and Pagh (1998, 1) define the concept of Supply chain management as an integration of key business processes from end users through original suppliers that provides products, services, and information that add value for customers and other stakeholders. Companies have realized through successful Supply chain management, (hereinafter SCM) that can strengthen their position in the markets and maximize the overall value of their offerings. Moreover, an efficient and well managed Supply Chain facilitates higher customer satisfaction. Russell and Taylor (2002, 311) emphasize that SCM is one of the most important strategic aspects of operations management because it integrates several related functions. Separately

managed Supply Chain functions are no longer totally focused on one goal. Holistic management of all Supply Chain functions is needed. Managing the whole flow of goods and services increases the capabilities to respond to customer needs cost-effectively (Russel& Taylor 2002, 268).

Successful business requires customer understanding and the ability to identify the customer needs. Due to dynamism of the consumer, companies need to continuously re-evaluate their effectiveness to respond customer demand and expectations (Bustinza, Parry & Verdrell-Herrero 2013, 619). Cambra-Fierro and Polo-Redoro (2008, 212) define Demand Chain Management (DCM) as the chain of activities through which the supplier recognizes customer demands and communicates that demand through to suppliers. According to Walters (2008, 699), Demand Chain Management focuses on customization, responding to product and service opportunities served by certain customers or customer group with specific characteristics, while Supply Chain Management focus is strongly linked to processes and activities, and services delivered to the customer. Because an interaction between demand and supply chain is strong, the company has to have the capability to manage both (Walters 2008, 701). Bustinza et al. (2012, 618) argue that a combination of the management approaches, i.e. SCM and DCM, is required by companies in which the customers´ role as value creator is the key element. Cambra-Fierro and Polo-Redondo (2008, 211) points out that in order that the company is able to maximize the value creation to their customers, integration of both concepts in the demand-supply chain will turn the focus to the final customer.

Demand uncertainty has a significant role in global business and causes challenges in matching supply with demand. Gensheng and Deitz (2011, 671) argue that facilitating mass customization process in SCM increases companies´ upstream and downstream information processing capabilities. Furthermore they conclude that linking mass customization in supply chain strengthens the value creation with exchange partners efficiently (Gensheng & Deitz 2011, 671). McCarthy (2004, 348) defines mass customization as the ability to manufacture a relatively high volume of products for a relatively large markets that demands customization, with minimal loss of production efficiency.

Even though Supply Chain Management has an important strategic role in the companies, it does not add value to the company alone. As the case company operates in global markets, it is

challenging to balance the customer´s requirements. Walters (2008, 701) points out that before the company can achieve effective operations management, understanding the current markets as well as potential markets is required, but also the core processes that are required for success. Furthermore, according to Walters (2008, 701-702), the demand strategy model offers an integrated demand chain/supply chain, which is based on organizational needs where the supply chain strategy processes are in line with customer value drivers.

The case company in this thesis is Metsä Board (hereinafter the Case Company). The company produces corrugated white top kraft liner for consumer packaging, communications and advertising end-users. The main market areas are Europe, North America and Asia. The case company provides high performance, premium quality paperboards for its customers to provide ecological packaging materials.

The writer´s personal interest in the topic is due to her employment as a Supply Service Coordinator in the case company with responsibility area covering the supply management for the North American customers. Furthermore, the writer is a service owner for one supply model – common stock, which is why the dedication for the topic is very high. The US market is the biggest single market area for the case company and the strategic business focus is on strengthening their position in North American markets as well as on expanding the business in the area. Therefore, the personal interest in developing the supply is high. In order to be able to increase the market position, it is critical to understand the customer demand and expectations. Demand fluctuations create challenges to meet the customer demand, because the consumption of the product is challenging to forecast. Due to the market´s geographical location, the lead time to the US is relatively long. In addition, the volumes are high which is why increasingly accurate forecast is needed to secure the delivery accuracy and ability to respond to the market demand. The tacit knowledge concerning the US customer needs and expectations is mostly under sales expertize, where the interest lies in the customer demand and consumption patterns. The fact, that this highly valuable market information would have transparency in the whole supply chain, would increase the efficiency of the whole SCM in the case company.

This research seeks to increase the case company´s customer understanding in the US markets. Increased understanding of customer needs and market demand throughout the supply chain

guides the case company to improve its efficiency without damaging the customer experience. In addition, in-depth customer knowledge reduces the risk of customer loss when the whole organization, not just its sales organization, understands customer requirements. Furthermore, the objective of this research is to find out the optimal ways of utilizing its supply models. The data to be used in this research is heavily based on empirical observations while working in the case company.

At the beginning of 2011, the case company decided to re-examine its Supply Chain Management and business processes, and re-defined six different supply models, which will be taken into use after and at the end of the year 2013. All of these supply models are separately specified according to customer needs. The business in the US markets will be executed through Common-stock model, which means a certain level safety stock, including customers order ready-made products from the company´s stock which is located in the US. Orders include popular reel specifications that are always stocked by the company, based on the safety stock level. Re-defined supply models not only to impact on the structure of the supply chain, but also results in a new strategic direction from production focus to an increasingly customer-oriented approach.

The current view is that there may be a need for another supply model, which would improve the availability for the markets. Thus, this research focuses on evaluating the current supply model and examine if the fulfillment supply option is needed.

1.2. Research objectives and questions

The specific objective of this research is to strengthen the company´s ability to respond effectively to customer demand with more accurate forecast, and consequently improve delivery accuracy to the US market. Another objective of this research is to support the current developments made in the case company´s business that are aimed at meeting the specific market characteristics and improving the knowledge of the target market from the company´s point of view. The third objective of the thesis is to examine how the Common-stock supply model increases the company´s competitiveness in the US market and thereafter, the customer satisfaction. Furthermore, the research focuses on customer value creation by exploring the combination of management approaches, i.e. SCM and DCM strategies.

Hilletofth, Ericsson and Christopher (2009, 1179-78) argue that despite the fact that SCM and DCM in organizations tend to be dealt with separately, there is no major discrepancy between the demand and supply chains. DCM focuses on understanding customer demand and providing customer value, while the traditional definitions of SCM focus on the activities moving products through numerous facilities to the consumers (Hilletofth 2011, 184-185; Langabeer & Rose 2001, 5). If the company´s strategy focuses too much on either the demand side or the supply side, the company might encounter difficulties, e.g. inefficient product delivery and incompetency in meeting the market demand (Hilletofth 2011, 185). Therefore, the integration of SCM and DCM provides market understanding and creates value cost efficiently, as well as fosters the delivered customer value. Consequently, DCM and SCM should be coordinated (Hilletofth 2011, 185). Walters (2006a, 246) points out that SCM and DCM are about process management, where the processes in DCM are focused on planning, forecasting and delivering the customer value.

Thus, this research focuses on examining strategies mentioned above. The aim is to examine how the case company can maximize its value through an integration of the supply and demand chain, into value chain focused on final customer demand and expectations. This research has particular interest from the case company point of view, by examining how the US customer may be served effectively and in a way that the company achieves greater customer responsiveness and market understanding. For these reasons, the focus on DCM processes is demand planning, forecasting and customer value creation. Because the case company operates in global markets with large volumes, it is necessary to examine the mass customization process as well.

In practice, this research is set out to find out the improvements and possible supplementing features that the current supply model needs in order to improve its customer understanding and customer satisfaction. The US market area is the biggest volume segment for the case company. Because the company operates in global markets, demand has a key role in planning and forecasting. The current availability and delivery reliability is based on large stocks which locate in the US. Large manufacturing and customer-oriented business model in the US is executed through safety stock and stock keeping units (hereinafter SKU). Increasing market demand and consumption fluctuations create challenges to plan accurate forecast. Talluri, Cetin and Gardner

(2004, 62), note that companies often encounter challenges to determine the optimal order sizes, optimal production volumes and safety stock levels, which is why the inventory management arise as one of the key elements in the supply chain. Therefore, the objective of this research is to offer specific market information about market segments and through that to facilitate the planning and forecasting, and at the end to secure the optimal safety stock levels to meet the increasing customer demand in the US. In addition, one objective of the research is to identify possible shortcomings of the current way of working, and through that to develop the service efficiency of the whole supply process to encounter customer satisfaction.

Based on the research objectives discussed above, the research questions are set as follows:

1. *How well has the company been able to respond to the customer demand and delivery accuracy in the US market?*

This question explores the case company´s ability to respond to the US customer demand and the delivery of required volumes to the customers. A cap analysis from delivered tonnages versus customer demand illustrates the level of the company´s delivery accuracy as well as the ability to fulfill the customer needs.

2. *Why is the Common-stock model needed and what are the factors which affect the competitive advantage in the US Common-stock-model?*

The purpose of this question is to identify the key factors in supply chain that the customers in the US value the most. Identifying these factors supports the company to improve the development of business processes and planning the service provision to the customer. In addition, this question seeks to identify the competitive factors which create the customer value while providing the services.

3. *What possible improvements in the current supply chain model would bring about additional value for the company?*

This question examines if another supply model in addition of current model would improve the availability and service level, what the possible demand related issues are from the customer and

the forecast points of view that are to be taken into consideration. In other words, the question to be answered is what facilities the company must possess in order to be able to respond to the customer demand. Furthermore, the existing competitive advantage is documented to find out the factors that can add value to the entire supply chain. In addition, the gap analysis indicates whether the current supply tools and operating procedures in the case company are useful and efficient.

4. *How can the case company achieve more accurate forecasting through improved delivery accuracy in the US market?*

This question examines how the case company needs to improve its actions and processes related to forecasting, as well as its supply models business processes in order to bring about additional value for the case company and the customer.

1.3. Limitations of the study

This study is geographically limited to North American markets. Geography is a very important factor, because it determines the delivery time for the products. In addition, the existing data does not provide all the necessary information concerning the US markets. The data does not reveal the real information about customer experience and expectations, because of the lack of transparency between the mill and sales. Therefore, deep knowledge and expertise of the customer demand and behavior is at the sales agents´ possession. The required volume levels are based on sales forecasting, and therefore the focus is on the information generated by interactive forecast generation. The US sales agents have the actual knowledge because they are where the customers are, and due to that the relationship they have with the customer is highly appreciated and valuable.

In addition, cultural differences and the way of working induce their own limitations. The sales agents in the US are used to working independently, without strong guidance. As a researcher, evaluating the US processes, it is highly important to maintain the positive attitude in order to avoid future misunderstandings. Therefore, it is essential to achieve the sales agents´ trust and maintain their motivation. The enormous knowledge of the sales agents should turn into a common benefit , not transferring the power from a party to another.

1.4 Structure of the thesis

Chapters two and three present the theoretical framework of this study. The literature review with a focus on the Supply chain management and the key elements is discussed first, followed by chapter three concentrating on value creation in supply chain, where the Demand chain management, inventory management and mass customization are discussed. The chapter four presents the research methodology of the thesis. In chapter five, the operational environment of the research is illustrated, focusing on the current situation at the target market. In addition, the chapter analyzes the environment the company is acting in, and the reasons of the process improvement. Chapter six provides information concerning the case company supply options as well as analyses the supply model used in the US. The empirical findings together with suggestions provided on the basis of this research are discussed in chapter seven. Proposals for the future actions and possible improvements are discussed in chapter eight and finally, chapter nine concludes the thesis.

2 SUPPLY CHAIN MANAGEMENT STRATEGIC FRAMEWORK

The concept of SCM is discussed below, illustrating the network structure of business processes and relationships SCM deals with. In addition, this chapter presents the SCM components which have a strong influence on SCM framework.

2.1. Concept of SCM

According to Dawei (2001, 13), defining the SCM can be easy because it is widely known in nearly all businesses, and literature offers various perceptions of the concept. However, the definition can be extremely difficult because the definition must cover the whole supply chain management in practice, far and wide. Lambert (2004, 19) supports Dawei´s point by noting that there is plenty of confusion over the concept of SCM, depending on how synonymous the companies consider it with logistics, customers and suppliers. According to Hines (2013, 1), SCM is a combination of supply chain and demand chain, as supply contains service and product push-factors, while demand provides market and customer pull-factors. Thus, the existence of supply chain postulates the demand for service. Dawei (2011, 13) defines the concept of SCM as simply and ultimately business management, which engages the external organizations in the decision making in order to achieve ultimate business objectives.

Globalization, volatile markets and specific drivers force companies to develop increasingly effective ways to manage and coordinate the material flow, such as strengthening the relationships with suppliers (Mentzer et al. 2001, 2). Furthermore, Mentzer et al. (2001, 2) point out that the competition in the market is performance based, where the customer demand focuses on fast delivery and delivery accuracy without damage. Supply chains need to fulfill the customer expectations by delivering the products on time, and meet the customer's demand with good availability. In addition, when the SCM strategic focus is on the customer, the ability to increase the customer value is stronger, due to understanding the customer perspective (Hines 2013, 102). Therefore, the dynamic and uncertain conditions require greater market demand understanding and flexibility in supply chain, which is based on the interdepencies between processes, products and resources flowing in a supply chain (Mentzer et al. 2001, 2; Rao & Wadhwa 2002, 2). Based on SCM definition of Mentzer et al. (2001, 18), Supply Chain

Management is “the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain”, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.

Russell and Taylor (2002, 268) describe the SCM as managing the flow of goods, services and information through the whole supply chain by synchronizing all these features, and through that achieving the ability to respond to customer demand by fulfilling the customer expectations while lowering the total costs. Effective Supply Chain management simplifies the service provision to the customer through well designed business processes and planning (Russell & Taylor 2002, 268-269). Mentzer et al. (2001, 16) maintain that SCM can be divided in the functional scope and organizational scope. The functional scope refers to traditional business functions in SCM process, e.g. logistics functions and service processes, and the organizational scope focuses on inter-firm relationships. Reliable delivery and good availability as well as efficient stock circulation without maintaining big stocks are the outcomes from well managed Supply chain. The SCM can be seen as a logistics system which includes the material flow from the raw-materials to a complete product and to the customer. (Mentzer et al. 2001, 16-17.) In addition, SCM can be classified also as a set of management processes which are structured and designed for a particular market or a certain customer (Mentzer et al. 2001, 10).

In addition to the definitions discussed above, Czinkota, Ronkainen and Moffett (2002, 390) define SCM as an integration of value-adding activities which connects a company´s supply side with its demand side, where the approach view begins from the supplier´s suppliers, ending to consumers or end users. Furthermore, Czinkota et al. (2002, 390) note that strong market understanding enhances efficient supply-chain planning and design, and increases the customer satisfaction and cost-efficiency at the same time. Lambert, Cooper and Pagh (1998, 1) perceive the SCM as a network of multiple businesses and relationships, which represents total business process excellence and illustrates the way of managing the business and the relationships with other members of the supply chain. Furthermore, Lambert et al. (1998,1) also emphasize that the integration of SCM business processes from end user through original suppliers that provides products, services and information, adds value to the customers.

Croxton, Garcia-Dastugue and Lambert (2001, 13) define the SCM as the integration of key business processes across the supply chain. In addition, the SCM can be seen as a function with a primary goal for linking business functions and business processes within and across companies into a cohesive and high-performing business model (Stadler & Kilger 2008, 11). Croxton et al. (2001, 13) highlight that it is impossible to build links between supply chain members unless the companies implement a standard set of supply chain processes. Menzer et al. (2001, 15) state that the SCM improves the profitability, competitive advantage and enhances customer value and satisfaction of a supply chain. Moreover, in order that the supply chain succeeds, it is essential to consider the final customer as a member of the supply chain (Menzer et al. 2001, 4). Hines (2003, 102) note that customers drive markets and market demand. Therefore, the market driven and customer focused supply chains fulfill the customer requirements effectively and create value through the supply chain. Langabeer and Rose (2001, 6) support Hines by stating that consumer demand is the ultimate driver and goal for supply chain.

Based on the proposal by Menzer et al. (2001, 15), SCM enhances customer satisfaction and customer value, which strengthens the competitive advantage for the supply chain, and at the end improves the profitability. Thus, the objective is to improve the customer satisfaction, competitive advantage and profitability across the supply chain by lowering the costs but still providing the necessary level of customer service (Menzer et al. 2001, 15). Another objective focuses on managing the inventory and the optimal levels (Ellram & Cooper 1990, 3).

Cooper et al. (1997, 5) point out that the concept of SCM is logical: inventories need to stay low, the products needs to be able to track and information systems must cover the different levels in the supply chain from the production to the customer requirements. Moreover, the companies need to set the availability one of the core factors. Hence, the focus is no longer only in logistics process, but in all business processes, which requires coordination and visibility (Cooper et al. 1997, 5). Therefore, the implementation of SCM requires an integration of major business processes and business functions from distribution, sourcing and manufacturing across the supply chain (Chen & Daugherty & Landry 2009, 27). Hertz (2006, 208) maintains that shorter lead times and reduced inventory levels increase the need for integration in supply chains. Consequently, Chen et al. (2009, 27) point out that close collaboration among the supply chain members add value and positive outcomes to the supply chain.

The wider understanding of the SCM framework concept is illustrated in figure 1, which describes the supply chain structure, the key supply chain processes in the SCM as well as the information and product flows.

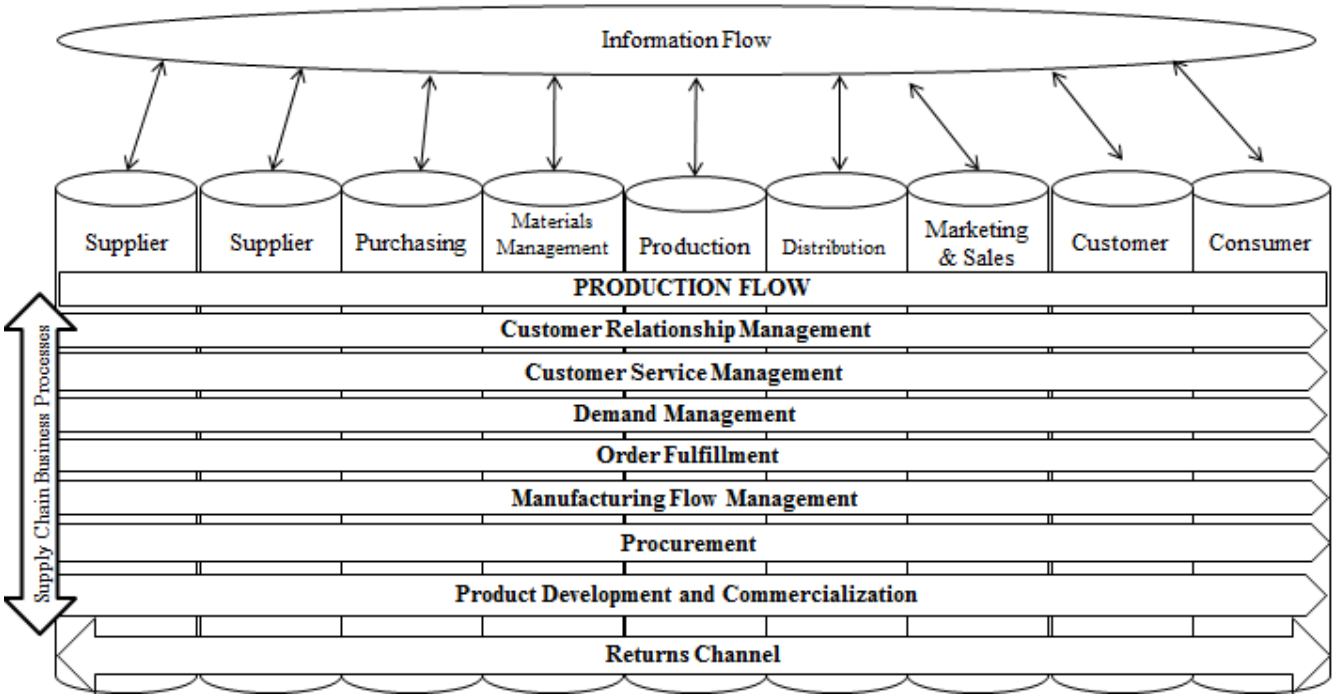

Figure1. Framework of Supply Chain Management (Cooper & Lambert & Pagh 1997, 10)

The supply chain process flow passes throughout each of the functional silos where the business processes become supply chain business processes, and are linked to each other across the supply chain (Cooper et al. 1997, 9).

2.2. Supply chain elements

Today´s dynamic environment requires boarder understanding of SCM, where the context of the SCM focuses no longer only in logistics function, but focusing on development of business processes and efficiency, as well as managing the relationships with other members of the supply chain (Cooper et al. 1997, 4-5; Lambert et al. 1998, 1). According to Lambert, Cooper and Pagh (1998, 1), the supply chain is a network of multiple businesses and relationships, where the SCM deals with specific business process excellence and manages the business as well as the

relationships with other members of the supply chain. Hereby, Cooper, Lamber and Pagh (1997, 8) state that the general structure of SCM framework is built around three closely related elements as follows: business processes, management components, and the network structure of the supply chain. The implementation of SCM requires defining the supply chain members and key processes which need to be linked with each others in order to manage successfully the supply chain (Cooper et al. 1998, 4). This means an integration of processes across the supply chain (Cooper et al. 1997, 3). In order to achieve efficient and successful SCM, every element is based on identification the key supply chain members and how the integration is operated between the processes and supply chain members (Lambert, Cooper & Pagh, 1998, 15). Thereby, figure 2 illustrates these three closely inter-related elements which capture the core of SCM (Cooper & Lambert & Pagh, 1998, 4).

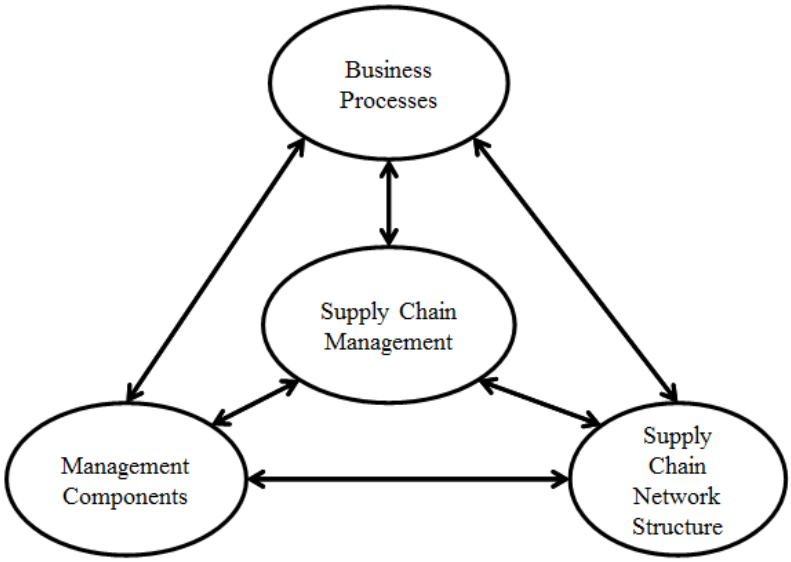

Figure2. Supply chain elements (Cooper & Lambert & Pagh 1997, 6)

These closely related elements are managerial variables which integrate the members of the supply chain. Business Processes determine the key processes which are essential to link with every supply chain member. The supply chain network structure specifies the key supply chain members with whom the processes are linked. The management components determine the structure of the business processes and management. Thus, the picture above illustrates the vision of how the SCM framework encompasses all business processes across the supply chain (Lambert et al. 1998, 4).

2.2.1. Supply chain Network structure

A network can be defined as a specific type of relation linking a defined set of persons, objects or events (Harland 1996, 67). Competitive business environment place the companies in the middle of an interdependent network, which consists of the key factors of mutually complementary competencies and capabilities (Dawei 2011, 108). The network structure determines the size of the supply base; the extent of vertical integration, the location of the suppliers as well as closeness of the relationships, in other words, how the flow model is constructed (Dawei 2011, 108). According to Cooper, Lambert and Pagh (1998, 5), the supply chain network structure is the network of members and the links between members of the supply chain. Furthermore, in order to be able to manage the supply chain, it is essential to have accurate knowledge and understanding of how the supply chain network structure is determined. Thus, the main structural aspects of the network are the key supply chain members with who links the processes (Cooper et al 1998, 4). The network can be seen as highly complex, because the supply chain contains all types of members with whom the companies interact directly or indirectly. Therefore, Cooper et al. (1998, 5) propose dividing the network between primary and supporting members, by defining the primary members of the supply chain as follows: ”all those autonomous companies or strategic business units who actually perform operational and/or managerial activities in the business processes designed to produce a specific output for particular customer or market”. Furthermore, they define the supporting members as “companies that simply provide resources, knowledge, utilities or assets for the primary members of the supply chain” (Cooper et al. 1998, 5).

Srai and Gregory (2008, 394) define the Supply network structure as a network tier structure and shape, composition, ownership, levels of vertical and horizontal interaction, location, co-ordination, manufacturing processes, complexity and flexibility. According to Rao and Wadhwa (2002, 6), the flexibility is one of the key competitive priorities which enhances a long-term impact on the supply chain competitiveness as well as the business performance. Srai and Gregory (2008, 394) point out that the supply network structure contains key elements including prime dimensions as follows: the flow of information between the key operations, the relationships between the key network partners and the value structure of the product and service, as well as product replenishment mode, e.g. make-to-stock, make-to-order or stock

keeping units (SKU´s). In other words, the network can be defined as a particular type of liaison linking the certain set of objects, events or persons (Harland 1996, 67).

Lambert et al. (1998, 6) analyzes three structural dimensions for the network, i.e. the horizontal structure, which focuses on the number of tiers across the supply chain, the vertical structure, referring to the number of supplier and customer, and the horizontal position of the company, which illustrates is the position far or close the source of supply or the ultimate customer.

According to Harland (1996, 67), network has a strong influence on organization´s competitive behavior, such as choosing the collaborative partners, how the relationships are handled and the competitors position is monitored. The dynamic business world requires re-configurability from the supply network, which requires the abilities to re-arrange the key elements of the supply network, such as improve the supply, to develop a new product or service, or change the value structure of the product or service (Srai & Gregory 2008, 394). Thereby, each component of the networks is dependent on each other (Harland 1996, 67).

Collaborative and cohesive relationship among the supply chain members maintains the competitiveness for the whole supply chain network (Lam & Chan & Ip & Lau 2008, 1101). Constantly changing markets drive the customer demand towards higher level expectations with high quality, new products, low cost and short lead-time, which is why the network needs to have the capability to respond effectively (Lam et al. 2008, 1101). Zhang and Dilts (2004, 187) supports the findings mentioned above by noting, that external factors such as strategy and environmental demand affects the structural complexity and formalization of the network structure. In addition, Zhang and Dilts (2004, 187) point out that demand has a significant effect on network on structure, which leads to cooperative interaction model, where the goal is to satisfy customer demand.

Croom, Romano and Giannakis (2000, 73) point out that the relationships and liaisons between the members in the network are the most significant factors in supply chain organizational relationships. Furthermore, Croom et al. (2000, 73) argue that without effective supply chain relationships, the organization is unable to manage the information and material flow across the supply chain. Ellram and Cooper (1990, 1) emphasizes the importance of the role of partnerships and third party relationship as them providing the necessary information and making the supply

chain channel even more efficient and competitive. A strategic partnership can be defined as a type of channel relationship where the objective is to provide long-term benefits to the parties involved in the relationship (Ellram & Cooper 1990, 4). Thus, based on notes and definitions discussed above, an effective SCM builds from a series of partnerships among the co-operative companies and reciprocal information, including channel risks and rewards (Ellram and Cooper, 1990, 4).

Harland (1996, 69) maintains that most of the supply chain network performance has been contributed by logistics, and demand information concerning timing and volumes. The focus of the logistics chain performance is on delivery accuracy, cost performance and customer satisfaction (Harland 1996, 77). Ellram and Cooper (1996, 7) supports Harland´s identifications by noting, that operating environment increases the pressures to provide additional value-added services with increased coordination, such as good customer service, reliable delivery or special storage conditions.

2.2.2. Supply Chain Business Processes

Global economic conditions force companies to add focus on the core business processes, which enhance the growing more cost effectively (Klappich 2010, 8). Therefore, the operational efficiency and productivity possess a great priority and a holistic approach to the supply chain processes is needed, without any effect on customer satisfaction (Klappich 2010, 8).

Cooper et al. (1997, 5) support Davenport (1993) definition of processes as "a structured and measured set of activities designed to produce a specific output for a particular customer or market". Moreover, the business processes are the activities which produce specific output of value to the customer, and link the key supply chain members to each other (Cooper et al. 1998, 4). Menzer et al. (2001, 10) argue the SCM as a set of management processes. Moreover, without inter-functional coordination in Supply Chain Management planning and processes, the SCM cannot achieve its full potential (Menzer et al. 2001, 19). Lambert, Garcia-Dastugue and Croxton (2005, 26) point out that the business processes are the structure of the functions between the members of the supply chain, where the combination of the business processes leads

to cost reduction, output quality, empowerment and at the end improving outcomes for the customers.

Cooper et al. (1997, 5) support the identification of Hewitt (1994, 2) where the SCM contains seven core business processes, i.e. Customer Relationship Management (CRM), Customer Service Management, Demand Management, Order Fulfillment, Manufacturing Flow Management, Procurement, Product Development and Commercialization. This view of Supply chain management is illustrated above in figure 1, which depicts the supply chain network structure and the management processes involved in organizations across the supply chain. The CRM process identifies how relationships with customers are developed and implemented. The customer service management provides the company´s face to the customer and act as a key point of contact. Demand management balances the customer requirements and synchronizes supply and demand. In addition, it increases the flexibility and reduces the variability by coordinating effectively production plans and market requirements. Order Fulfillment process involves all the activities needed to meet customer requests and expectations. Manufacturing Flow Management is concerned manufacturing the products that meet the customer demands. The objective of Procurement is to support the relationships with strategic suppliers and strengthen the manufacturing flow. Product Development and Commercialization process focuses on new products and developing (Lambert 2004, 20).

Cooper et al. (1997, 6) note that in the end, the ultimate goal of every key processes discussed above is to meet the customer expectations and demand. Therefore, the role of demand management is highly critical, because it help companies to understand the market demand and customer behavior, and consequently increases company´s capabilities to reach more efficiently to customer expectations. Thus, it facilitates the operation planning and future operation planning, and fundamentally improves the efficiency of the whole supply chain. Very often, the business organizations operate around these key processes down the line even noticing. Lambert (2004, 20) points out that successful SCM postulates changing the management from an individual function to managing a set of integrated processes. According to Croxton, García-Dastuge and Lambert (2001, 15), the importance of the processes is depending on the manufacturing company and the business, which is why the activities inside the process may vary as well. Therefore, Croxton et al. (2001, 15) emphasizes the importance of the capability to integrate the company´s key members and business relevant processes in the supply chain.

However, the role of each component depends on the process drivers, which are linked in organization´s perspective, i.e. how the company sees the memberships and network structure (Lambert et al. 1998, 7). Therefore, Lambert et al. (1998, 7) identifies four types of business processes among the key members of a supply chain, i.e. managed process links, monitored business process links, not managed business process links and non-member business process links. Managed process links integrates the process links with customers and suppliers, such as collaboration with other supply members. Monitored process links indicates how the process links are integrated and managed. Not-managed process links involves links which are critically important for neither monitoring nor actively demanding resources. Non-member process links concern the links which are influenced by other connections, i.e. non-members of the supply chain with the strategic members of the supply chain.

Based on the process links described above, Lambert et al. (1998, 7) indicate that close integration and management enhances the organization collaboration through all members of the supply chain and facilitates companies to improve their specific supply chain objects, such as product availability, high-quality and reduce overall costs. In addition, Lambert et al. (1998, 15) suggest that the overall structure of processes has a crucial meaning for creating prime competitiveness and profitability, which can be reach only by integrating the business processes with key members of the supply chain.

Lambert et al. (1998, 15) argues that the structure of processes within and between organizations, as well as an integration among them is crucial for generating superior competitiveness and profitability“. Thus, Lambert et al. (1998, 15) conclude …”the successful integration and management of key business processes across members of the supply chain will determine the ultimate success of the single enterprise”.

2.2.3. Supply chain management components

According to Cooper et al. (1997, 6), management components are important members in all business processes and members of the supply chain which create the base of the SCM framework. Cooper et al. (1997, 6) defines the management components as “they determine how the business processes, and thus the supply chain, are managed and structured”. In order to execute successful and efficient process redesign, the components needs to receive managerial

attention, and executives needs to be able to manage and process all SCM components (Lambert et al. 1998, 11).

Lambert et al. (1998, 11) proposes dividing the SCM management components into two categories, physical and technical group, and managerial and behavioral group. The first group focuses on visible, tangible, measurable and easy-to-change components, and therefore focuses too much on managerial attention. The second group focuses on less tangible and visible components and therefore more difficult to evaluate. These components focus on organizational behavior and influence of the implementation of management components (Lambert et al.1998, 11).

Unless the companies do not have the ability to align the management components, the supply chain is less competitive and profitable (Lambert et al. 1998, 11). As a consequence, successful and efficient SCM can be achieved only by understanding each of the SCM components and their interdependence (Lambert et al. 1998, 11). Thorough understanding and succesfull management of supply chain components improve the company´s supply chain performance regarding on response and efficiency (Vierasu & Bálásescu, 2011, 73). However, the number of components and combinations of them varies, depending on how well the components have been understood in the organization. As a consequence, this may mean that the components are integrated and managed differently in the supply chain (Lambert et al. 1998, 12).

Cooper et al. (1997, 7) identifies nine management components for successful SCM. Figure 3 illustrates the management components which drive and consolidate the company´s behavior to support the supply chain objectives and operations. In addition, the figure epitomizes how the management components can be divided into two groups.

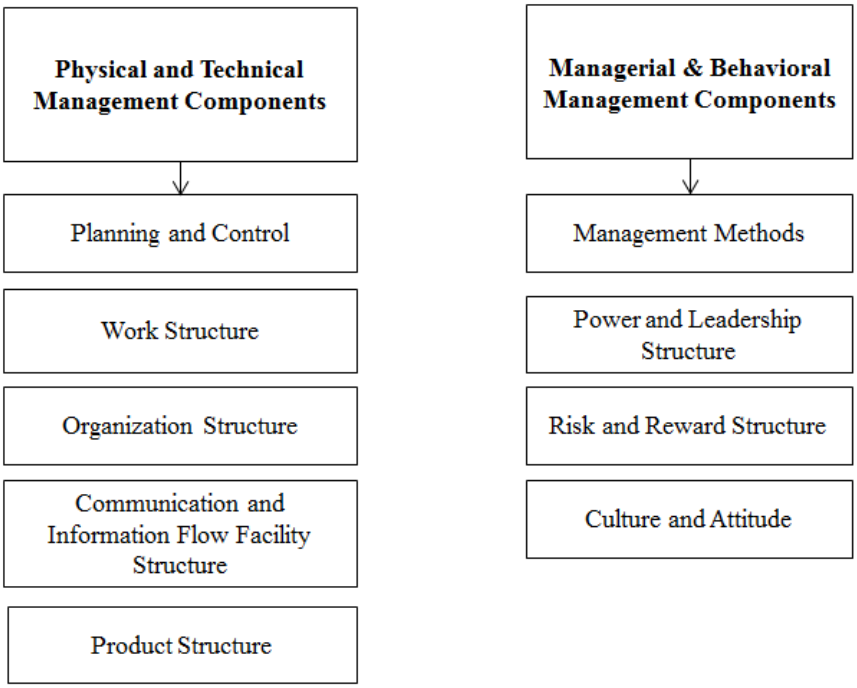

Figure 3. SCM Management components (Lambert & Cooper & Pagh 1998, 12)

The physical and technical group contains the easy-to-change components, such as visible and measurable factors, which usually focus on managerial attention. Planning and control operations are the master components to moving the organization in a desired direction. The work structure illustrates how an organization performs its activities. Organizational structure indicates an individual organization and the supply chain. Communication and information structure has a great impact on the information flow between the supply chain members. Product structure contains the structure of product development and product portfolio (Cooper et al. 1997, 7-8). Managerial and behavioral management components illustrate less tangible and visible factors, which defines how the management components are implemented. Management methods present the organizations philosophy and management techniques. The power and leadership culture has an impact on the form of supply chain. Strong leader defines the direction for the chain, as well as the level of commitment of the other members of the chain. Risk and reward structure illustrates the level of commitment of channel members. The culture of the corporation and the attitudes include the values of the employees and how the values are joined into the management (Cooper et al. 1997, 8) In addition, according to Lambert et al. (1998, 11), the SCM is not able to

achieve the full efficiency and succeed, if there are no understanding each of the components and their interdependence.

3 VALUE CREATION IN SUPPLY CHAIN

"A customer is the most important visitor on our premises; he is not dependent on us. We are dependent on him. He is not an interruption in our work. He is the purpose of it. He is not an outsider in our business. He is part of it. We are not doing him a favor by serving him. He is doing us a favor by giving us an opportunity to do so" (Hines 2013, 101.)

This chapter examines the interdependencies between the supply chain processes, by exploring the strong pressure of supply chain integration by focusing on one chain. Moreover, the important concept of demand management in relation with customer-focused supply chain is discussed. In addition, the chapter analyzes how the integration in supply chain influences the business and value creation through boarder and more comprehensive cooperation.

3.1. Integration of the Supply chain

According to Hines (2008, 102), customer-focused supply chain begins from customers´ demand signal for specific products and services, and it ends with fulfilling the customer demand by delivering the products and services when needed. The key point where the demand is created is the market place which is why it is the most critical driver for the business. Thus, in order to able to create the customer value, the companies needs to understand fully the customer needs and demands. Therefore the starting point of the strategic focus postulates companies being customer focused, and requires the understanding the customer perspective; what does the customer value? (Hines 2008, 102-103).

The implementation of SCM requires an integration of processes from sourcing, manufacturing and distribution across the supply chain, where the consumer and customer involvement is necessary (Cooper et al. 1997, 1). In order to be able to execute successful supply chain management, integration of key business processes is needed (Lambert 2004, 19). Dynamic markets require higher level products and wide level of services, which increases the need of collaboration between the companies and logistical flows (Hertz 2006, 208). Singh and Power (2009, 189), high-light the importance of supply chain collaboration between customers and suppliers, by noting how the collaboration gains effectiveness to the supply chain. According to

Togar and Sridharan (2002, 19), the supply chain collaboration can be defined as "two or more chain members working together to create a competitive advantage through sharing information, making joint decisions, and sharing benefits which result greater profitability of satisfying end customer needs than acting alone".

Chen, Daugherty and Landry (2009, 27) points out that supply chain integration links the main business functions and business processes within and across the companies, and provide positive outcomes for supply chain. The implementation of supply chain management requires identifying the key supply chain processes and members, where the objective is to create value for the whole supply chain network, including the end-customer (Croxton et al. 2001, 30). Focus of every process is on fulfilling the customer expectations, which is why the major business processes must be identified and understood distinctly (Chen et al. 2009, 28). Chen et al. (2009, 33-34) find out that the main key drivers for supply chain process integration are cost orientation and customer orientation, where the all effort is focused on creating and maintaining customer value. Understanding what the customer values, is challenging and plays remarkable role in the business (Flint & Larsson & Gammelgaard & Mentzer 2005, 116). According to Flint et al. (2005, 117), most of the customer value concepts contains the idea of a trade-offs related in quality and price and logistic service providers, such as functional and service benefits, where the aspect is to fulfill the customer´s perceptions. Therefore, it can be conclude, that expertize of customer knowledge increases the ability to fulfill customer needs and demand. Collaborative planning, forecasting and replenishment focuses on costs and customer orientation, where the integration between these processes enables to improve the inventory costs as well as customer service (Chen et al. 2009, 34). Therefore, the understanding the customer demand and dynamics of customer values has a positive impact on logistics value as well (Flint et al. 2005, 117). Therefore, it can be conclude, that integrating the demand management as a part of Supply Chain Management, adds significantly additional value for the whole supply chain, due to increasing knowledge of market demand and customer expectations. Consequently, the company is capable to plan the optimal stock levels and plan the operations more accurate, when the transparency between the customer and market demand is more visible and well understood.

Assey Mbang (2012, 199) argues that the supply chain integration improves the companies' abilities to identify the members in the supply chain which requires improvements. In addition, the integration strengthens the flow of goods and information in the organization, and therefore

has an improving impact to performance as well (Assey Mbang 2012, 199). Hertz (2006, 208) support Assey Mbang´s finding by arguing, that the integration of the supply chains increases the efficiency and effectiveness in the supply chain.

However, the supply chain network structure can be arbitrary depending on how useful the integration of the business processes is for the company´s perspective, and how the management understands their interrelated roles and perspectives (Lambert & Cooper & Pagh, 1998, 7). Depending on the driver fluctuations of the processes, some links are more critical than others. Therefore, integration of all business processes throughout the supply chain is not advisable (Lambert et al. 1998, 7). In order to implement the supply chain integration smoothly, linking only the most relevant business processes is required, as well as simplifying the supply chains by reducing unnecessary steps (Chen & Daugherty & Landry 2009, 29). Consequently, supply chain process integration is defined as a set of continuous restructuring activities aimed at seamlessly linking relevant business processes and reducing redundant or unnecessary processes within and across firms (Chen et al. 2009, 29).

Chen et al. (2009, 31) maintain that the main targets for supply chain integration are cost efficiency, reduced inventories and increased effectiveness. In addition, market demands indicate the customer orientation relating to service levels and responsiveness to market needs (Chen et al. 2009, 31). Hertz (2006, 208) point out that the exact delivery accuracy and reduced inventory levels are the main drivers which leads the companies towards the need of integration of the supply chains. However, due to external factors also the objects change. External market pressures and the visibility of the customer demand forces the companies to recognize the customers´ needs even more effectively, which is why the companies have developed their portfolio offerings and service levels (Bustinza et al. 2013, 618). Furthermore, Bustinza et al. (2013, 620) note that service offerings will not increase the value, unless there is no understanding of customer´s demand, and the knowledge of the factors which corresponds the needs of the customers. Therefore, it is crucial to recognize and understand the customer demand, in order to be able to respond customer expectations, and consequently, execute sales and operation planning more accurate.

Bustinza et al. (2013, 618) argues that the integration of supply chain strategy and demand chains into a value chain leads towards to final customer requirements and maximize the value of the whole supply chain. Demand is a signal from the market and typifies how to align SCM processes to meet better the customer responsiveness (Bustinza et al. 2013, 619). Demand driven supply chain improves customer satisfaction and effectiveness through the whole supply chain by matching the supply chain with the demand chain, and strengthens the collaborative customer relationship (Collin, Eloranta & Holmström 2009, 412). Moreover, demand chain is based on market understanding and meeting the customer needs. Thus, the customer´s role as a value creator is vital and it has a notable influence on the management of the value chain (Bustinza et al. 2013, 618). Therefore it can be conclude, that due to DCM, the companies obtain better market knowledge, which facilitates the operation planning and forecasting and therefore provides more efficiency for all business processes in supply chain, such as maintaining the optimal safety stock levels. Based on indications discussed above, Bustinza et al. (2013, 618) propose, that the final customer is better served by integration of supply chain and demand chain. Figure 4 presents a holistic framework of the integration of Supply Chain Management and Demand Chain Management.

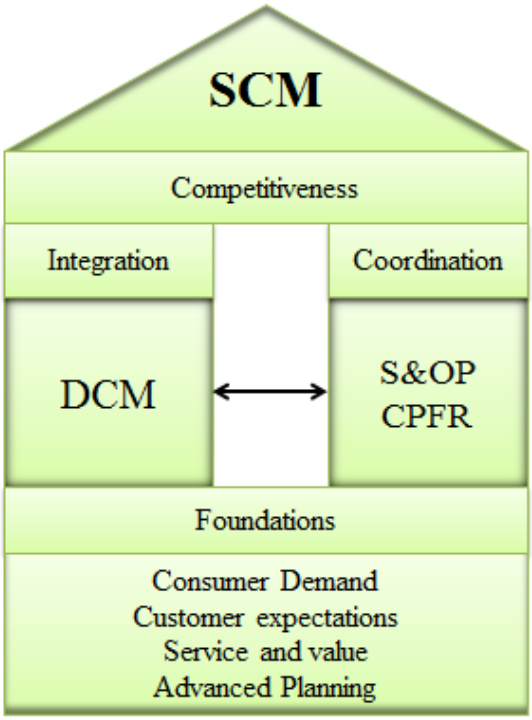

Figure 4. The House of SCM

The ultimate goal of Demand Chain Management is to serve and understand the customer. Moreover, better market understanding strengthens and facilitates the sales and operation planning, as well as collaborative planning, forecasting and replenishment process. Thus, alignment of each of the objects streamlines the operations and maximizes the effectiveness of the entire supply chain.

Global competition has become more and more intense, which is why the consumers´ demand requirements and expectations increase all the time. In order that the companies remain competitive and profitable, they need to focus their resources on activities which bring the value for the company. Figure 5 shows how the companies must view demand as a part of the strategy.

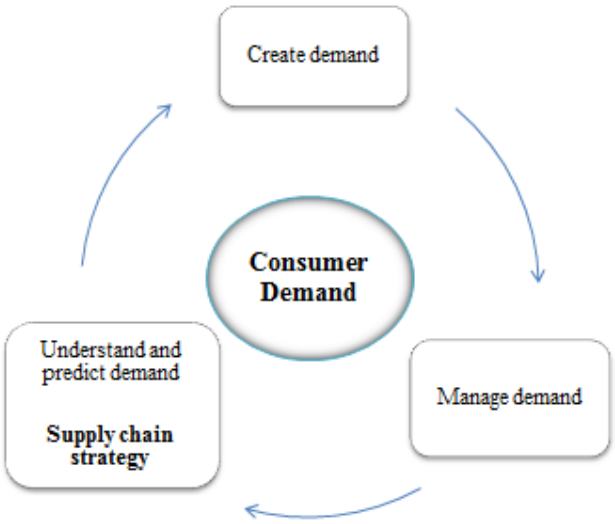

Figure 5. Understanding consumer demand in supply chain (Langabeer & Rose 2001, 4)

According to Langabeer and Rose (2001, 4-5), supply chain has a critical role in the company as transforming the products to meet the markets and consumer demand. Therefore, the companies need to accommodate their supply chain strategy to understand the demand, in order that the manufactured volumes are optimal and provide the customer requirements with effective logistic decisions. In addition, another critical factor is to manage the demand which aid the company´s capabilities to determine the correct products to make and the capability to respond volatile market conditions. Lastly, creating the demand is one of the core factors which require

knowledge, business creation and unique operation planning, in order to be able to create strong brand among the consumers (Langebeer & Rose 2001, 4).

3.2. Demand chain management

Today´s dynamic market environment drives companies and supply chains to develop new ways to manage demand. Demand plans are the drivers for the companies to manage their supply and financial plans, executed in collaboration with customers and suppliers (Crum & Palmatier 2003, 1). As customers becoming more demanding, companies face greater challenges to achieve the customer expectations. Therefore, it is critical to understand the customer demand and identify the potential customer value doorsteps, in order to select the best supply chain for each customer (Collin et al. 2009, 413). In order to achieve strategic effectiveness, it is essential to recognize the characteristics of the market, as well as core competencies to produce and deliver customer value expectations (Walters 2006b, 78). In addition, Walters (2006b, 82) high-light the importance of identifying and understanding the nature of demand by suggesting that strong understanding of customer and shareholder satisfaction endorses the supply chains ability to provide the correct value efficiency. Hence, Crum and Palmatier (2003, 2) argue that without an accurate demand forecast and effective demand management, the company cannot execute comprehensive production planning. Thus, the Demand Chain Management enhances more accurate forecasting and improves the operations planning to meet the correct demand, as well as logistics planning. Therefore, the Demand Chain Management fundamentally improves the cost-efficiency in whole supply chain, when the company is able to optimize the production and maintain the optimal level stocks.

Cambra-Fierro and Polo-Redondo (2008, 212) defines the Demand Chain Management (hereinafter DCM) as follows: The DCM recognizes customer demand and transmits the demand through suppliers. In addition, the DCM focuses on identifying customer expectations, and conveys the signals from the market with analyzing customer perceptions concerning product and service, compared to price. Rainbird (2004, 242) defines the DCM “An understanding of current and future customer expectations, market characteristics, and of the available response alternatives to meet these through deployment of operational processes”. Williams, Maull and Ellis (2002, 692) supports these definitions discussed above by defining the DCM as “the management of supply production systems designed to promote higher customer satisfaction

levels through electronic commerce, that facilitates physical flow and information transfer, both forwards and backwards between suppliers, manufacturers and customers".

The fact that DCM has focused on fundamental market understanding and satisfying the existing customer requirements, creates remarkably additional value for the supply chain as well improves the internal performance (Cambra-Fierro et al. 2009, 619). According to Crum and Palmatier (2003, 2), the objective of DCM is to ensure that the demand, supply and financial plans are synchronized and executed as planned, and ensure that decisions concerning these key factors generate the positive impact for the company´s financial performance. Croxton et al. (2001, 18) note that the purpose of DCM is to balance the customers´ requirements to meet the company´s supply capabilities. In addition, Hilletofth (2011, 185) points out that the goal of DCM is to obtain greater competitiveness by providing exquisite customer value at lower cost, which is achieved by understanding how the customer value is created and delivered cost efficiently, and how these processes are coordinated, i.e. choosing the most suitable supply model for the customer.

According to Rainbird (2004, 235), the purpose of the DCM is to analyze and understand overall market demand, which is why the supply chain gains the effectiveness in the production and logistics processes. In addition, the DCM subsidizes an organization´s processes to adjust the common plans by improving the coordination within the supply chain by using forecasts and plans according to consumer demand understanding (Rainbird 2004, 235). DCM is planning and strategy oriented, encompassing forecasting, market understanding and strategic planning capabilities. Hence, the key processes in DCM include forecasting current and future market demand, product life cycle analysis, collaboratively product strategy planning and finalizing predictions to adjust forecasts (Langabeer & Rose 2001, 7-8).

The lack of knowledge of the market demand leads to ineffective planning, inaccurate forecasting, and consequently causes difficulties, such as to determine the optimal order quantities, safety stock levels and cycle inventory (Langabeer & Rose 2001, 109-110). Porter (2011, 25) note that demand fluctuations increases the variability of the supply chain. These factors include wrong sizes stocks, order delay and the time gap between order and delivery date, leading to over-ordering and buffer stock to ensure the sufficient stock to meet the customer demand. Thus, it easily leads to mismatch in order batching, e.g. when orders are not placed until

they reach a predetermined batch size between demand and order quantity (Porter 2011, 25). Consequently, the DCM strengthens the companies' ability to predict the future demand and execute better forecasting, and due to that to maintain the optimal safety stock levels and correct products.

3.2.1 Demand management Framework

The ultimate purpose of DCM is to provide for the company the broader view of customer understanding and the markets, and execute better understanding of customer expectations concerning products, pricing and services, and consequently, to find the proper supply model for the customer (Crum & Palmatier 2003, 10). Langabeer and Rose (2001, 37) note that the purpose of DCM is to analyze market demand, predict the future and enhance collaborative planning and at the end support the business strategy. When the marketing and sales has the understanding of market demand and customer expectations, the companies are able to generate more accurate demand forecasts, and strengthen their position in the market place (Crum & Palmatier 2003, 10).

Crum and Palmatier (2003, 10) divides the demand management in four elements: planning demand, communicating demand, influencing demand and managing and prioritizing demand. Each of the elements is depending on each other, and only by integrating the elements the comprehensive view of demand is achieved and more accurate demand forecast executed (Crum & Palmatier 2003, 11). Figure 6 illustrates these elements and provides the board-view of demand management process model.

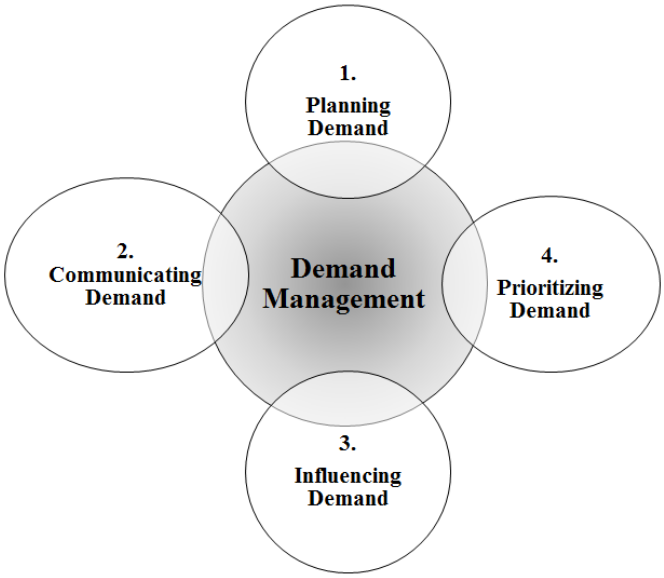

Figure 6. Demand Management elements (Crum & Palmatier 2003, 11)

In order to be able to manage demand effectively, the understanding of the term of demand forecast is critical. Demand forecast is a forecast of future *demand*, not shipments (Crum & Palmatier 2003, 11). Unless the companies do not possess the market understanding, demand forecasts are easily based on shipments. The fact that shipments do not always match on customer-requested delivery dates due to actual shipment dates, ensures less accurate forecasts. (Crum & Palmatier 2003, 12).

Despite of that the first element of demand management is planning, the forecasting is only one part of the planning process. Forecast predicts a future condition or occurrence, which is difficult to predict precisely. A plan is a scheme or a method of acting, doing, proceeding and making, developed in advance and is more controllable. (Crum & Palmatier 2003, 26). Planning process facilitates and supports the companies to make the best decisions of how to fulfill demand and through that to achieve better results (Langabeer & Rose 2001, 47). Furthermore, well created demand plan anticipates the demand from external factors, such as competitor´s actions, and the health of economy which influences straight to the products and services, and service level (Grum and Palmatier 2003, 27). Communicating element typifies the demand plan communication between supply, finance organizations and supply chain partners. Influencing demand involves efforts from marketing and sales, product positioning, pricing and promotion, while managing and prioritizing demand contains managing the customer orders to match availability (Crum & Palmatier 2003, 11). Without communication, the company result

inaccurate demand plans, and consequently is incapable to achieve the business objectives effectively (Crum & Palmatier 2003, 47). Figure 7 illustrates the communication processes of demand management.

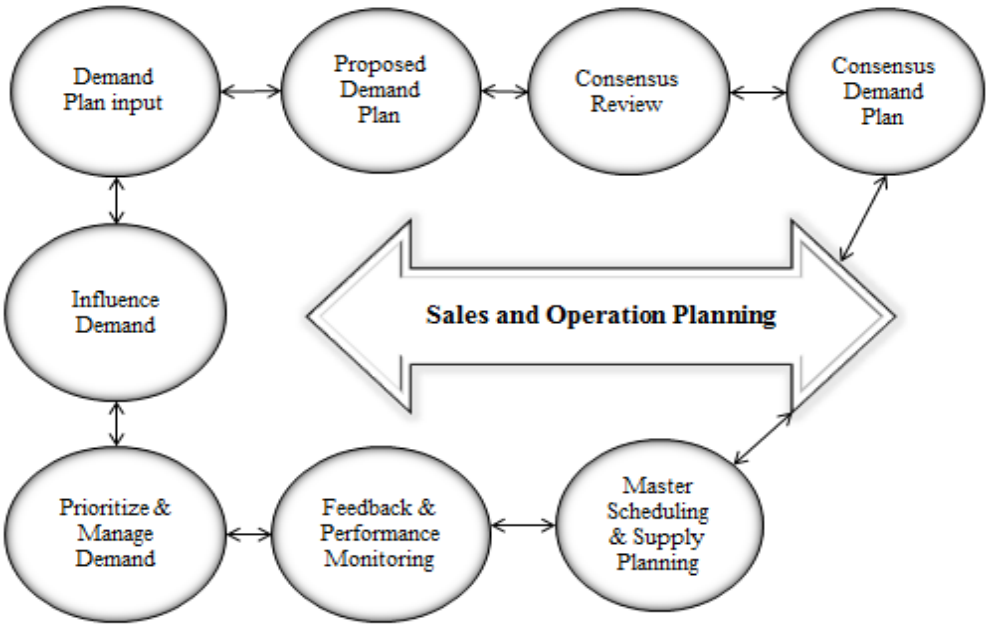

Figure 7. Demand Management Communication Process (Crum & Palmatier 2003, 47)

According to Crum and Palmatier (2003, 47), the demand planning process is a structure process for expressing and delivering information, adapting information, the decision making tool and feedback channel. The communication process contains the input of the communication, validation of the suppositions, proposing a demand plan and reaching on the demand plan. The communication processes cut through the sales and operations planning, and are in synchronization with supply, financial and demand plans. Thus, the communication process facilitates to understand the real market demand, and determines the necessary actions that need to execute in order to achieve the demand and business objectives (Crum and Palmatier 2003, 49).

The third element considers the factors influencing the demand. The process includes marketing, product positioning, pricing and sales efforts. The goal of the process is to convince the customers as well as influence the demand. In other words; convince customers to buy the products and services in such a way that supports the company´s objectives, and facilitate the

companies to meet the customer expectations. In addition, another objective of the process is to adapt to changing market conditions. Otherwise the company is incapable to respond customer signals on time (Crum and Palmatier 2003, 61). The fourth element, managing and prioritizing demand involves managing the customer orders to meet available supply. Crum and Palmatier (2003, 73) compare the managing and prioritization of demand to the race car fine tuning. The optimal demand performance encapsulates the demand volume, sales revenue and profit, and customer service. The critical need for managing and prioritizing demand exists, when the volumes, timing, availability or mix of demand emerges, and when these factors are not synchronized with the supply organization´s capabilities to respond the demand. Therefore, the basis for the decision making requires board view of the company´s strategic objectives, marketing and sales goals, as well as cost and profit objectives (Crum & Palmatier 2003, 76).

3.2.2 Collaborative Planning Processes in Demand management

Collaboration is the heart of the demand management. The dynamic nature of the business requires more comprehensive and compact collaboration with different parties, focusing on sharing demand information. As demand drives the value chain, collaborative planning, forecasting and replenishment process need to have the visibility throughout the value chain. Consequently, it prevents uncertainty about the volumes and subsidizes order quantities to meet the true demand (Crum & Palmatier 2003, 198). Strong demand orientation in the business world drives the supply chains competing with other supply chains, which has increased the importance of the cooperation in entire supply chain. Strong market demand understanding and sharing it collaboratively with all partners is the core of the managing and creating demand (Langabeer & Rose 2001, 41). Langabeer and Rose (2001, 47) defines the collaboration as working jointly with others in an endeavor to accomplish similar goal. In order to utilize effective demand management process, it is essential to determine the internal and external key factors involved that have interactions with demand projections e.g. marketing, sales, production planning, manufacturing, finance, sales and operational planning and transportation (Langabeer & Rose 2001, 41).

According to Langabeer and Rose (2001, 47), the collaboration is the fundamental for supply chain and contains two key processes which guide and support the planning processes significantly: sales and operation planning (S&OP) and collaborative planning, forecasting and

replenishment (CPFR). Sales and operation planning focus to identify and define the most efficient ways to fulfill demand. The role of S&OP is highly important especially in complex manufacturing business due to huge production volumes, multiple selling locations and large stocks. Customer-oriented and mass production business largely includes a wide category of SKUs (stock keeping unit) in several locations, where the demand is difficult to predict and understand. From the supply point of view, production capacities are limited, including several existing restrictions, such as distribution, lead time and resource constraints. Thus, the focus in S&OP is long-term view at the higher product levels, such as categories or SKU´s, maintaining the optimal safety stock levels, fulfillment of the domain market area and balancing the demand and supply. The objective of S&OP is to provide the market information and facilitate other parties in supply chain to understand how the market is changing and analyze metrics such as target of safety stock levels, inventory days, order fulfillment cycle and manufacturing. In addition, the goal is to provide business plans and lead towards to better decisions and execution. Therefore, the sales and operation planning has a significant role in supply chain as it is about matching the demand with supply (Langabeer & Rose 2001, 48).

Crum and Palmatier (2003, 198) note that CPFR is a guideline which fosters the most efficient practices in implementing collaborative trading partnerships. According to Langabeer and Rose (2001, 55), CPFR is a process that focus to improve the relationship between retailers and suppliers and fosters the information flow through supply chain. In addition, the objective of the CPFR is to ensure that all parties in the supply chain share the common business and demand plan. Moreover, another objective is to gain better visibility of demand, inventory and shipment data. Hereby, the issues around CPFR are meeting demand, prioritizing demand and managing supply allocations collaboratively (Langabeer & Rose 2001, 55-56).

The nature of basic S&OP process is collaborative and contains different parties from the senior management, supply chain, manufacturing, sales, marketing and finance. Figure 8 presents the basic flow of the sales and operating planning process.

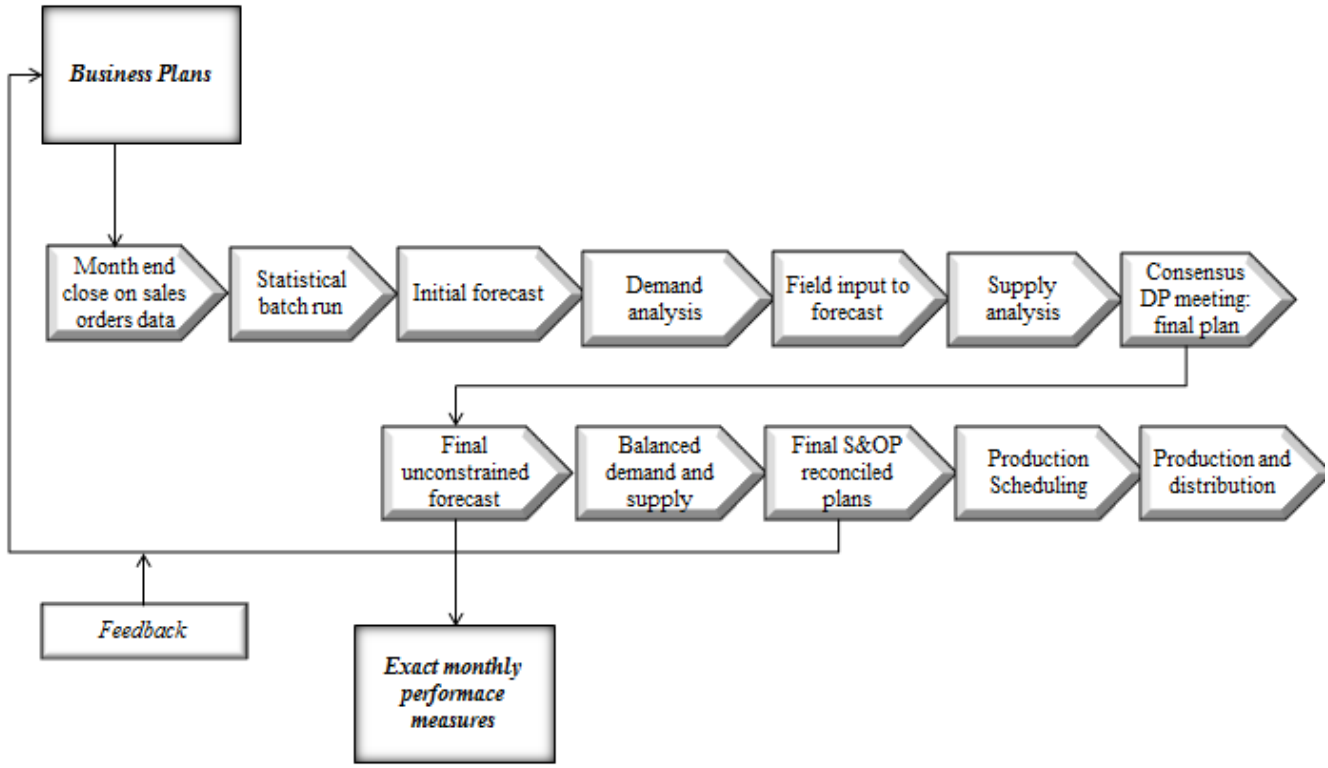

Figure 8. Sales and operations planning process (Langabeer & Rose 2001, 51)

The sales and operation process contains several activities and sub-processes, which defines the strategic key aspects of the business, including analysis of sales and market share. Furthermore, the process is responsible for providing the direction to the product portfolio and guiding the business decisions concerning manufacturing and logistics requirements (Langabeer & Rose 2001, 50). In operational level the process executes and fine-tunes the forecast in synchronization with sub-processes, resulting collective production plan. Moreover, aim of the process is to increase flexibility and reduce variability concerning demand, lead-times and capacity (Croxton et al. 2001, 20).

3.2.3 Demand control and planning

The demand management process contains more than only forecasting. Crum and Palmatier (2003, 12) point out the importance of sales and marketing by arguing that this function should own and lead the whole demand management process. Stadler and Kilger (2008, 148) state that the main purpose of demand controlling is to control the quality of the forecast as well as the

demand planning process itself. According to Cooper et al. (1997, 7), planning and control are the key processes in supply chain which guides the organization in a desired direction.

Stadler and Kilger (2008, 133) note that most of the time the customer demand has the highest impact in supply chain decision making, which is why the process of forecasting the future customer demand is called demand planning. Demand planning is all about control and control starts with demand planning. In order to be able to control the demand effectively, the conditions over the time needs to be monitored and set the plans to respond the market demand in timely as well as profitable practice. The planning process contains products and services in control horizon an 18-month, which includes updating the product, sales plans and predictions each month through consensus demand plan (Crum & Palmatier 2003, 28). Figure 9 presents the demand control process which includes the key input components: sales, analysis, business plan, marketing and product management.

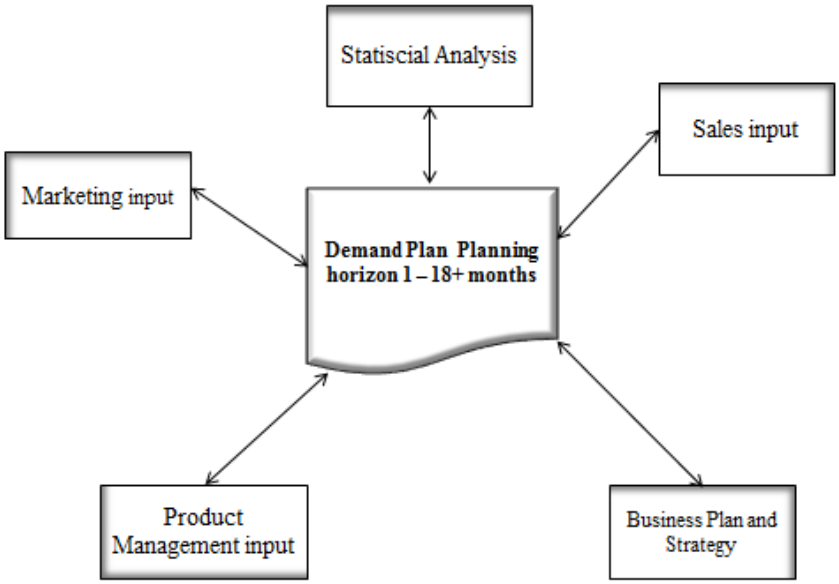

Figure 9. Demand control components (Crum & Palmatier (2003, 29)

Especially when the company´s product portfolio includes a wide amount of end products e.g. SKU´s, an effective planning strategy is a prerequisite that all items are effectual planned and produced on adequate manner. 18-month planning horizon permits sufficient time to act when the demand does not match with business plan and demand exceeds the supply capability.

Therefore, an aggregate planning at least an 18-month planning horizon is needed to ensure that volume, demand and timing fluctuations are identified on time and supply chain has better capabilities to adapt the changes in sufficient time and maintain optimal stock levels (Crum & Palmatier 2003, 33, 41). In addition that 18-month planning horizon facilitates the reacting time when demand does not match the business plan; it gives the view of the next year´s demand plan. Thus, the control process elements can be seen as stability zones and decision points, especially when the demand does not match with supply in the time frame planned. As a result, the demand fluctuations are identified on time and the company has more options and control to affect the changes (Crum & Palmatier 2003, 92-93). Stadler and Kilger (2008, 149) state that in addition the demand planning control monitors the quality of the forecast, it is also used as a feedback mechanism for the process elements to receive information about the market demand.

Statistical forecasting is the most commonly used method, which creates forecasts for a lot of items automatically, and is executed based on historic customer orders. Thus, the statistical forecast takes in place when the level is SKU´s is high and certain amount of safety stock required to fulfill the desired service level (Stadler & Kilger 2008, 137). Stadler and Kilger (2008, 158) note that service level is the key value for the safety stock, where the service level can be defined as the fraction of periods in which no stock-out during the replenishment cycle.

Crum and Palmatier (2003, 28) state that the statistical forecast is the most common used method which is based on historical data and future demand. The method is an analyzing process and support component for demand planning especially when demand patterns varies and higher degree of accuracy is needed due to seasonal patterns. The statistical forecast also gives an input to explanation of past peaks and dips in demand, as well as provides the transparency of the product, marketing and sales activities and demand trends. Crum and Palmatier (2003, 32) high lights that especially when company produce and operate with hundreds or thousands of end items/ SKU´s, the statistical forecasting is needed. Otherwise the company is not capable to respond just-in time to the customer and provide the availability. Wide product portfolio requires efficient planning strategy to ensure that all of the products are duly planned. Therefore, an aggregate plan in 18-month planning horizon is the commonly used strategy (Crum & Palmatier 2003, 33).

The base for the demand controlling is to define the basics how the accuracy of the forecast is measured and identity the key figures required in demand planning structure. Companies which are operating in wide range of product portfolio, often complement their demand planning with the functionality of safety stock calculation. The forecast is the most powerful factor which has a straight influence to the amount of stock which has to fulfill the requisite service level (Stadler & Kilger 2008, 158). The basic safety stock calculation is based on the stocking point, from which the demand is served. The stocking point is generally based on certain product (SKU) standard of the forecast by noticing the risk time and forecast error. Thus, Talluri, Cetin and Gardner (2004, 62) note that integrating demand and supply variability into safety stock evaluations is highly important.

3.3 Inventory management, safety stocks and maximizing the value chain

The role of inventory management is remarkable in demand and supply chain. Hines (2008, 243) high lights the importance of inventory management because it has a strong impact on supply model service level. Effective supply model provides the right service based on customer demand in right place on time when needed with correct price. Therefore, the inventory management is one of the key elements of managing the supply chain activities (Hines 2008, 244). Talluri, Cetin and Gardner (2004, 62) note that ineffective inventory management disclose inaccurate order quantities and safety stock levels, complicates the optimal production quantities and has a significant impact to supply chain costs and profitability. The purpose of the inventory management is to minimize the stock-holding costs but still fulfill the customer demand at the same time. Thus, the business processes redesign is needed for adapting the supply model service levels to meet the market demand effectively (Hines 2008, 244). Moreover, while the focus on customer-focused supply chain is lowering inventory with minimum costs and satisfy the customer demand, re-designed business processes with appropriate technologies support the internal and external elements of the process (Hines 2008, 264).

According to Stadler and Kilger (2008, 61) the safety stock is one of the key elements for managing the inventories and maximizing the customer availability especially when the market is prone to demand fluctuations. The purpose of the safety stock is to satisfy unexpected demand peak and equalize customer demand which exceeds the forecast. In addition, the safety stocks

improve the supply model´s service level, inhibit the stock-outs as well as avoids loss of sales. In addition, Stadler and Kilger (2008, 135) high lights that the safety stock is the prerequisite for reaching a desired service level, because the process is closely linked to forecast. Hines (2008, 126) note that the service is the factor which adds value to the customers. Therefore, the core of the service focuses on value creation, where the customers are the heart of services. In order that the company is able to obtain effective service level, deeper market and customer understanding is required (Polaine & Lovle & Reason 2013, 36).

According to Chopra and Meindl (2007, 335), the safety stock facilitates supply chain to provide customers a higher level product availability despite of the supply and demand fluctuations. The role of safety stock is to provide better product availability when demand fluctuations are large and customers are unable to generate very accurate actual demand. Forecast errors and demand fluctuations in actual demand may vary which results the actual demand higher or lower compared to regular demand. Picture 10 illustrates the basic average safety stock profile.

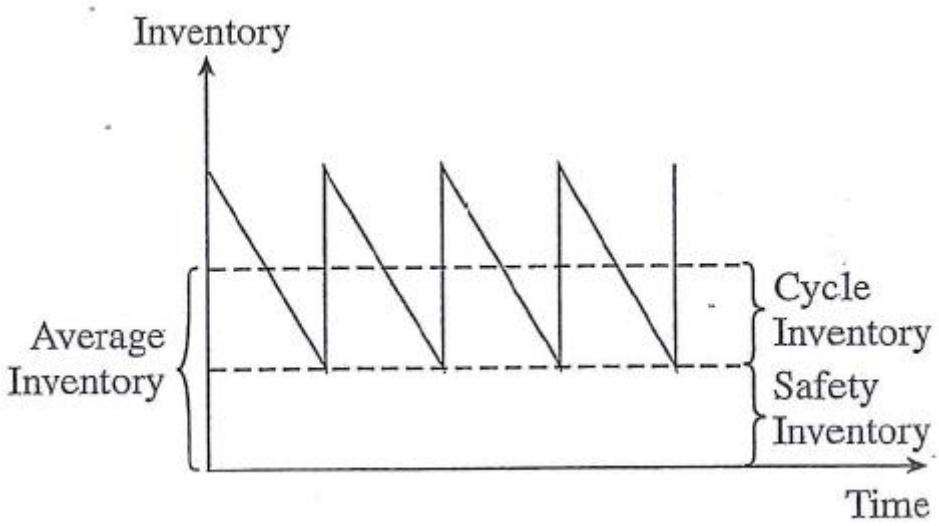

Figure 10. Inventory profile with safety stock (Chopra & Meindl 2007, 305)

The basic safety stock model increases the service of product availability to the customer especially in situations where the demand exceeds the normal demand. Therefore, the level of the safety stock is the average inventory remaining when the replenishment orders arrives. Global markets instability, demand uncertainty and lead time variability create pressures for

availability. As a result, companies' inventories are carried out more and more through safety stocks (Chopra & Meindl 2007, 305).

According to Chopra and Meindl (2007, 23) the customers´ priorities are the fundamental for the company´s competitive strategy, where the target is to fulfill the customers´ expectations by providing the right kind of product and services that satisfy the customer needs. The typical organization value chain is shown in picture 11.

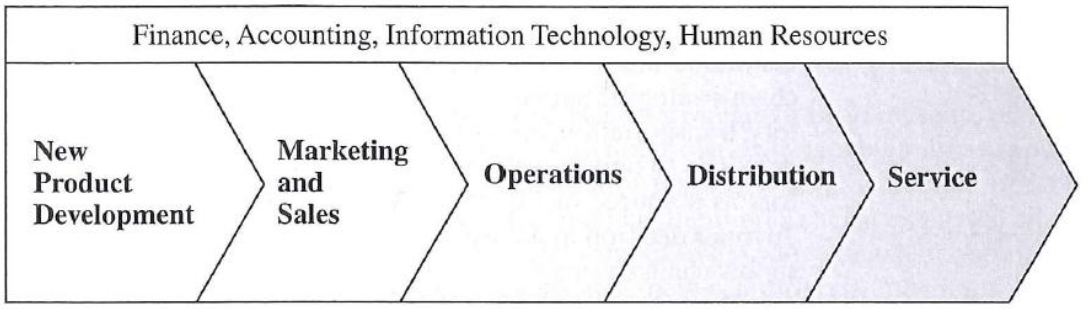

Figure 11. The value chain in a company and core process functions (Chopra & Meindl 2007, 23)

The first element of the value chain contains product development, which defines the specifications for the product portfolio. Marketing and sales generate the demand by identifying the customer needs in order to provide the right kind of service and product to the customer. Operations element convert the demand to the product, while the distribution ensure that the product reach the customer. The service element reply to the customer desire, whereas the demand during or after the sale. Finance, accounting, information technology and human resources are supporting factors, which simplifies the operation of the value chain. Thus, the value chain illustrates the close relationship between all process elements in the company, which is why every element is critical in order that the company is able to satisfy the customer needs profitably (Chopra & Meindl 2007, 23-24).

3.3.1 Demand forces Mass customization

According to Genshgen and Deitz (2011, 668), the nature of the business has developed more towards to customer understanding, which mean that the manufacturing products require more accurate attention in order to meet the customer´s specific need. Langabeer and Rose (2001, 136) high lights that the supply chain need to have the capability to respond quickly and effectively to constantly changing consumer demand, and provide more accurate delivery, which is why the demand drives the customer focused supply chains towards to mass customization. The strategy of the mass customization focuses producing high volumes of the products and services for a large market area with customized products according to specific customer needs McCarthy (2004, 348). Thus, McCarthy (2008, 348) defines the mass customization as a "capability to manufacture a relatively high volume of product options for a relatively large market that demands customization, without tradeoffs in cost delivery and quality". Furthermore, McCarthy (2008, 348) point out that the mass customization strengthens the company´s competitive advantage to understand and meet the customer expectations, and supports the capability to generate more accurate forecasts by understanding the market opportunities.

Gensheng and Deitz (2011, 669) stress the significant meaning of mass customization in supply chain and points out that based on customer needs, the companies need to be able to adapt these needs into product and supply model service design, produce them optimally and deliver just-in-time to the customer. Consequently, efficient implantation of mass customization requires well managed supply chain relationships.

The focus of the mass customization is on designing, producing and delivering large volumes on time to the markets, by providing differentiated products which fulfill the customer needs. Demand uncertainty is intrinsic feature of mass customization, which creates challenges to match the supply with demand, causing difficulties to schedule supply and coordinate deliveries. Therefore, it is critical to efficiently co-operate with exchange partners and link logistics management with mass customization capabilities (Gensheng & Deitz 2011, 670-671).

Inventory and safety stocks are typically involved with the implementation of mass customization strategies due to supplier lead time reduction, because it balances the demand uncertainty and improve the inventory control. Therefore, the co-operation and linking the

resources, such as supply models, which serve to products, personnel, logistics and customer processes, is needed. As a result, the lead time reduction reflects how efficiently the suppliers are integrated into mass customization efforts. When the lead-times meet the customer demand, the companies are able to supply customized products through lower levels of safety stocks more cost-effectively (Gensheng & Deitz 2011, 673).

4 RESEARCH METHODOLOGY

4.1 Qualitative case study

The main research method used in this thesis research is the single case study method. According to Yin (2003, 1), compared to other methods, the strength of the case study method is its ability to examine, in-depth, a "case" within its "real-life" context. Case study method is integral, when research questions answer to the questions of *how* and *why*? (Yin 2003, 2). Moreover, the case study method supports illustration of a particular situation, helps understand it, and underpins the researches direct observations, when collecting the data from natural settings (Yin 2003, 2).

This research focuses on finding out space for improvements concerning a delivery process to the US as well as increasing the case company´s knowledge of customer demand in the US markets. This study does not aim to cover the whole area of Supply Chain management in the case company. Instead, the focus is on demand chain management, processes focused on planning and delivering customer value through supply chain to the US market. Despite of the fact that the research includes statistics and numerical data, the results in numerical form is not the focus. The main focus is on analyzing cause and effects, and therefore the qualitative method is used in this research.

Greener (2008, 19) defines the quantitative approach as a deductive approach to testing theory through numbers and facts, as well as examining the objective view. In addition, according to Greener (2008, 19), a qualitative approach generates the theory from the subjective perspective rather than constructing the knowledge from the "reality". Therefore, the qualitative information used in this research is collected by using field research and findings when visiting and working in the US, whereas the quantitative information, i.e. content analysis from case company, is provided by using the case company internal data.

The theoretical part of the thesis is carried out through relevant literature and scientific articles concerning supply chain management and demand chain management based on identifying

customer needs. Several researches have been made concerning an integration of demand management and supply chain management. Walters (2008, 699) points out that Supply chain coordination is not efficient without an adequate understanding of demand. Furthermore he notes that the market changes drive the companies to re-think the business processes to meet the market characteristics. Therefore, implementing an integrated model of SCM and DCM enables companies to tailor correct supply models to meet the customer demands, and consequently, increase value to the customers (Walters 2008, 699). Bustinza, Parry and Vendrell-Herrero (2013, 618) propose that a combination of SCM and DCM approaches is required by firms which add services to their portfolio.

4.2 Data collection

Research techniques used in this study are as follows: analysis of the historical invoicing versus the data delivered volumes, as well as the safety stock volumes. Moreover, the writer´s work experience and observations while visiting and working in the US as well as exploiting the interviews of the US management are relied on for data collection. In addition, semi-structured interviews provide the key information source in this thesis. Interviews were carried out through specified questions and carefully targeted interviewees, mainly from business management level of the case company. The interview data is collected from sales managers, sales directors as well as sales support managers in the US market.

The practical part of the work consists of interviews conducted in the case company, analyzing the current data, and practices of the case company as well as the writer´s own experiences. Moreover, meeting the sales organization staffs and the customers give highly valuable information and understanding about the markets and reasons behind the market demand. The research includes the evaluation of the US supply model and interviews of the business management and examinations which improvements are valid for the case company from the customer value point of view.

By analyzing the case company´s data and interview information collected, the data analysis serves the basis to what the case company´s opportunities are and which they can re-organize

when implementing a new supply service model. Furthermore, following the data analysis stage, the conclusions are reflected against the demand chain management processes. Based on these methods and techniques, this research deepens the case company's knowledge about the US customer segment, increases the customer value and helps to improve the reliability of supply chain.

4.3 Data analysis

The collected data in this thesis is analyzed through document analysis, observations and Business-to-Business Depth (B2B) interviews made in the US. The analyses are based on the information from different sources. The data analysis focuses on invoicing history, safety stock evaluation and order volume analysis.

The B2B interviews focus on understanding the key factors affected on demand, safety stock managing process, customer behavior and supply contexts, and are carried out via open-ended type of interview. In addition, the obtained data will be compared to research questions as well as theoretical framework, and the writer´s own personal background knowledge.

5 THE OPERATIONAL ENVIRONMENT

The case company´s operational environment in the US is presented and discussed in this chapter. In addition, a mission, vision and strategy are illustrated to provide the basis for the business operation. Furthermore, the chapter provides the strategic reasons behind the re-defined supply models.

The information for this research was accumulated from the interviews made in the US, focusing on middle and senior management levels. The main focus of the data collection was to examine the case company´s strategic position in the markets as well as to study the market demand in the US. Moreover, the interviews were intended to aid the deeper understanding of the market behavior and reasons behind the dynamic nature of the business.

The interviews were implemented during spring 2014, in working period in the US, by face-to-face or conference call, or via email, depending on the location of the interviewee.

5.1 Metsä Board mission, vision and strategy

The case company is one member of the largest forest industry groups in the world, and leading folding boxboard company in the Europe, as well as the world´s leading manufacturer of white-top kraft liner. The business is divided in five core business areas: wood supply and forest services, wood products, pulp, paperboard and paper, and tissue and cooking papers. The group has operations nearly 30 countries and production in nine. In addition, the business contains 28 sales offices. Furthermore, the company obtains a wide sales and agent network that covers nearly all countries in the world.

The case company´s strategy focuses on business operations, investments and resources on areas where they obtain a good competitive advantage and strong growth prospects, such as North America business area. The case company´s strategy is customer focused and competitiveness is achieved through the high-quality raw material and deep knowledge of structural wood construction (Metsä 2013a, 2) The market demand has changed due to demanding living standards, where the customers value more luxury and easiness. The President of Metsä Board

Americas (2014b) notes that strategic focus and growth area in the US is high end graphics. However, the strategy is not necessarily product specific, but to maintain long term player role in the US on part with domestic suppliers in all respect. The importance of the product innovation rises up, when the customer behavior has changed towards to consumption where the consumers value more and more packaging. According to Regional Customer Service Manager (2014d), the strategic target is the brand owners and their relevant convertors, where the focus on various segments but the main focusing on food use segment.

The case company´s mission is to be profitable and competitive forest industry group that uses wood grown by its owner-members. Its vision focuses on operating in international market as a profitable Finnish forest industry by integrating sustainable raw material, customer orientation, innovation and sustainable development (Metsä 2013a, 4-5).

5.2 Metsä Board´s position in American markets

The US is the largest market segment for the case company. Nearly 40 % of the case company volumes go to the US market area. The biggest consumer segment in the US is Pre-print market, which is used for high volume end user products, typical segment for beer industry, liquor industry and diaper business, and also food and produce. The pre-printers only print the rolls, and the rolls they print go to corrugated Box plants to be corrugated and converted to boxes. Another main segment for the case company in the US market is Post-print segment, which means printing the corrugated sheets after the product has combined in the corrugation process. However, the Pre-print volumes are remarkably larger than Post-print volumes. Post-print customers typically have smaller run lengths compared to Pre-print customers, and this segment mainly serve a wide variety of smaller end users/Brand owners. Generally, the carton volume determines whether a particular application will be Pre-printed or Post-printed. According to Midwest Region Sales Manager (2014e), the case company is industry leader in the US Graphic Corrugated market for coated liners due to very strong brand recognition amongst all major Pre printers, and company´s products are considered as “Benchmark” grades in the markets. The case company´s products are specified by large brand owners such as Proctor and Gamble (Pamper Diapers), Kimberly Clark (huggies), Anheuser Bush, Miller Coors (beer industry), and Brown and Forman a Distillers (Jack Daniels). Thus, the case company´s brand recognition in the market similar to Coke or IBM brand (Midwest region Sales Manager, 2014e).

Regional Sales Director (2014c) note that the company´s position in the US market is strong. Its special products, high-quality and delivery accuracy has leaded the company to leading position in kraft liner packaging industry. The case company´s strong trade mark and good reputation in the market was achieved through excellent availability and good service. The business in the US is based on good availability and common-stock supply model, where the company is able to offer ready made products with specified sizes with certain safety stock level. Due to common stock model, the case company has been able to operate in the market as a "local" supplier, as reaching the customer confidence, rather than a supplier from long distance Finland. The product is positioned well in the market with no serious competitors, especially due to investment the case company made for developing the production, by adding second coater which enabled case company to offer even high-quality products. Therefore, the investments to the product development enabled the case company to develop new product portfolios and better quality, and consequently, to offer even better products (Regional Sales Director, 2014c; Midwest region Sales Manager, 2014e). The case company´s position in the market is seen as a rapidly growing force due to its uniqueness of product compared to the domestic equivalent, and investments generates even stronger base to stand in the market alone. Moreover, due to case company´s increased supply options (common stock on of them), the domestic competition in the market is limited (Regional Customer Service manager, 2014d). However, after being several years in dominant position in the market, the case company is watched carefully among the competitors.

According to President of KemiArt US Inc (2014f), the company has been able to respond well to continuously increasing customer demand due the Common stock model. The Common stock model has enabled the case company to provide something that the domestic competitors have not been able to offer. Consequently, the company has been able to respond the just-in-time orders, which requires fast delivery dates.

5.2.1 Metsä Board background to the situation

After establishing the sales in the North America, the early years were quite challenging for the company. The US market was very skeptical about purchasing liner shipped all the way from Finland. Customer's primary concerns in the markets were the lead times getting the product to

the states, and the consequences what might occur if currency exchange rates became volatile. In addition, the market concern was, would a Finnish mill truly be committed to the US market in long term? Over the next three to four years the company steadily captured new business from the US competition and the customer skepticism diminished greatly (Midwest Region Sales Manager, 2014e).

Regional Customer Service manager (2014d) notes that in order that the company was able to respond effectively to the market demand, the determination of the service level in Common stock took time. Moreover, convincing the customers for the market place and the fact that the common stock is in the US to stay and not to drop the customers took efforts, but is now it is seen in the past. The company gained remarkable competitive advantage from the warehouse, because no other mill in the US would warehouse rolls or slit rolls to fulfill the customer's ever changing requirements. The domestic mills produced to block schedules every six weeks. If a customer had an unexpected order to come, they had to wait for the next production run. The case company was able to capitalize on that policy by having common stock readily available to ship within a day of receiving an order. According to Midwest Region Sales manager (2014e), the two key factors and foundation of the success was having a great product, and having it readily available in a Common stock in the warehouse. However, the challenge was to maintain correct stock levels due to seasonality of the business. Due to inaccurate forecasting, the demand peaks created difficulties to serve availability for all customers who had the need for the same product sizes.

The strategic focus is to expand and increase market share especially in North-America, where the competition is based on products and product features, high-quality and reliable delivery. Despite of the fact that the case company has a leading position as a supplier in Europe and major part of the volume flow goes to the US markets, there are still plenty of unattainable market shares and new market segments in the business area. Because the market area is big, there are a lot of potential new market shares. Midwest Region Sales Manager (2014e) supports the strategic direction analyze by noting, that the main goal is to seek continuous growth in each market segment, as well as maintain and continually improve the quality level of the products and serve offerings (Regional Sales Director, 2014c; Midwest Region Sales manager, 2014e).

The overall competition and macroeconomic in forest industry has changed, which is why the packaging is moving from Asia to the US, because China is not low-cost country anymore. Furthermore, nowadays the product can be manufactured in Asia, but the packaging is done in the US. The importance of the product innovation rises up, when the customer behavior has changed towards to consumption where the consumers value more and more packaging. Therefore, the growth is seek through new product portfolios, where the aim is to find new customer segments and thus to expand the overall market share of American business area (Regional Sales Director, 2014c).

Continuous market increase and heavy demand indicated strong growing aspects. Therefore, the strategic direction to North-America drove the case company to develop and re-think its competencies in whole supply chain, which is why in 2013, the case company decided to re-define its supply options through safety stock levels in the US Common-stock. The focus of the re-designing was to improve the supply chain management of the case company and in that way to improve the capability to response increasing market demand and product availability. The prime targets were to facilitate the service provision to the customers through improving business processes and planning, and reduce work load while providing the services. In addition, the aim was to reduce the operating network capital. Consequently, the aim was to achieve the capability to serve the customer better by securing the availability level for each stock keeping unit (SKU) via safety level, and manage the increasing market demand more effectively.

5.2.2 The US business and organization

The cornerstone for the case company´s capability to strengthen its position in the rapidly growing US market was the strong support by the management. The support enabled the company to make big investments in the US by purchasing a warehouse. Furthermore, the big investment to product development and machinery supported the strong execution of growth in the market (Regional Sales Director, 2014c). The President of Metsä Board Americas (2014f) highlights that the company´s strong position in the US market is a result of a long term commitment, resourcing and investment. The Common stock is seen as an operating network capital, because the warehouse commits money and is therefore seen as an investment.

The nature of the business is highly dynamic and strongly based on seasonality. Therefore, operating and maintaining the position in the US markets postulates stocks. Thus, large investments are required. Most of the local suppliers don´t have stocks, which is why the customers are forced to order their products from the production, which means longer lead times (Midwest Region Sales Manager, 2014e; Regional Sales Director, 2014c). Therefore, the remarkable success factors for case company are having a common stock readily available and excellence service, what the company was able to offer through good availability.

The case company's sale in the US market is executed through an independent sales company, and Metsä Corporation´s own sales office. KemiArt US is an independent company working under a sales agreement for Metsä Corporation. KemiArt US sells Metsä Board liners exclusively in the North America. Rest of the US area is covered by sales force in Metsä Board Payroll in Norwalk. The Metsä Board Kemi USA organization is presented in figure 12.

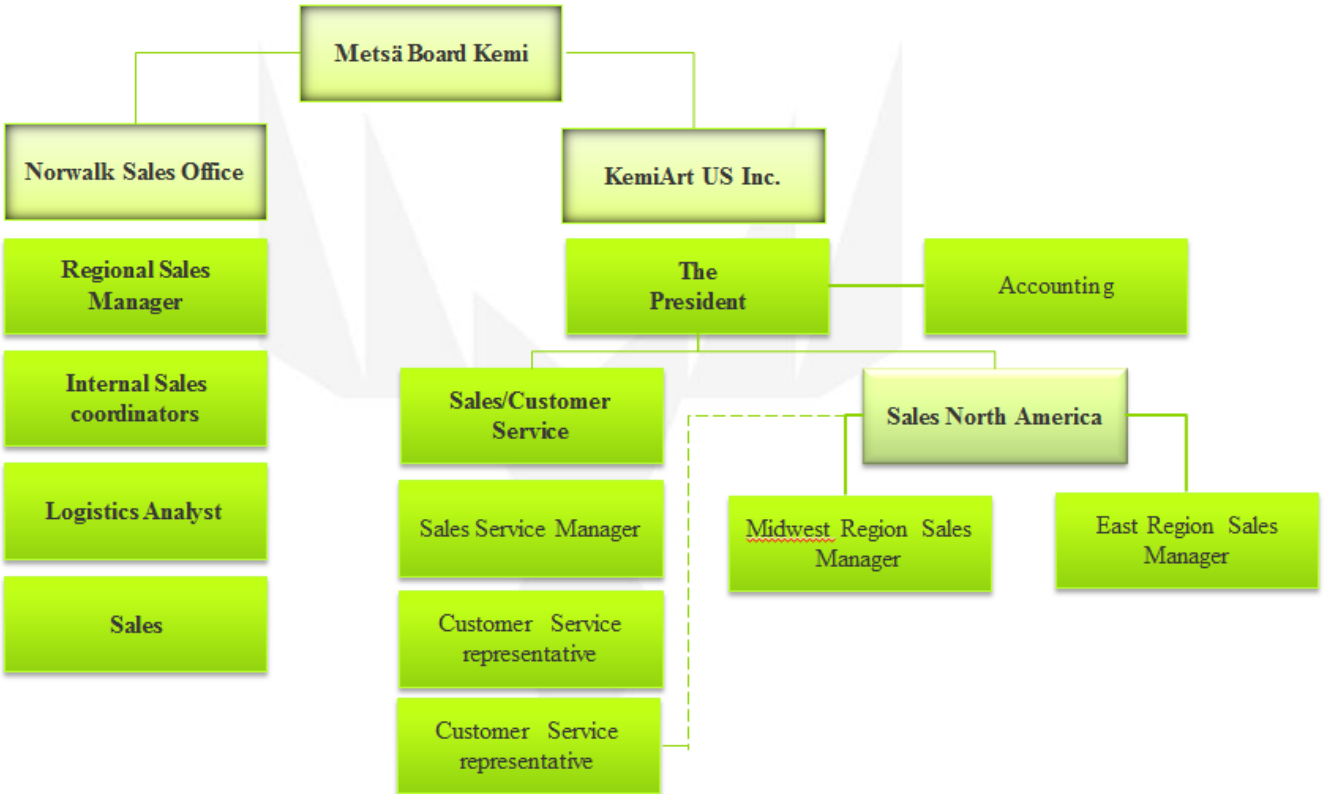

Figure 12. The organization of Metsä Board USA

5.2.3 Market Demand and customer behavior in the US

The key drivers in the US market are based on delivery accuracy, where the focus is good availability. Customer expectations and demand are the critical drivers in the markets. In order to achieve the customer trust, the lead time needs to reliable. High-quality and price are the competitive factors as well, but moreover the technical service and marketing has a significant role in the business. Thus, the company has been willing to invest in needed resources, such as technical support. Customers value the technical services and availability to support customer´s operations by helping them to find the most optimal converting conditions of customer equipment's (Regional Sales Director, 2014c; The President of Metsä Board Americas, 2014f).

Midwest Region Sales Manager (2014e) point out that the accurate forecasting and planning is rarity and just about non-existent, due to ever changing consumer buying trends, economy, product launch success or failure and seasonality. Moreover, mass retailers and Brand owners business is based on "just-in-time" and "hot-orders", which means fast delivery and good availability. Mass retailers demand is based on demand of their suppliers, and suppliers need is based on consumer consumption. Consumers' constantly changing buying habits requires more choices, which is why new packaging solutions are developed all the time. Thus, new products are launched to the markets all the time, as a result of succeed or failure. Offering is large on the shelves, promotions, graphic, and celebrity packing and appeals, where the products can be on Top on the charts one week, and on the bottom the next. In addition, product launches can be a huge hit or a huge failure (Midwest Region Sales manager, 2014e). The customer´s do not want to get stuck with obsolete product so they are conservative at launch start. The product can succeed overnight and then the demand increases rapidly. Consequently, the customers expect the product from the case company overnight, which generates sudden pressures for the stock as well as for the Mill.

The presence of the seasonality is very strong in the business. E.g. Beer and Wine season in heaviest through October, candy season follows the major holidays of Easter in April, Halloween in October, Christmas in December and Valentine's day in February. Midwest Region Sales manager (2014e) note that in addition of the Common stock, the best way to manage the seasonality is using past historical usage figures as a general guideline to prepare for the seasons.

In addition, by tracking the past trends the company can anticipate peaks and get the stocks built up in preparation for the peaks. Moreover, the close communication with customers occurs more frequently prior to the season, in order to be able to be even better prepared. Regional Customer Service manager (2014d) note that the best way to manage the presence of the seasonality is forward planning and forecasting in the extent what is possible, with the aid of sales strong expertize.

Relationship-building process is executed though cooperation with the customers. The customer's portfolio´s support the company to identify the values in the business and facilitates to determine the customer business needs, as well the relationships what the customer may have with other members of their own business group (Regional Customer Service manager, 2014d). The President of KemiArt US (2014f) point out that the company´s own continually analyzed internal control and customer reporting provides the information, which customers really create the value for the company. However, along with the profitable business that the customers bring to the company, there is unprofitable business that has taken. Regional Customer Service manager (2014d) high lights that unprofitable business works to company´s advantage in great level, when the customer recognizes the "help" given to them in securing and increasing their volumes, and thus the partnership grows and becomes stronger, i.e. like a Marriage.

Due to dynamic business nature, the case company´s customers have to react quickly to their customers demand. This causes the burden of prompt delivery for the case company as a Pre-print and Post-print supplier. In Post-print business, large amount of the orders are one time orders from the customer´s customer, and seldom the same size or order quantity repeats. In some level, similar ongoing orders occurs for the same customer but the size will continually change from order to order. In Pre-print segment, the business is for big runners, so the size information generally does not change. However, the volumes and usage may change. The company´s major accounts use the very common sizes, and they can place a very large order in calling the same size all at once (Midwest Region Sales manager, 2014e; Sales Service manager, 2014h). Hereby, the US market is strongly consumer driven. The brand owners are always launching new products, changing graphics, running promotions and offer to lure the consumers, which is why there are an extensive selection of choices available at the retailer level. Therefore, the overall demand fluctuations are very challenging to predict and forecast. Common stock model secures largely part of the business and the market demand, but when sudden demand

peaks occur for the customers who happen to order same sizes, it is challenging to secure the safety stocks for everyone.

The global economic situation has a strong influence in the case company´s business and demand. External factors, such as unemployment, economic development and weather conditions reflect the market demand and consumer consumption and consequently, have a straight impact to competitive advantage. For example in the Beer business, the demand may suddenly increase if the weather conditions will turn warmer. In addition, the fruit business is dependent on weather, and changes can cause sudden demand peaks in the demand (Regional Sales Director, 2014c). Furthermore, The Midwest Region Sales manager (2014e) notes that consumer´s buying habits have changed over the years. The internet has a major impact for the demand for packaging. Consumers order heavily their products from the internet, such as Amazon, and have the product delivered and packaged in a cheap brown box, rather than the same product would have delivered covered by well printed and luxury looked packaging from the store. The vantage of the case company is the target markets, which are not heavily dependent on the internet/E commerce purchasing. Food (Agricultural and Produce), Beverage (Beer, Wine and Liquor) and Personal Care (Baby diapers and wipes) and Household Products (Cleaning Products, Detergents) are the main market segments for the case company, which the consumers purchase from the stores. Regional Customer Service manager (2014d) point out that nowadays the consumers are more aware of their surroundings, which is why their preferences have focused on speed of demand, i.e. how quick the customer receive the product. Consequently, the just-in-time principle is becoming the norm in the business.

According to Regional Customer Service manager (2014d), the customers value delivery accuracy, where the value lies in the capability to deliver the product cost effective rate with respected carriers, on time when the customer needs it. Moreover, the customer values having the necessary service what the customer wants and where the delivery is secured. In addition, customers appreciate the possibility to choose from nearly any size of SKU due to converting service.

The customer behavior in the market is skeptic, which is why it is highly important to maintain the customer trust by good delivery accuracy. The customer expects to receive the products on

time, exactly when promised (The President of KemiArt US, 2014f; Regional Sales Director, 2014c). The customer demand can change rapidly, which requires ability to respond sudden delivery need within short notice. I.e. the Common stock should always possess the right size of reel with reasonable tonnage levels, as well as have the ability to deliver it fast. Thus, the logistics plays a significant role in the business. Logistics Team Lead (2014g) notes that the truck deliveries create challenges because despite the fact that the range of the truck companies is wide, the average age of the drivers is 65 year. Getting new truck drivers on the business is difficult due to nature of the job. In addition, the truck drivers are committed only in profitable deliveries, until the better offer occurs. In other words, the liability to get the truck to pick up the delivery in 100% is rare. Furthermore, delivery accuracy may impair due to vessels volatile sailing schedules. The lead times are relatively long (three weeks), and in addition, the vessels are highly depending on the weather conditions, which can effect on sailing time and cause possible delivery delays. The case company Logistics Team Lead (2014g) note that several factors have an impact to sailing schedule: in long distance travels, "slow sailing" is common in order to save fuel. In addition, the vessel may have forced to make unexpected stop due to sick crew. In addition, the strikes are also one critical factor, which has an impact to business, and it is something where it is difficult to affect. The US market area is wide and the distances inside the country vary a lot. In addition, the sailing time from Finland to the US is relatively long, i.e. three weeks, and the company is operating in hectic just-in-time business. Therefore, the delivery accuracy is the most important factor what the customers in the US value.

The President of the KemiArt US Inc. (2014f) notes that the customer expectations have change over the years. Earlier, the quality was the highest priority, but at the moment, the stock availability is the most important factor, as well as the competitive advantage. The fact, that the customer receives the confirmation from the delivery with a short lead time, is a critical customer value factor. According to Regional Sales Director (2014c), availability is stronger factor than a quality or price. The customers in the US appreciate good service level, filled promises and 100% trust, i.e. the ready-made reels ready at stock with optimal sizes.

Regional Sales Director (2014c) point out that in order to be able to react to the market demand the customer knowledge has a significant role in the business. The nature of the business requires close interaction between the sales and customer, which strengthens the ability to predict the customer needs, and thus, to produce the optimal volumes to the stock as well. Due to skeptical

customer behavior, each customer relationship requires building in deeper level, which means close customer follow ups and regular meetings – many times outside of the work environment. Building the long term relationship requires patience and market expertize, which is why the customer relationship strategies are determined according to market area (The President of KemiArt US, 2014f; Midwest Region Sales manager, 2014e). E.g. Midwest market area requires extrovert and rakish sales, when the East coast customers are more familiar with calm and elegant behavior. Creating the relationship with the customers is the core factor in the business, and it is seen as a personal thing, rather than just a business thing.

The Midwest Region Sales manager (2014e) high light that the most important key factors what the customer values are the consistency of product quality and service. The biggest part of the case company´s service comes from the ability to react to rush orders and the size changes, which only can be achieved by having adequate Common stock in the US.

6 METSÄ BOARD COMMON STOCK- MODEL

This chapter presents the case company´s Common stock supply-model and the business process where the supply model is based on. In addition, the chapter discusses the functionality and performance of the process.

6.1 Supply models in general

The purpose of the re-defined supply models is to increase efficiency of the case company business processes and reduce the company´s net work capital. Moreover, the goal is to strengthen the company´s capabilities to meet the customer requirements from three different aspects: availability, planning and forecasting, and required level of customization. Consequently, the aim of the proper supply model is to improve the delivery reliability and customer experience. The supply models are carefully customized based on specialized customer needs and demands. The supply models are: Direct mill orders, Customer dedicated stock, Convert-to-order, Vendor managed inventory, Consignment stock and Common Stock.

6.2 Common stock supply model

Common stock supply model provides ready-made products from the company´s Philadelphia stock with short lead time but limited choice. Reels are manufactured at the Mill, based on replenishment needs. The replenishment need is identified based on the situation at the stock location: safety stock versus current stock + the stock in-transit – forecast – sales orders – orders to converter. The stock maintains the specified sheet and reel specifications that are always stocked by the company. The stock is based on large amount of stock keeping units (hereinafter SKU´s), where the aim is to maintain agreed safety stock level. The service offers a wide selection of standard SKU´s available for customers to order from stock to respond the short lead time requirements. In addition, the process contains service provider for converting the material to serve the customer needs if the Common stock do not provide the required size. Figure 13 illustrates the Common stock supply model process.

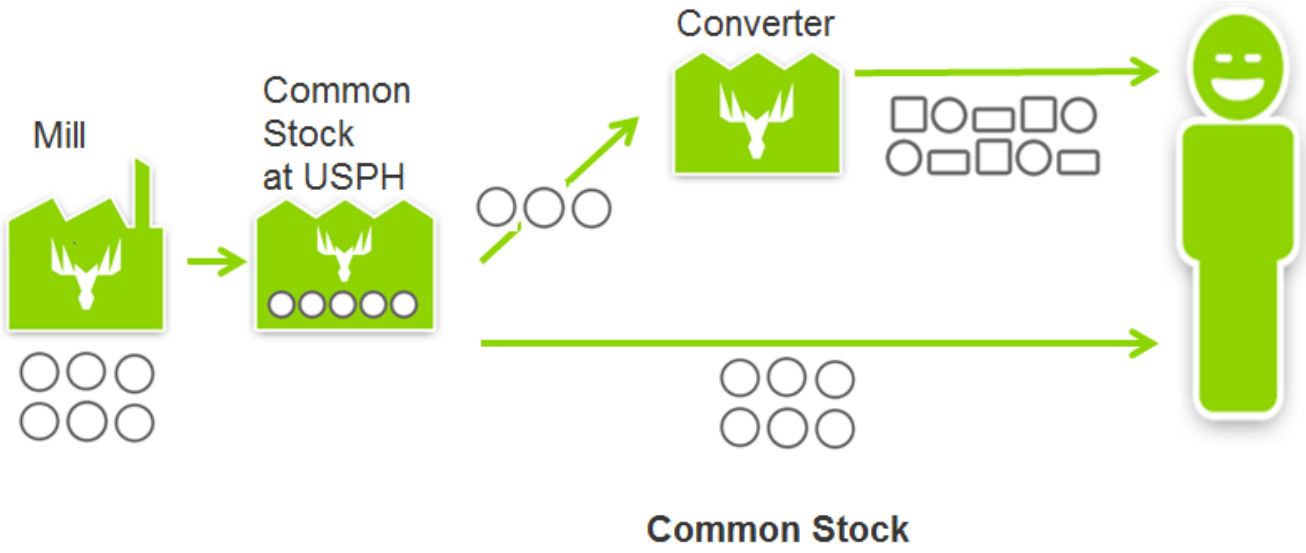

Figure 13. Common stock – Ready-Made Board fast (MetsäBoard 2014i)

The Common stock model is based on make-to-stock process (hereinafter MTS) where the goods are produced to the stock to be sold to different customers. The process is based on automated replenishment fulfillment, where the system background run reflects the demand from the forecast given from the sales to the fulfillment need. The majority of the Mills´ volumes are based on MTS process. The MTS process is illustrated in the figure below.

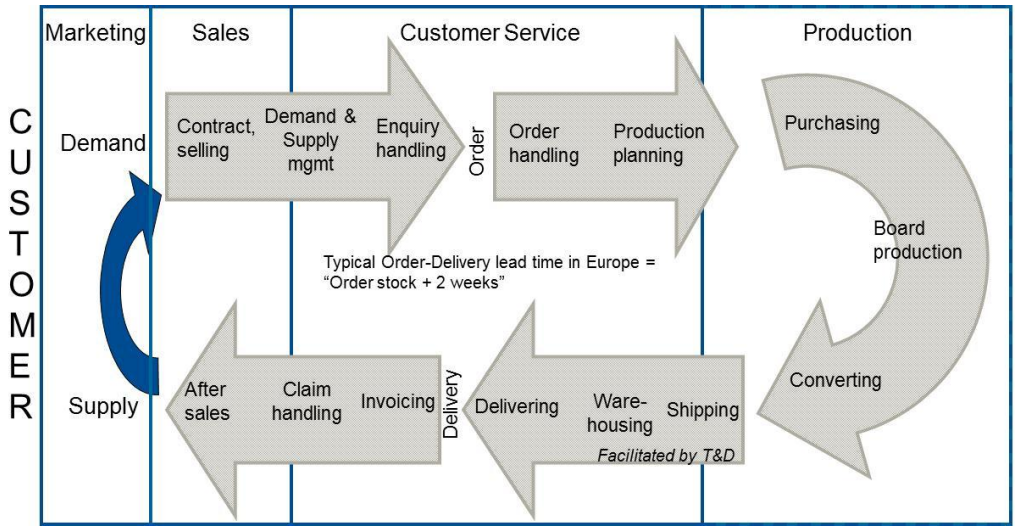

Figure 14. Metsä Board´s Make-to-stock process (Metsä Board 2011j)

The customer's orders are input into the mill, produced primarily in Finland. Converting may be done by the company's own production resources or by sub-contractors, when the Common stock has a stock out from certain size or the customer has a special size request. The US mainly converts their orders via local sub-contractors. The product is delivered mainly through multi-leg logistics chain to the customer.

6.3 Advantages and disadvantages of Common stock model

Most of the local suppliers' don´t have stocks in the US, which is why the customers are forced to order their products from the production, which means longer lead times. The challenge for the local suppliers is the capability to fulfill customer´s ever changing requirements, because the lack of inventory, production cycles are long, and if a customer faces an unexpected order to come in, they are forced to wait for the next production run (Midwest Region Sales manager, 2014e). By having adequate common stock model, the case company´s is capable to capitalize on that policy by having Common stock readily on available. Thus, the Common stock enables company to offer products straight from the stock with shorter delivery lead time. The President of Metsä Board Americas (2014f) supports these findings by noting that the Common stock model is the only way to provide the needed service level cost efficiently.

The US customers value having the common stock available, as this allows that the customers do not have to tie up a large amount of money by maintaining large quantities in their own inventory (Midwest Region Sales Manager, 2014e; Sales Service manager, 2014h). Most of the customer´s do not have an adequate space for storage, which is why they value the service which is based on the customer needs. The customer can cover the need by ordering the product from the Common stock according to given order or weeks usage, versus buying the product from a competitor with month or six week supply. The production cycles of the competitors is four week, and deliver the whole stock produced with invoicing it immediately. The Common-stock enables the customer to order only the volumes they need, and the invoicing is executed against the amount shipped (Midwest Region Sales manager, 2014e). Hereby, in case the customer loses a piece of business, they do not possess an obsolete inventory which has been paid already. Regional Customer Service manager (2014d) comply the Midwest Sales manager by noting that by holding the Common stock SKU´s in term of volume and sizes, the company has ability the

deliver anywhere into the North-American market within a maximum timeframe of six days. Moreover, with revision of logistics model and offering 2 main types of freight, the company is able to execute the Common stock operation the most cost effective and efficient way to the customers. In intermodal deliveries the product is loaded in specific container on top of the truck, and from truck to the train. Delivery time in intermodal freight is slightly longer, but it supports efficiently the truck deliveries.

Midwest Region Sales manager and The President of KemiArt US Inc.(2014f) high lights that because the common stock is capable to offer large ready-made volumes within short notice, it is seen highly invaluable service for the customer. In addition, the Midwest Sales Region manager (2014e) note that by having adequate common stock readily available, the company is able to cut the lead times remarkably, which is absolutely the single greatest reason for the strong succeed and dominant position in the US markets. Competitors in the US markets have tried the similar programs but soon after discontinued. Thus, the common-stock model can be seen as unique in the US markets.

The case company´s core competence is to offer unique service with high expertise. Due to quick inventory turn around, the age of the products is nearly always fresh and operation is cost-efficiency. Thus, the Common-stock allows the customers to react quickly to consumer requirement and increase the case company´s flexibility to adapt to ever changing market demand. However, there are factors which affect to ability to respond the customer demand and the tonnages coming from the Finland. The Europe markets share the same Mill capacity, so keeping the global balance of where the products are going is executed through strategic market allocations. Midwest Region Sales manager (2014e) point out that getting enough production capacity from the Mill to the US demand is challenging. High extra volumes reserve the capacity from the other markets, which is why the sales and operation planning is challenging to execute. In order that the company is capable to manage large volume enquiries and keep the market demand in balance, the prioritization is needed. In addition, planned and unplanned downtimes at the Mill have an impact on volume coordination, as well as vessel planning to the States. Mill production cycles grades every 2 weeks, vessels every 3. Consequently, despite of the fact that the Mill produces more tons for the US market, the tonnages might not get the vessel space. Mass volume coordination and planning for the shipping companies is a challenge as well. Big

vessels require booking well beforehand, and volume changes affect to the vessel type. Logistics Team Lead (2014g) note that keeping the promised vessel schedule is extremely difficult due to several reasons: the strongest impact is the weather conditions, especially during the winter when the vessel can stagnate in the ice. Furthermore, most of the large ocean liners apply i.e. slow sailing, which means slower pace of speed to save the fuel. In addition, crew illness or accidents at the vessel might cause unexpected stopping in another port.

The common-stock supply model enables reliable customer deliveries, because the stock offers full-time availability, and therefore the company is seen as a local supplier in the US market. Competitors have difficulties to get in to the markets, because the delivery reliability requires stocks, where many of the competitors do not have the resources to invest. Therefore, the Common stock model enables the case company to maintain strong position in the US markets. Optimal stock levels strengthen the case company´s competitive position which enables the possibility to be present at the market better than other suppliers. From the customer point of view, the company is in the states, not in Finland. Consequently, it is more local than the locals, which is why the brand is very strong. In addition, the lead time is shorter compared to other competitors due to better availability (The President of KemiArt US, 2014f; Regional Sales Director, 2014c; Sales Service manager, 2014h).

The safety stock levels ensure that the company is able to offer better service to customers without facing stock outs. However, the large amount of SKU´s is challenging to maintain optimally due to dynamic market nature. Despite of the fact, that the US common stock contains nearly 300 SKU units, and because of the nature of the business, new widths and sizes exists all along. The company´s remarkable advantage is the capability to provide any sizes due to external converting, where the product can be converted to meet the size the customer needs. However, using the external converter in great extent is cost-ineffective. Regional Customer Service manager (2014d) point out that the target for the amount of SKU´s is optimal and developed through a great level of sales expertise and knowledge. Nevertheless, the goal is not to increase the levels, but to decrease. That facilitates the managing and maintaining.

7 EMPIRICAL FINDINGS AND DISCUSSION

The main empirical findings of this research are discussed in this chapter. Additionally, the chapter discusses the data related in stock and invoicing, and analyses the results of the common stock supply model in use.

7.1 Results of research

The demand in the US has increased to a wide extent, which is why the new strategic direction is to focus the business even more strongly than today on the North American markets. The company´s strong and well know brand in the US market supports the company´s capabilities to expand its operations. The trademark of the company is extremely well known in the business and among all the suppliers. Thus, the case company has made correct strategic moves by focusing the resources on the development of coordinating and managing the volumes, such as implementing and developing the common stock supply model in the US markets.

The fact that the company is operating in a unique way by maintaining the common stock model in the US has enabled the company to build a strong position in the market. The threshold for the competitors to enter to the US markets is high, as the lifeblood of staying in the markets is the inventory maintenance. Maintaining the inventory requires recourses to a large extent, as well as huge investments, which is why several competitors have failed in the long-run.

The case company has been able to respond to the customer demand extremely well mainly for two main reasons as follows: the common stock and external sales company KemiArt US Inc. The common stock including the most regular and partly specified product sizes has secured the company´s capability to respond to ever changing customer needs. Furthermore, through external converting where the product is modified to meet the customer needs, the company has been able provide nearly any size of product from the stock. Thus, the common stock operation is seen as an excellent service from the customer´s point of view. The nature of the business is based on “hot orders”, where the demand requires fast deliveries. The delivery accuracy plays a critical role in the business, as the Pre-print and Port-print nature is highly dynamic and variable.

Consequently, the customers value the delivery accuracy and reliable business. The customer nature is skeptical, and building the long-term relationship with the customer requires a great efforts. Therefore, earning the customer trust is the golden case. Serving the customer by fulfilling the customer requirement and delivering the products on time, the company provides high level availability, which is again good service and valuable a value factor for the customer.

The strong seasonality and constantly changing customer requirements in the US market segment place a strong challenge to forecast the future needs beforehand. Despite the fact that the usage of historical figures provides some level of general guidance, it does not tell the volume size or how strong the product´s size variability is. The seasonality can change due to several reasons, e.g. the weather can be warmer or colder, which has s straight impact on beer business. The customers buy less or more, and that leads to the fact how many beer boxes are needed. The cruel fact is that the Brand owners guide the business, as their power as a large volume supplier is huge. The company´s customers, i.e. Pre-printers and Post-printers, are heavily dependent on what the demand of the Brand owner is, and Brand owner is dependent on what the Mass retailers order. Therefore, the forecasting in the market segment is extremely challenging. Figure 15 illustrates the order/customer relationship chain.

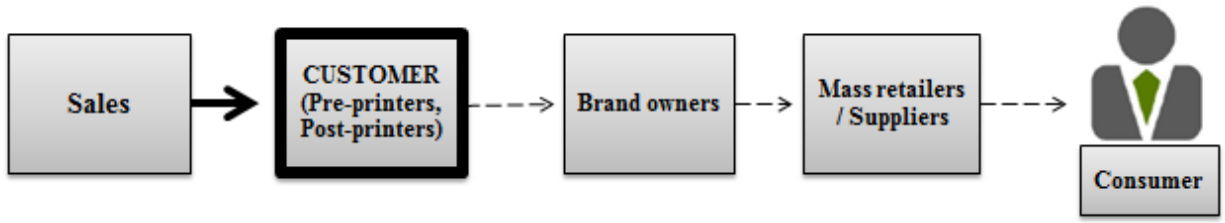

Figure 15. The order/customer relationship chain

The case company´s customers are the Pre-printers and Post-printers, who receive their orders from the Brand owners. The final consumer is the customer of the Mass retailers and Brand owners. In order that the case company´s customers are able to provide the accurate forecast, the Mass retailers should know how much the final customer is going to consume. Moreover, the Brand owners guide the business, and they may have several alternative suppliers. Thus, having the forecast from the Pre-printers or Post-printers is behind of chain reaction, affected by several

factors. In addition to weather conditions and seasonality, buying trends, economy and product launch success or failure have a strong impact on demand. Consumers may buy less, they may switch to lower cost that have less attractive packaging that does not use the case company coated grade. Moreover, as the US market is heavily consumer driven, the brand owners are always launching new products, changing graphics, running promotions and offering alternative choices to the customers. As a consequence, the case company´s customers are able to forecast their "general best guess" for the demand. Therefore, the history data do not always provide the data for decision making for future actions and S&OP

The figures clearly expose how volatile the market demand is. In 2012, the demand peak falls for both customers in time line from June to autumn i.e. September and October, and typifies the low demand at the beginning of the year as well as on December. Major part of Pre-print business customers are big runners, where the size generally does not change. However, the usage and volume can vary strongly, as the statistics shows. Despite of the strong downturns, the volumes have increased from 2012 to 2013 for both customers, especially for IP. The future indicates even higher volume demand, which sets pressures to provide the adequate service level when the demand peaks hit. Unfortunately, the case company´s three major Pre-printers all use very common sizes, where they can place a very large order calling for same size at once. Therefore, the more accurate forecasting is extremely important.

However, there is a light at the end of the tunnel. Due to importance of the relationship with the partners, both parties have the understanding that the better transparency increases effectiveness and even better availability. Based on writer´s observation and information gained while visiting in the US and seeing the customers, the customers are able to predict the demand in certain level by utilizing their long-term customer relationships with the Brand owners. The case company´s customers are able to improve their operations by paying more attention in historical data, as well as increasing the cooperation with the sales company, which facilitates the order planning and volume managing. Constantly changing customer buying habits create more choices to the markets, and consequently, a lot of product launches which can be a huge hit or huge failure. Therefore, the brand owners are forced to react quickly to their customer demands. Despite of the fact that the Common stock and safety stocks allow to accommodate the demand and provide a service, the utilization of the converter is relatively large. Having an opportunity to co-operate with a service provider for converting the material is an advantage for the Case Company.

Furthermore, utilizing converter services broadens the SKU flexibility. However, the optimal usage for the converting is to response small and fast demand when the Common stock is not capable to offer proper size. Running converting usage decreases the efficiency and in long-term, the profitability as well. Therefore, the interest of the customer as well as the case company to have exactly the right size product from the stock without slitting/converting is high. Moreover, it creates the motivation to pay more attention to future needs, and facilitates to develop the optimal availability at Common stock.

KemiArt US Inc. has a great role in building the business in the US markets. Having the sales in present where the customers are is highly valuable factor. The expertize level of the KemiArt US Inc. has addressed the ability to capture the US customers strongly in Kemi business. The case company´s name is strongly present in the market and due to high quality and excellent availability the customers are willing to use company´s products. Customer's skeptical attitude to buy the product all the way from the Finland does not exist, because in customer eyes the company locates in the US, not in Finland. The KemiArt US Inc. has created strong and firm relationships with the customers, which are valuable especially at times when the business might face challenges. Reliable and long-term relationship with the customers forgives the potential problems and facilitates the business to cope with the problems without the loss of customers.

7.2 Data related to the demand and invoicing in use

Sharing the strategic market allocations globally with the other markets in the business is a challenge for the US as well as for the case company. Keeping the balance in a set-up where every market is served according to demand, cause pressures and affects to the volumes allocated to the US markets.

The report clearly shows that the case company has been able to respond in largely part to the customer demand in the US. Most of the time the volumes have exceeded the budgeted level and the difference in months which remain under the budget is not remarkable. However, the situation indicates that there always seem to be more room for the demand. Several factors may have an impact why more the tonnages are not allocated to the US. Despite of the high demand, the Mill machine capacity is still the restrictive factor, as the daily production is limited and

shared by many markets. Keeping the all markets served in full extend is a challenge and requires prioritization in many market level. Three weeks delivery time from Finland to the US does not allow an invoicing and supplying to go hand in hand. The volumes produced on May and delivered on end of May, might have the customer order on June, denoting that the invoicing logs for June. Therefore, when reviewing the situation analysis in monthly basis, the supply and invoicing gap needs to be taken into consideration.

Furthermore, the figure explicitly express that the US demand is increasing evenly, which supports the strategic direction; The North American market as a primary focus. Therefore, the sales invest to the markets requires even greater efforts, which mean larger allocations from the Mill to provide additional volumes to the US markets in a level the market demand requires.

7.3 Advantages and disadvantages of common stock in use

Like find out earlier in this research, the lead time and availability are the most critical and beneficial factors in the US, which is why having the Common stock in the US is the cornerstone for the case company´s great succeed in the US markets. In order to survive in the US business and being able to respond the dynamic Pre-print and Post-print demand in the US markets, the company needs to able to offer short lead time and good availability. Having adequate stock readily available cuts the lead times from 6-8 weeks (from Finland to the US) to 4-5 days from receipt order. In addition, lack of accurate forecast by customers and customer´s customers enable the company to response the ever changing demand via common stock and provide service no others will offer. However, the lack forecasting sets the burden for safety stock program.

The US Common stock contains nearly 300 SKU´s, providing a large range of popular product sizes to meet the customers rush demands. The minimum safety stock levels for each SKU ensure that there are no stock outs, and Common stock availability is secured. However, in order to maintain the most optimal safety stock level in Common stock, more accurate forecasting from the customers in needed. More accurate forecasting enables Mill to produce optimal fulfillments to the common stock. The fact, that ordered volumes per one go are massive, creates a challenge for the common stock. Big accounts may use the same sizes and the demand peaks

leads easily to stock out. A succeed of product launches and customer trends are difficult to predict, and therefore the forecasting for +18 months is extremely difficult. However, some level forecast in shorted time span, e.g. +8 month, would maximize the availability in times when the demand peak hits unexpectedly.

The ideal stock size is calculated in a way that product rotation is optimal and corresponds for to a month´s supply. An average stock level ensures that the level covers a large part of the demand without slow move products. Moreover, due to relatively long shipments cycles, the optimal fulfillment size adapts the fulfillment cycle with the deliveries the most efficient way. Figure 19 illustrates the basic formulas for the data behind of the common stock process.

$$\text{Average stock} = \text{minimum stock} + \frac{\text{fulfillment size}}{2}$$

$$\text{Fulfillment size} = \frac{\text{annual sales}}{\text{shipments per year}}$$

Figure 19. Average stock and Fulfillment size

The large amount of SKU´s designates a large amount of fulfillment lots from every production run. Wide range of SKU´s sets challenges for managing. The demand fluctuations per SKU can vary, so the more stock keeping units exists, the more accurate forecasting is needed. Figure 20 presents the safety stock levels and free stock levels for certain SKU´s. Certain SKU´s possess higher safety level compared to others, based on demand. Free stock contains the tonnages available in stock, as well as the tonnages in transit, i.e. in the vessel or port. The table indicates good stock levels, showing approximately double tonnage levels available. However, as part of the tonnages is in transit, the current amount at stock is lower. Due to three weeks delivery period, the pipeline contains high amount of orders which can be in transit, at stock in Finland or the US, in the production or going into production. Therefore, taking into consideration the lead time from Finland to the US, the safety level needs to be optimal.

As the business is heavily affected by trends and seasons, the safety levels also operate as a general guideline to prepare for the certain seasons and works as an anticipating tool for the demand peaks. Therefore, the stock levels are built up to support the company´s abilities to respond to the demand peaks. Thus, the more uncertain the demand level is, the more attention the safety stock level requires. However, too high safety stocks result high inventory costs and may have a critical impact to business.

As the safety stock model in Common stock in the US is new, and the volumes are massive, the safety stock is utilized as a strategic tool until the time when the company is capable to determine how accurate the forecast is, after the first few years. Consequently, the main priority is to find the balance in the stock levels, where the demand is fulfilled without maintaining too heavy stocks but nevertheless providing the most optimal safety levels. Moreover, in order to be able to respond successfully to the demand peaks, certain SKU´s require more attention and managing compared to others. However, despite the potential costs of inventory, the beneficial strategy for the start is to provide high stock levels and ensure that the demand is secured. Once the demand becomes more predictable, the safety stock levels can be modify to meet the actual demand.

8 PROPOSAL FOR IMPLEMENTATION OF ADDITIONAL SUPPLY MODELS

The case company cannot avoid the uncertainty in the US markets. The nature of the business is highly dynamic and demand peaks are more the rule than the exception. Despite the fact that the company has been able to respond relatively well to the market demand in the US, the demand fluctuations cause peaks in safety stocks, causing pressures to provide adequate stock in certain SKU levels for simultaneous orders. Having an accurate forecast from the customer is a challenge, but not impossible. The company has a long term big accounts where the historical data provides certain guideline for the product variety.

The customers in the US value good service level, where the availability is one of the core factors. The fact, that the big accounts would always have a certain amount and certain sizes in stock on hand and dedicated only on their use, would definitely improve the capabilities to respond and manage the demand peaks more effectively. The customer dedicated stock –supply model is based on a service, which allows customer specified orders to locate in common stock facility for a later delivery. Furthermore, the supply model fits for a sufficient and regular business volume. However, the supply option requires service level agreement, which contains the basic guidelines for the supply option, such as specific products, the warehousing period and constraints as well as the follow-up. As the common customer behavior in the US is skeptic, signing the contract requires extremely good ground work and expertize with the customer. Based on the observations and discussions with sales, operation with the customers is based on trust and long term relationships, where the major part of the business is based on hand shaking and verbal agreements. Hence, everything goes smoothly as long as no one brings up the paper for a signature. Nonetheless, providing better service through secured availability most likely has a positive impact to contract signing as well. Thus, combining the customer dedicated stock and common stock in the service portfolio would increase the customer value remarkably.

Consumer packaging business, where the case company operates is seasonal, where the volume peaks can exceed even the production capacities. In contrast where the goal of Common stock is to provide large safety level for large amount of SKU´s, the seasonal stock contains a group of stock keeping units which share the same demand capacity. Generally the case company has the

knowledge and expertise to determine when the demand peaks are in prospect. E.g. Beer and Wine season is heaviest from April to October; Halloween is on October, followed by Christmas in December. Therefore, the seasonal stock containing specific sizes would support the Common stock to provide the necessary service level in highest demand season. Figure 21 illustrates the determination of the seasonal stock.

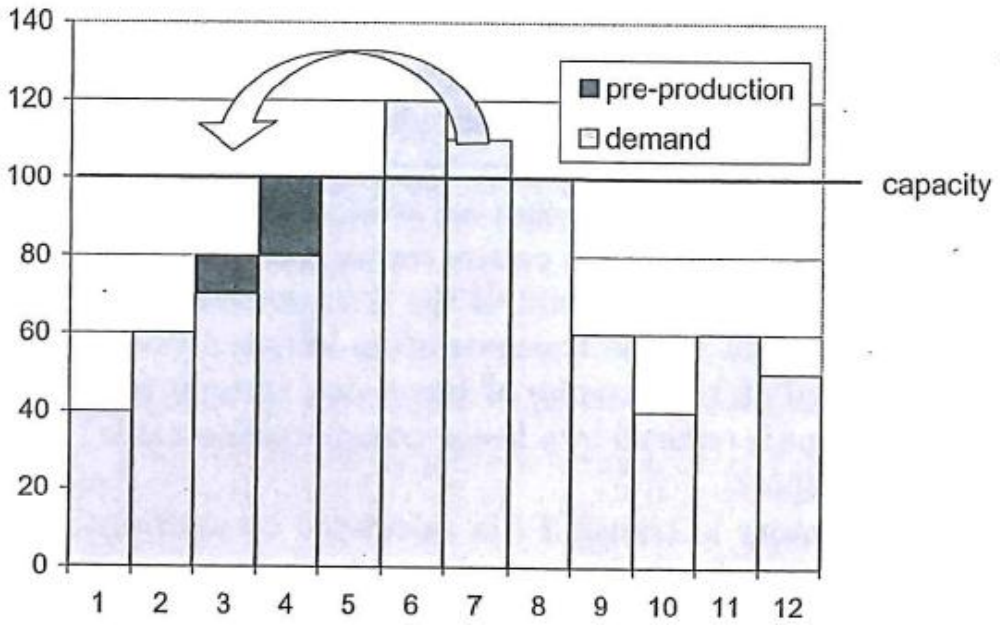

Figure 21. The determination of seasonal stock (Stadler & Kilger 2008)

Stock levels in time periods before the demand peak are low in order to avoid inventory costs. The seasonal stocks are built up gradually in periods 3 and 4, and utilized to fulfill the demand in periods 6 and 7. Reasonable pre-production before the season peak would prevent the bottlenecks from the Mill production as well as facilitate the production planning by balancing the capacities in a comprehensive way. Thus, every main account of the case company would be highly served especially during the seasonal peaks, despite of the long lead time from Finland to the US.

9 CONCLUSIONS

The objective of the research was to explore the US market demand and strengthen the Case Company's ability to respond the US customer requirements. Furthermore, another objective of the thesis was to examine the Common stock- supply model and study how well the supply option fulfills the specific market requirements. Lastly, for the development purpose, the third objective was to identify the factors which impede the demand forecasting in the US markets.

According to several researches, successful Supply Chain Management requires abilities from the companies to adapt their strategies to the dynamic business environment. In order that the real market demand is identified, the companies need to focus on customer demand and expectations. Therefore, the key of the successful business is customer understanding and identifying customer needs (Langabeer & Rose, 2001; Hilletofth, 2011; Bustinza et al. 2013). The Case Company's strategy has become increasingly customer-oriented, and focuses on seeking new market segments especially from the North-America, where the company clearly has opportunities to expand.

As third of the case company´s volumes goes to the US markets, the US role in the business is significant. In order to be able to provide the real value to the customers, the Case Company need to focus on key business drivers and key activities which drive the product the customer. Therefore, the Case Company´s input and resources committed in the US supply chain should be the same level as the market volume share. Development of the Common stock –supply model clearly strengthens the efforts to consolidate the market-leading position in the US markets. However, the focus to identify the real customer demand is increasing and has remarkable role in the business. Increasing customer demand and uncertain competition force companies to change their strategies from production-focused business to the customer-focused strategy, and strengthen their abilities to match the supply to demand (Gensheng & Deitz, 2011). The market demand in the US is demanding, where the requirements for the delivery lead times are tightened increasingly. Customers in the US value increasingly fast and reliable deliveries, where the availability plays a major role. The case company has responded these needs by developing and re-designing new supply options, i.e. Common stock –supply model to meet the market demand. However, in order to obtain the necessary capability to respond the customer needs, it is critical to identify the real market demand and reasons behind the market behavior.

The interviewed managers in the US expressed their point of view that the case company´s Common -stock has given the case company to an opportunity to be physically present in the US markets, which is absolutely the most notable reason why the company´s position dominates in the US market. In addition, remarkably well-known Brand name has provided enormous competitive advantage to the Case Company and strengthened the position in the markets even more.

Volatile markets set pressures to develop efficient ways to manage and coordinate the supply chain and fulfill customer demand with good availability (Mentzer et al. 2001). In the US, the domestic competitors do not have an opportunity to maintain the stocks, which is why the Common -stock is the most powerful competition advantage for the case company. The company has been able to respond to the US market demand well despite of the seasonality. The lead time from Finland to the US is too long for Pre-print and Post-print business, where the fast deliveries are needed and good availability required. Thus, the Common stock has enabled the company to achieve unique reputation as a local supplier, as the ready available Common stock model has dispelled the skepticism, and from customer point of view the company locates in the US, not in Finland.

The competition in global market is heavily based on performance, where the ultimate goal is to fulfill the customer expectations with good availability and accurate delivery, i.e. role of supply chain is remarkable (Mentzer et al. 2001). The increasing US market demand has forced the case company to focus even strongly on service levels and supply options, and develop the ability to respond to the demand even more effectively. Therefore, improved customer understanding is needed in order to identify the real customer needs. Since the seasonality is a major force in the markets and something that is always present, the company is better placed in managing the demand by focusing on safety stocks. Ready-made and always available service portfolio, including a large range of SKU´s facilitates and simplifies the S&OP and follow up. However, finding the most optimal safety stock level to serve the customer demand is a challenge due to lack of forecast. This is the point where the importance of the market knowledge rises up. Customers drive the markers and market demand, and therefore the consumer demand is the ultimate driver and goal for supply chain (Hines 2003; Langabeer and Rose 2001).

Even though the S&OP has been able to provide and allocate the required tonnages to the US markets, the increasing demand sets pressures on balancing the allocations globally. Therefore, increased accuracy in forecasting is needed. The customer´s customer relationship causes the complexity to predict the demand. The fact that the case company´s customers do not know their customers exact demand sets challenges for precise forecasting. The fluctuations in the markets are unpredictable and may cause a sudden need to case company´s customers to serve their customers. When the need occurs, the customer needs the product, and unless the case company is not able to provide it, the customer buys it from the competitor. Thus, the availability is the key to long-term relationship with the customers.

A good understanding the nature of demand and customer, endorses supply chains ability to provide the real value to the customer (Walters 2006). Increased accuracy in forecasting requires understanding the current market demand and behavior. The case company can improve its efficiency by utilizing the US sales company´s knowledge and long term customer relationships to determine the real customer demand. The sales in-depth customer knowledge reduces the risk of customer loss. Co-operation with every member of the supply chain is highly critical. More transparency between the US sales and supply chain is needed. The fact, that the case company has a separate sales company, i.e. KemiArt US Inc., operating in North America, is highly valuable and beneficial. The principle "The locals know how to locals are handled" is valid in this case. The prerequisite of success in the market is to be present in the market - 24/7. The US sales have close-hand market information available at all time, but currently this has not been utilized enough in the company. Especially at this point of the supply chain development, close communication with the US sales is highly important. Strengthening the co-operation between the sales and supply chain would increase the efficiency of the whole US business. Therefore, regular, close and ordered co-operation between the sales and supply chain is crucial. Moreover, focusing on real market demand and integrating it into value chain, strengthen the focus on final customer demand and expectations.

The seasonality in the US remains in the markets and, therefore, the alternative supply options would increase the Common stock service level. Forecasting the consumption at monthly level is difficult, but since the demand peaks always occur, the historical data provides the information when the demand peaks occur based on the seasons. Having certain sizes always available and

dedicated for the major accounts would increase the service level, but also sets the interest for the customer side to keep the turnover in optimal in order to avoid storage costs. Customer dedicated stock as a supply option would strengthen the trust of the customers to always obtain the basic demand available. Moreover, the commitment level becomes even higher from the customer´s point of view as well as the company´s point of view, as the customer interest in forecasting its own needs become increasingly important. Thus, the customer dedicated stock would bring about additional value for both parties, i.e. to the case company and the customer.

Another supply option is the seasonal stock. Maintaining the seasonal stock would allow building the stocks gradually, without sudden pressure to the machine. From S&OP point of view as well as the Mill production capacity, preparing for the demand peak would go smoothly due to gradually produced volumes, and consequently facilitating the vessel capacity planning as well. However, the accurate volume level at hand in seasonal stock is sensible, as changes in customer behavior may change and cause overstocking.

As the safety stocks in Common stock supply model are in such an early stage, the forthcoming year shows where the safety stock levels are needed to determine. In order to have every individual SKU to respond fully to customers just-in-time orders, the safety levels should be adjusted to cover the basic needs. Aggregate planning ensures that the company has better capabilities to adapt in and maintain optimal stock levels (Crum & Palmatier, 2003). Currently, due to inaccurate forecast, the safety levels require a lot of manual monitoring from the supply chain point of view. In order to have the capability to modify and manage the volume flow in efficient way, good transparency and communication between the Mill Supply coordination and the US sales is crucial. Maintaining too wide a range of SKU´s is not beneficial and hampers comprehensive managing. In order to find the balance between stock levels and real market demand, the utilization of the US sales strong market knowledge and expertise is needed. Most likely, as soon as the optimal stock levels have been determined, the amount of the SKU´s will decrease and optimal volume flow is adjusted to meet the real demand. Thus, the Supply coordination, S&OP and knowledge of the real market demand should go hand in hand and should always be reviewed equally.

Well-functioning and efficient logistics is a prerequisite for accurate supply. Long lead time from Finland to the US sets a place for a research for the future developments to have shortened lead time to the US, e.g. to have the vessels to the states every second week. In addition, there is room for an additional research to explore the viability to set another warehouse in the Midwest area to serve the major customers. As the major accounts locate in the Midwest area, closer Common stock could enable lowered transportation costs and smoothened transportation planning, and in addition, faster deliveries.

Based on research findings and writer´s own work experience, can be conducted that managing and coordinating Common stock –supply model requires strong market understanding and ability to interpret the market demand. Moreover, in order that the most optimal stock levels can be determined in effective way, the business´ expertise of the US market area is the base for the development. The main reason behind the complex forecast is the customer chain behind the Case company´s customers, which is why having an accurate forecast is a challenge. However, closer co-operation with Sales and Supply coordination would enhance the Common stock service offering and future development.

As a conclusion, there is a room for continuous improvement for the US customer insight knowledge, which is why the US sales function should be linked stronger to the supply chain to provide the real demand information for the whole value chain. Moreover, the supply coordinator should have more active role for analyzing regularly customer behavior and demand in the US environment. However, despite that determining the correct stock levels are built slowly, the development of Common stock-supply model provides excellent opportunities to expand the business in the markets.

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APPENDICES

APPENDIX 1(5): DISCUSSION TOPICS FOR INTERVIEWS

Strategy

1. Focus on North American market – How would you see the company´s current position in the US market?

2. What is the strategic direction and focus for specific products in the US?

3. What are the key business drivers in the US markets?

4. How well the company has been able to respond to the customer demand in the US market?

5. How the overall competition and macroeconomics in forest industry has changed, and how well the company has been able to link these factors to predict and manage demand?

6. From the business growth perspective, how the company is able to predict the market demand patterns and how the product positioning in profitable markets is executed?

7. In your opinion, why do we need Common-stock –model in the US?

8. What are competitive advantage factors we´ll get through the Common -stock model?

9. From the future point-of view, are certain actions or developments needed in Common-stock model, in order to maintain the competitiveness in the market?

10. What are the main factors which will influence the market demand and in your opinion, what is the best way to be prepared for demand fluctuations?

11. What are the key factors in the Supply Chain for the US which will increase the customer value?

- >from the delivery point of view?
- >from the service point of view?

Tactical

1. Why do we need Common-stock in the US?

2. Is there something what we can offer more or execute better compared to other suppliers?

3. Do the customers communicate their order schedules and future demand plans on regular basis?

4. What are the main reasons for demand “errors”, when the demand will not meet the forecast?

5. At the moment we have more than 250 SKU´s on hand at the warehouse; how the future looks like? How the amount of new SKU´s has developed over the time?

6. How the consumer demand and preferences have changed over the time?

7. What is the best way to manage the presence of the seasonality?

8. What are the main values in services that the Common-stock offers to the customer (e.g. time, quality, and price)?

9. What is the most important service what the customer values the most?

Operational

1. What are the main reasons for the demand fluctuations?

2. Is there any way how could we improve our capability to respond the demand fluctuations?

3. What facilities the common-stock needs to possess, in order to maintain agreed stock levels and efficient reel turnover?

4. How the company can achieve more accurate forecasting and through that to increase the delivery accuracy to the US?

5. Are there any kinds of bottlenecks within this process?

Sales

1. How would you see the company´s current position in the US market?

2. How well the company has been able to respond to the customer demand in the US market?

3. In your opinion, why do we need Common-stock –model in the US?

4. In Common-stock concept, what are the external factors (markets/competitors etc.), which will influence in our competitive advantage?

5. What are the key factors in the Supply Chain for the US which will increase the customer value?

- >from delivery point of view?
- >from service point of view?

6. Do the customers communicate their order schedules and future demand plans on regular basis?

7. How the consumer demand and preferences have changed over the time?

8. How well the customers are able to forecast their consumption and product needs?

9. What is the best way to manage the presence of the seasonality?

10. What is the most important service what the customer values the most?

Warehouse

1. What are the benefits of the common-stock model and is there something what we offer more or execute better than others?

2. What are the main issues/problems in logistics point of view?
->e.g. knowledge of the overall situation, truck deliveries, planning the truck deliveries

3. Do you have enough delivery capacity e.g. trucks in sudden demand requirements?

4. How often the warehouse face problems (i.e. missing reels, wrong information, damage issues)?

5. How accurate the vessel schedules are? What are the reasons for the delay?