CUSTOMER VALUE EXPERIENCE IN ORDER-TO-DELIVER PROCESS

Case: UPM Plywood

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ABSTRACT

Due to intensifying global competition, manufacturing companies are facing challenges to stand out in the markets. Simultaneously, industrial competition has become more and more evident between supply chains. This means that companies target in providing a better service level since the order-winning criteria are especially related to service, not only product features. To understand the customers' service requirements, research of customer value experience and related quality factors is needed.

The objective of this thesis was assigned by UPM Plywood, one of the leading plywood manufacturers in the world. The case study aimed to find out which order-to-deliver process quality factors are generally mentioned in the existing literature and what the company's customers consider the most important attributes of their order-to-deliver process value experience. The final aim was to create guidelines for the company to adapt its operations to meet customer requirements better.

The thesis applied qualitative methods to conduct a literature review and a quantitative e-mail survey to collect data for the case study. The findings in the literature section were used in the creation of the e-mail questionnaire form. The questionnaire was sent to 11 customers in one market area, resulting in receiving 10 replies. The data analysis phase applied the methods of descriptive statistics.

As the result, delivery reliability, good product availability and fluent communication and cooperation appeared to be the most important features of customer value experience. Accordingly, the supply chain management focus should be on constant delivery reliability improvement, including relationship management with the customers and third parties and upgrading the product availability through improved cooperation. Enhancing collaboration provides a good baseline to improve the other features. The study results also suggest guidelines that might assist in the formulation of new customer-oriented performance measurement systems or customer satisfaction surveys.

Keywords: order-to-deliver process, customer value experience, value chain

Lahden ammattikorkeakoulu
Liiketalouden koulutusohjelma

KARPLUND, RIIKKA-EMILIA: Asiakkaan laatukokemus tilaus-
                            toimitusprosessissa
                            Case: UPM Plywood

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TIIVISTELMÄ

Teollisuusyritysten erottautuminen kilpailijoista on jatkuvasti haastavampaa kiihtyvän kansainvälisen kilpailun vuoksi ja samanaikaisesti kilpailu on siirtynyt yhä vahvemmin yritysten toimitusketjujen välille. Koska asiakkaat valitsevat toimittajansa tuoteominaisuuksien ohella myös palvelun laatutekijöiden perusteella, yritykset pyrkivät jatkuvasti parantamaan palvelutasoaan. Jotta asiakkaan palvelutarpeet voitaisiin huomioida, asiakkaan laatukokemus ja siihen vaikuttavat tekijät tulisi ensin kartoittaa ja tunnistaa.

Tämän opinnäytetyön toimeksiantajana toimi UPM Plywood, joka on maailman johtavia vaneri- ja viilutuotteiden valmistajia. Tapaustutkimuksen tavoitteena oli kartoittaa, mitä tilaus-toimitusprosessin laatutekijöitä kirjallisuudessa esiintyy ja selvittää, mitkä näistä tekijöistä case-yrityksen asiakkaat kokevat merkittävimpinä tekijöinä osana tilaus-toimitusprosessin laatukokemusta. Tulosten perusteella tehtiin tilaus-toimitusprosessin kehitys- ja jatkotutkimusehdotuksia yritykselle.

Työn kirjallisuusosiossa hyödynnettiin kvalitatiivisia tutkimusmenetelmiä ja empiirisen tapaustutkimusosion aineistonkeruumenetelmänä oli sähköpostikysely. Kirjallisuusosion tuloksia hyödynnettiin kyselylomakkeen laadinnassa. Kysely lähetettiin yhden myyntialueen 11 asiakkaalle ja vastauksia tuli 10. Kerätyn aineiston analysointi suoritettiin kuvailevan tilastoanalyysin keinoin.

Toimitusvarmuus, hyvä tuotesaatavuus ja sujuva vuorovaikutus ja yhteistyö nousivat asiakkaiden vastauksissa tärkeimmiksi laatukokemuksen elementeiksi. Tulosten perusteella voidaan päätellä, että yrityksen toimitusketjun kehityksessä etenkin toimitusvarmuuteen liittyvät tekijät tulee edelleen huomioida. Yhteistyötä sekä asiakkaiden että kolmansien osapuolien kanssa tulee jatkossakin kehittää sekä varmistaa hyvä tuotesaatavuuden taso. Yhteistyön parantaminen antaa hyvät lähtökohdat muiden laatutekijöiden kehittämiselle. Tutkimuksen tulokset antavat perustaa uusien menetelmien ja mittareiden luontiin, jotta toiminnan laatua voisi jatkossa tutkia asiakaslähtöisemmin.

Asiasanat: tilaus-toimitusprosessi, laatukokemus, arvoketju

CONTENTS

1 INTRODUCTION

1.1 Background and literature

Industrial competition has increased between supply chains, and in today's business companies face several challenging demands. Hence, they constantly aim at improving their customer service level and at the same time reducing the costs. (Groznik & Trkman 2012, 1102.) However, logistics services have suggested having even more influence on the company's performance than the cost aspect (Kotzab, Seuring, Müller & Reiner 2005, 183; Christopher 2011, 35). Olhager and Selldin (2004, 353) found out that in a supply chain the primary priorities for the supplier and partner selection are quality-related issues. They also suggested that the customer's role in supply chain planning and control is even expected to increase.

The uncertainty of the markets, unstable energy price levels and intensifying global competition force the international companies to constantly seek strategic and operational competitive elements (Mendes 2011, 1-3; Groznik & Trkman 2012, 1102). Manufacturing companies are facing challenges to be distinguished from the competition and make themselves unique. One solution is to seize the opportunities provided by supply chain management and to target in providing better service level (Scott, Lundgren & Thompson 2011, 10-11.) In today's business, the order-winning criteria are especially related to service, not only product features (Christopher 2011, 16; Finne & Holmström 2013, 26).

Over the past 30 years, the emphasis of supply chain management has moved more and more towards strategies that increase the value experience of the customer (Christopher 2011, 10). Still, a common inefficiency even among large global companies' supply chains has been the incapability to adapt their supply strategies and operations into the customer needs (Mendes 2011, 3). Examining what value the customer is looking for is the first step in developing a suitable mix of services to meet

customer interest. The implementation of this process requires that the customer's value chain components are first recognized and understood. This is especially important in developing long-term customer relationships. (Hollensen 2004, 95; Baxter 2008, 27.) Christopher (2011, 40) suggests that the research of the logistics service needs of the customer starts from identifying the key components of the service, followed by finding out the relative importance of the components from the customer perspective. Still, when it comes to order-to-deliver process quality improvement, it is not adequate to only recognize quality factors but also follow up the actual quality level with relevant measurement tools (Salo & Hanski 2009, 16).

The objective of the thesis was assigned UPM Plywood. UPM Plywood is one of the leading plywood manufacturers in the world. The end-use of the products is mainly in the construction and vehicle industry, but also in liquid natural gas (LNG) shipbuilding, parquet floors and furniture (UPM 2018). The subject of the study arose from the case company's need to gain new information about customers' quality mindset, concerning certain supply chain operations. The primary presumption was that examining the customers' mindset regarding the quality factors of UPM's order-to-deliver process can generate valuable new information for the needs of supply chain management and development.

1.2   Purpose of the study and limitations

The study aims to find out what order-to-deliver process quality factors are generally mentioned in the existing literature. Further, based on this information, the target is to find out what the case company's customers consider the most important parts of their order-to-deliver process value experience. The final aim is concluding guidelines for the case company to adapt their supply chain quality management to meet customer interests.

These research questions are presented as per the following Figure 1.

What order-to-deliver process quality factors can be found in the literature?

What order-to-deliver process quality factors do UPM Plywood's customers consider as being the most important ones?

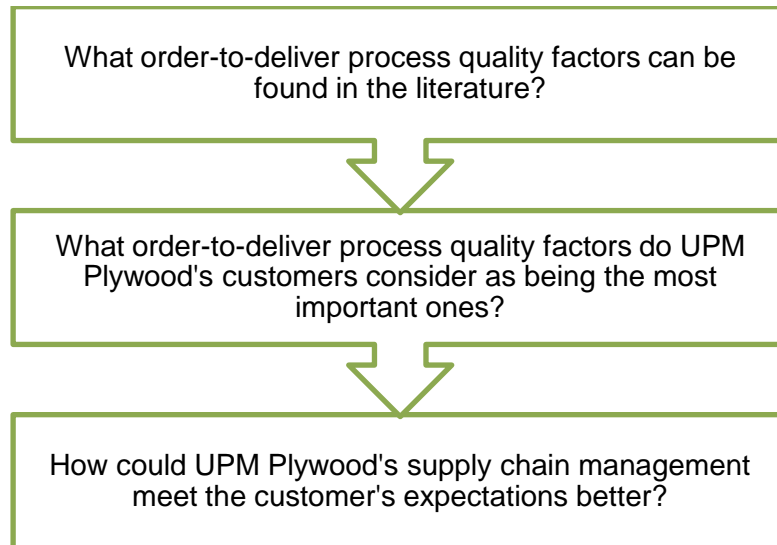How could UPM Plywood's supply chain management meet the customer's expectations better?

Figure 1. Research questions.

While logistics involves managing the procurement, movement and storage of the goods, supply chain management (SCM) seeks for achieving connection and coordination between the processes of the supplier, the company and the customer. Therefore, a supply chain includes all operations connected to this entity. (Christopher 2011, 2-3.)

This thesis focuses on the customer's perspective and therefore only those order process and supply chain functions that are mutual with the customer and the company are discussed, leading into consideration of the order-to-deliver process only. For this study, this process under consideration is limited to start from the customer and to end to the customer. The operations included can be simplified as shown in the following Figure 2, including the process phases of forecasting, order placement, delivery and after-sales services. In the present study, this process under consideration is subsequently referred as order-to-deliver process. Further, as Christopher (2011, 3) states, supply chain management in today's business is more likely to be driven by demand, not supply. To understand this and the customer's role in the process, this aspect is discussed further in the literature review section, as the process features and the concept of demand-driven supply chain management (DDRM) are introduced.
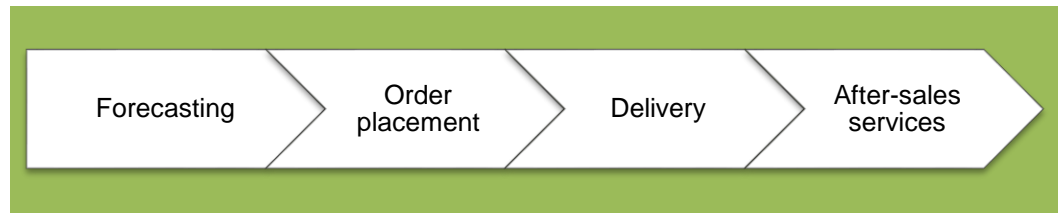
Figure 2. Order-to-deliver process.

Since the center point of the quality aspect is on quality factors and mindset, the quality indicators and quality level measurement were limited out. Only quality factors related to the order-to-deliver process were examined in the thesis, and for example, features related to product quality and pricing were excluded.
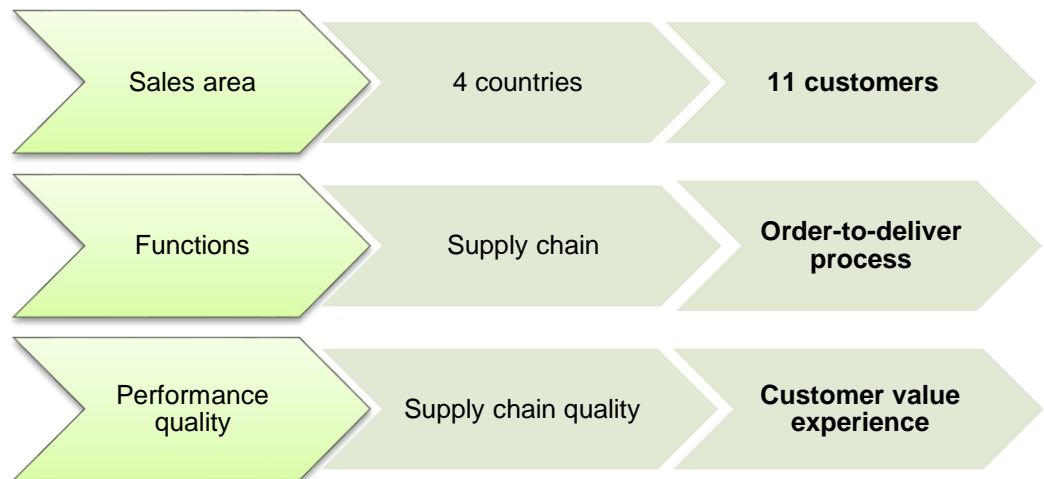

Figure 3. Limitations.

Further, because of the limited extent of the study, only one market area with four countries and 11 customers were included in the study. The sales volumes of this market area are significant, and all the customers in the area receive their orders by truck deliveries. The research limitations are presented above in Figure 3.

1.3 Research methods

Both quantitative and qualitative angles are needed in the logistics field research since all study objectives can't be solved with only one approach method. This originates increasingly from the fact that the business environment, including the logistics and supply chain functions, is getting constantly more complex. (Kotzab et al. 2005, 16-17, 22.) It has been proven that both quantitative and qualitative methods have their advantages and limitations in the supply chain research field. Whereas the quantitative study aims to generalizability and external validity, the qualitative study aims at extensive understanding and description of a phenomenon. Qualitative study can be described as an accurate close-up view. (Hirsjärvi et al. 2004, 129; Kotzab et al. 2005, 3.) Hence, even if the research of supply chain study methodology has traditionally shown only little usage of qualitative research, the need for utilizing qualitative techniques and case study sets to balance the quantitative research is constantly increasing. Qualitative methods are especially considerable when the subject of interest is new or complex or if the relevant measurement tools or variables can't be defined clearly. (Kotzab et al. 2005, 16-17, 22.)

Since the focus of this study is on one specific company and its order-to-deliver process development and the aim is to achieve comprehensive information about the subject, this study can be considered a qualitative study (Metsämuuronen 2006, 102–103). Because the study is viewing a single existing phenomenon or occurrence deeply, this study can be considered a case study from the strategic aspect. Case study approach is a general data collection strategy for qualitative research (Metsämuuronen 2006, 90–92). For qualitative study, the traditional data collection methods are literature reviews, observation, interviews and transcription (Hirsjärvi et al. 2004, 129). The literature reviews are a solid part of the study process because the information generation can only be conducted in relation to already existing knowledge. The literature review is seen the basis for the research since the aims for the literature sections are in generating

aspects for the study and summarizing the existing data. (Kotzab et al 2005, 92; Metsämuuronen 2006, 111–115.)

Even though case studies are considered representing qualitative research, also quantitative methods can be applied in data collection if necessary (Saaranen-Kauppinen & Puusniekka 2009, 11). As Vilpas (2018, 8) points out, of quantitative data collection methods, postal surveys (like e-mail questionnaires) are suitable for a large number of respondents or subjects with great distances. In this study, the long distances between the respondents were the main reason for utilizing quantitative methods in data collection. The subjects represented several countries, so an e-mail survey was considered as a natural data collection method for the case study. Still, as Vilpas (2018, 8) states, postal questionnaire forms include several issues. The response rates in e-mail surveys tend to be low and it may take a long time to collect data. Especially long questionnaires may lower response rates. A good covering letter for the survey can increase the participation rate. (Vilpas 2018, 8.) This was also considered in the creation of the survey.

As Saaranen-Kauppinen & Puusniekka (2009, 11) point out, it is recommended that the study questionnaires and interviews are based on already existing knowledge or theory introduced in the study literature section. As explained in Figure 4, in this study set the qualitative and quantitative methodologies introduced were combined by utilizing the literature review data in the case study section by using this data as the base information in the questionnaire creation. In other words, the relevant quality features (questionnaire variants) for the survey were picked from the data collected in the literature review.

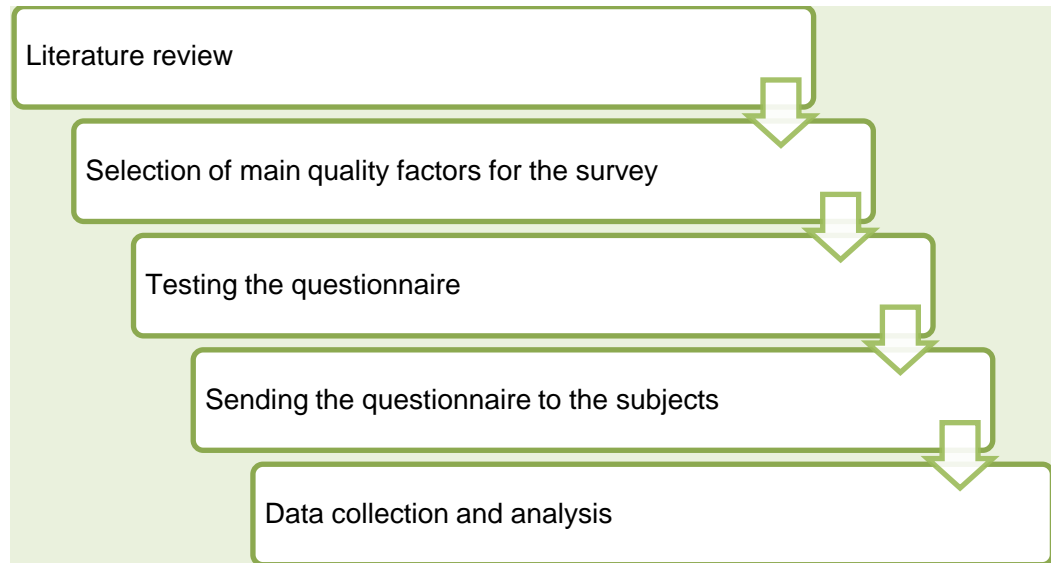| Literature review |
| Selection of main quality factors for the survey |
| Testing the questionnaire |
| Sending the questionnaire to the subjects |
| Data collection and analysis |

Figure 4. Data collection and analysis process.

As Christopher (2011, 32-35) states, the supply chain and order-to-deliver process quality criteria are always strongly combined with its environment, products and customers. Further, the requirements for the quality elements of the order-to-deliver process vary according to markets and products, hence there exists no solid list of elements. When creating the quality service criteria, it is essential to understand the customer service in the appropriate context and to find the criteria that are meaningful to the customers. (Christopher 2011, 32-35.) This fact was the reason for using both the company representative's and the author's experience and observation in this phase.

If there are assumptions that the background of the subjects may affect the study responses, the demographic variants should be measured among with the statistical variants (Vilpas 2018, 5). In this study, demographic data of the subjects was not collected. The main reason was that the demographic variants' impact in the responses was considered irrelevant in a qualitative case study set, with no aims to generalize the results.

Especially when utilizing quantitative data collection techniques in qualitative research, the aim of data analysis can be in describing and

demonstrating the data received from the respondents. Hence, descriptive statistics targets in describing and concluding the appearance of the variants, with no intentions for generalization the results to the population. (Mattila 2003, 70; Rantanen 2018, 4.) Descriptive statistics techniques were applied in this study, by examining the appearance of each variant in the data. In the analysis phase, the ordinal significance scale was amended to a scale from one to three, three representing the strongest significance. In this way, the ordinal scale can be interpreted as an interval scale, providing more opportunities for data analysis (Vilpas 2018, 19).

The univariate analysis methods for interval scale variants include average and deviation calculation and graphic demonstration (Mattila 2003, 68; Rantanen 2018, 13). When describing the distribution of the values, it is conventional to utilize the combination of an average and a deviation figure, of which arithmetic average (mean) and standard deviation are the most common figures (Mattila 2003, 74-77). Accordingly, in this study, the arithmetic average of significance for each variant was calculated from the variant's range of set in the data. Also, standard deviation (SD) rate was calculated to look further into the deviation of the replies.

The function of the graphs and diagrammes is to demonstrate and conclude the data and to ease the understanding of the relevant information. The graphic presentation can be implemented in several forms, of which the most common types are the column and line charts. However, the guideline is to choose the clearest and most natural presentation form for the information under consideration. (Paaso 2003, 121.) Likewise, the results of this case study were finally presented in graphic form, to demonstrate the calculated statistical figures and the differences between the variants. The replies to the open question were presented and analysed separately. According to the principles of the qualitative research and analysis described earlier, the study aim was not to make general conclusions concerning the sales area or other customers, but only to discuss the results received from this group of

customers. Further, the conclusions and suggestions were generated from this aspect.

1.4 Thesis structure

The structure of the thesis is demonstrated in Figure 5. This thesis includes two literature sections, aiming at collecting the already existing data around the research questions. The focus of the first section of the literature review is to describe and discuss the customer value experience. The second part of the literature review concentrates on order-to-deliver process features, process value and the generally recognized quality features related to the process.
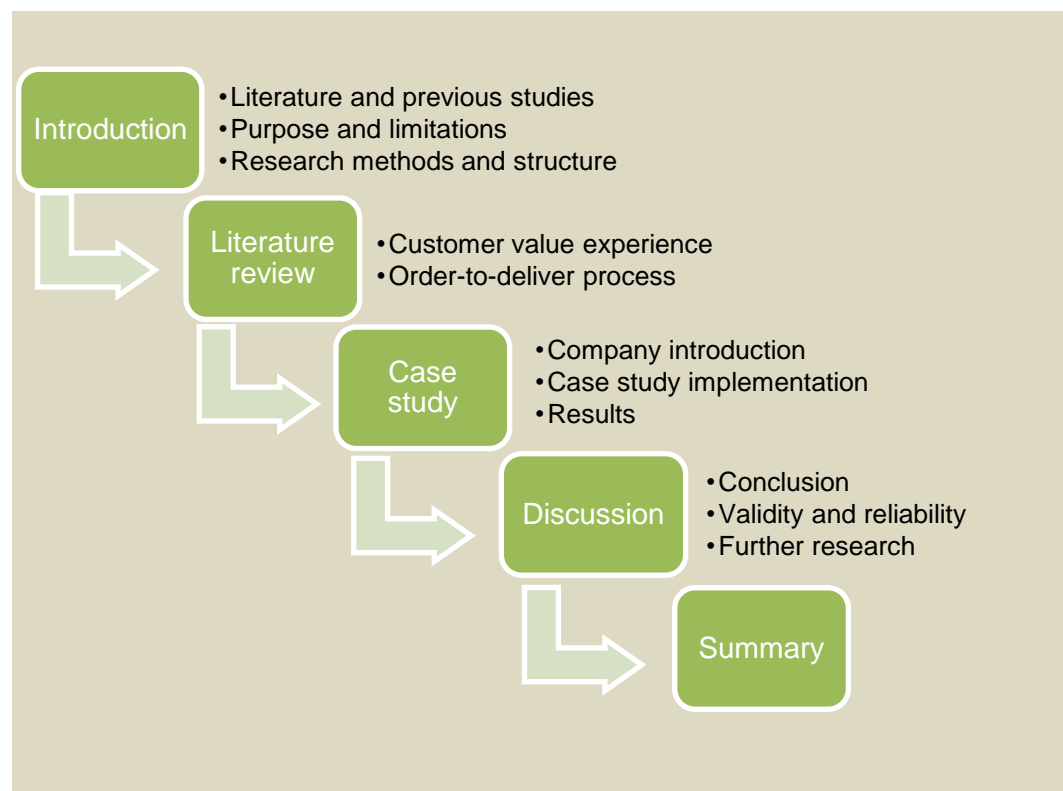
Figure 5. Thesis structure.

After the literature sections, the case company is introduced, followed by the case study procedures and result presentation. Finally, the study

results, suggestions and reliability and validity aspects are discussed in the closing section. Also suggestions for further research are given.

The appendices include the cover letter for the respondents of the case study and the questionnaire (Appendices 1 & 2).

2   CUSTOMER VALUE EXPERIENCE

The customers do not only buy products, they buy benefits. Besides the physical features of a product, the purchase is made because of the promise of certain value. This benefit can be even irrelated to the product features and may concern for instance the company image. The concept of perceived value contains all this – it is the customer's overall evaluation of the product and service. (Hollensen 2004, 95.)
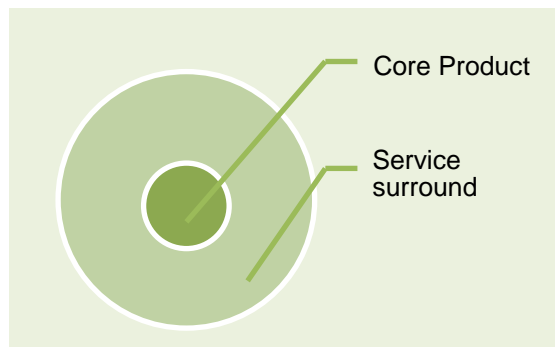

Figure 6. The added value provided by the service surround (applied from Christopher 2011, 35).

As Christopher (2011, 35) demonstrates in Figure 6, the customer value experience consists both of product features and of surrounding service and logistics -related features. Naturally, in many cases also advertising, branding and packaging can affect the value experience. Yet it seems to be increasingly evident that the companies that only compete with product features will face struggles if they put no effort to value-adding services and logistics features in the service surround. (Christopher 2011, 35.)

2.1   Perceived value

By one definition, value can be described as the excess of benefits over the cost (Baxter 2008, 35). Following Figure 7 explains the relation of the contributors of the customer value. Even though this equation is presented in several forms in the literature, the key point is that the perceived customer value outcome depends simultaneously on both of the perceived

benefits and the perceived costs (Woodside, Golfetto & Gibbert 2008, 4). Another closely related concept is customer satisfaction, which can be seen resulting from the customer value experience (Buttle & Maklan 2015, 41).

$$Value = \frac{Relative\ sum\ of\ perceived\ benefits\ (quality\ and\ service)}{Relative\ perceived\ costs\ (cost\ and\ time)}$$

Figure 7. The relation of the customer value contributors (applied from Woodside et al. 2008, 4; Christopher 2011, 31; Buttle & Maklan 2015, 154).

Regardless of how the value is defined, the customer-perceived value and quality is a complex concept since it is formed by individuals as a result of multiple experiences and relationships (Henneberg & Mouzas 2008, 100; Salo & Hanski 2009, 11-12). Usually the customer's value experience is attributed from the quality outcome of the product, but also the service level and the process fluency can affect greatly. Still, the image of the company usually has influence on the way that the customer experiences the variation in the quality of the product or the service. A positive company image allows the customer to tolerate quality deviation better and the customer still can find the total quality level at least satisfactory. On the other hand, a weak company image tends to increase the impact of the disappointments and simultaneously set the image even at lower level. (Salo & Hanski 2009, 11-12.)

The customer's expectations set requirements for quality and quality definition. The customer can find the quality good only when it meets (or goes over) the expectations. During the purchasing process, the customer constantly compares the quality output to the initial expectations. The components of the expectations originate for example from the customer's needs, individual customer features, price image and the customer's former experiences of the company or the industry. (Salo & Hanski 2009,

11-12.) It is also notable that the strategic importance of the purchase in the customer's end-use or offering affects the customer's quality requirements towards the product and services, since with the most critical purchases the quality plays a significant role. With less critical purchases, the quality matters are given less consideration. (Ritter & Walter 2008, 132.)

Any deviation in the quality level affects directly to customer's value experience. It is important to try to prevent these deviations since the consequences might have an influence on the customer's purchase behavior and quality deviations can cause extra costs both to the company and the customer. Prevention and earlier spotting of the deviations are possible by optimizing the quality monitoring conventions and procedures. The target is that the negative impact experienced by the customer stays at the minimum level. (Salo & Hanski 2009, 15.)

2.2   Concept of value chain

The constantly growing trend in placing effort towards providing superior value to the customer is based on the concept of value chain. Value chain represents the idea that the value a company provides is originated in process chains. Each of the activities contributes to company's operations, cost-effectiveness and position in the markets. The value chain concept is one way of understanding the cost formulation and, on the other hand, the potential sources of differentiation. The competitive advantage originally arises from the activities that the company performs cheaper or better than the competitors. (Christopher 2011, 9-10.)

The value chain activities can be divided to support activities and primary activities. According to Christopher (2011, 10), support activities include for example company infrastructure, human resources management, technology development and procurement. These all affect the company value outcome among the primary operations. The primary activities, which are under consideration in this study, include inbound logistics,

operations, outbound logistics, marketing and sales and service. This value chain concept structure is explained in following Figure 8.

Figure 8. Value chain (applied from Christopher 2011, 10).

This value chain model includes the concept that if any activity in the operation chain does not increase the value margin and total competitive advantage, outsourcing should be seen as an opportunity for executing these actions. This is based on the idea that a partner that has specialized to this specific activity can increase the company's value margin by providing their services. The goal is to extend the value chain beyond the business by including the external operators that are connected with the process value. Ultimately this means that the company organizations aim at concentrating on their core process value creation and competition. This logic is widely accepted in today's business in almost every industry. (Cheverton 2010, 112; Christopher 2011, 10-14.) For example, in the industrial business field the transportation services are often handled by a third party. Third parties are external partners that are specialized in freight forwarding. (Hokkanen, Karhunen & Luukkainen 2011, 83.)

Through value chain concept, logistics operations management's mission can be seen as planning and coordinating the activities that affect the achieved value margin, targeting to improved levels of service and controlling the costs. All logistics' operations can, therefore, be considered as a link between the supply base and the market. Further, when seeking improvement in the customer's comprehensive value experience, all

company functions must work through solid cooperation. (Christopher 2011, 12.)

2.3 Customer experience management

As presented earlier, the customer value experience is part of the company's total performance quality; thus the customer relationships are one of the most important factors in providing value to the company (Hollensen 2004, 100; Baxter 2008, 28). In addition, customer value experience structure and formulation are key elements in defining the company's competitive advantage. This results in a theory that the successful companies generate more customer value than their competitors. Therefore customer-perceived value can be considered as one of the key elements towards a company's success. (Salo & Hanski 2009, 10; Christopher 2011, 30.)
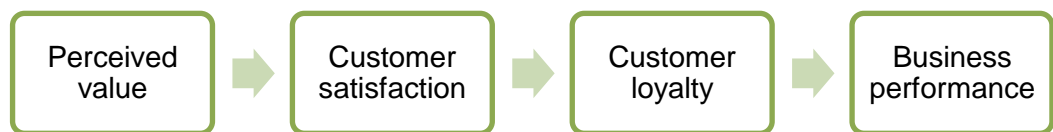
Perceived value	→	Customer satisfaction	→	Customer loyalty	→	Business performance

Figure 9. Satisfaction-profit chain (applied from Buttle & Maklan 2015, 41-45).

Customer satisfaction and loyalty bring several benefits for the company, and according to studies the longer the customer stays with the company the more profitable they get (Figure 9). Accordingly, perceived value contributes to better customer satisfaction, leading to customer loyalty and ultimately higher business performance. This originates mainly from the fact that a retained customer is typically less expensive to sell and service and especially the marketing costs are reduced. (Christopher 2011, 36; Buttle & Maklan 2015, 30.) The relationship development enhances the opportunity for the cooperation becoming more solid and a chance to achieve greater part of the customer's purchases. One important angle is also that satisfied customers share their experiences with other customers

and partners and by this way the chance of generating new customers increase. (Christopher 2011, 36.)

The relationship development brings benefit also for the customer (Christopher 2011, 36; Buttle & Maklan 2015, 39). From the customer's point of view, a deep relationship with the supplier reduces the performance risks related to the products and deliveries. The customer requirements may also concern developing certain services around the products and costs reciprocity, meaning that each party benefits from developing the relationship. (Buttle & Maklan 2015, 39.) Also, Cheverton (2010, 139) points out the importance of the collaborative partnership between the company and the customer in the value creation.

Since the customer is the one to decide, which service or product provider to choose, the companies are increasingly prioritizing fulfilling the customer's wishes and experiences and they are the usually the main concern for the company representatives (Baxter 2008, 28; Salo & Hanski 2009, 10). Building and maintaining the relationships and networks are therefore the key tasks for the company, and to take the needed actions the dimensions of the value experience have to be examined and understood (Baxter 2008, 28).

The analysis of the customer value experience can include for example monitoring the customer-perceived performance, customer expectations or their purchasing requirements (Busacca, Costabile & Ancarani 2008, 151). In addition, Collin, Eloranta and Holmström (2009, 413) suggest that the process of supply chain development should first take actions in identifying and understanding the customer's demand chain and required value aspects. As Hoivanen (2014, 25) points out, these actions are especially important in management of demand-driven supply chains. This aspect is discussed further in the next head chapter, as the features and quality factors for the order-to-deliver process are presented.

3   ORDER-TO-DELIVER PROCESS

When discussing the order-to-deliver process and the goods flow between only two parties, the company and the customer, the process chart can be presented as per Figure 10. Accordingly, the interrelated supply chain functions are make and deliver functions on the company's side and simultaneously plan and source operations of the customer. (Güsmüs, Jewkes & Bookbinder 2008, 502-503.)

Figure 10. The supply chain structure between company and customer (applied from Güsmüs et al. 2008, 503).

In a typical order-to-deliver process, the customer first develops the plan for requirements and methods for the sourcing. Then the company reacts to meet the customer's expectations by their products and services. (Güsmüs et al. 2008, 503.) For this need, diverse industrial companies have created customer demand-driven supply chain management (DDRM) systems. It is a set of technologies and processes that target in sensing and responding to customer demand. The emphasis is both on pushing up the level of the efficiency of supply chain operations, and also in responding to the customer's expectations efficiently. (Mendes 2011, 4.)

DDRM ideology is common especially with products with high degree of customization. The order placed by the customer is the first signal that starts the supply chain and the processes beyond, for example, the production and transport activities. In other words, the supply chain operations are driven by the customer demand. Hence, the supply chain personnel's task is to constantly balance the rate between the product supply and the customer demand. (Scott et al. 2011, 3-7.)

In DDRM systems their general disadvantages are related to long delivery times. The entire order-to-deliver process must be highly optimized and advanced to control the total length of lead times. (Sakki 2009, 127; Scott et al. 2011, 63-65.) Still, because it is typical for DDRM systems that the inventory levels are held at a minimum level, there can easily occur problems in disorder situations. For example, if damaging takes place in the product during the transportation, the item maybe can't be substituted quickly. The customer may have to wait for a long time until the new product is made and delivered. (Scott et al. 2011, 10.)

The function of a process is to describe how the operations are performed in the company (Buttle & Maklan 2015, 174). The baseline in the process models is in the idea that the total performance originates from process chains, not in isolated functions. The process concept also includes the thought of a series of different functions that ultimately bring value to the customer. Therefore, the customer's needs and expectations are the key when considering process management or development. This means that the different function goals should all support the customer perspective because each activity in the business operation increases the perceived value. (Hollensen 2004, 95.)

Hence, even though the customer value is originated in order-to-deliver process as a whole, the process always includes separate phases which all have special features attributing the customer experience and perceived value. These features and quality factors are discussed further in the subsequent chapters.

3.1   Forecasting

Since the production and delivery process is driven by received customer orders, a general peculiarity for DDRM systems is the difficulty in predicting the future customer demand. As following Figure 11 demonstrates, there occur several types of customer demands. By the time the demand level may stay about the same, increase, decrease or go

up and down seasonally. Hence, in an ideal situation, all customers could exactly predict their forthcoming necessities of the product features, quantities and the delivery times, and for this need, various forecasting methods have been created. (Scott et al. 2011, 10.)
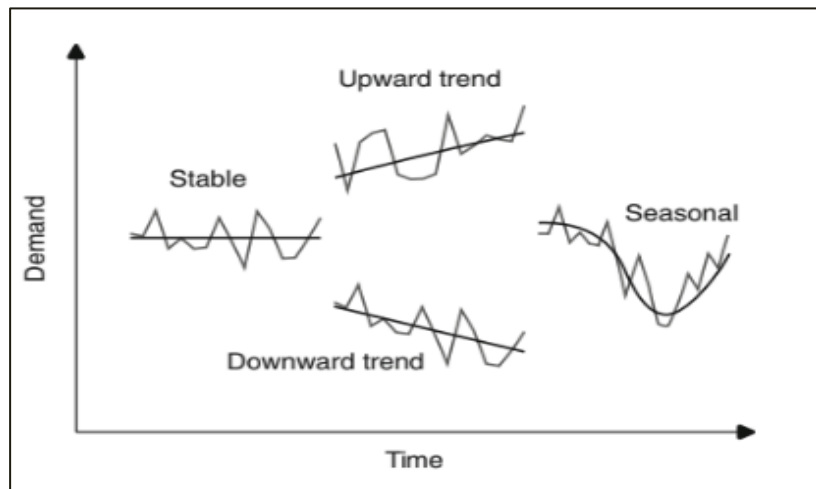

Figure 11. Demand pattern examples (Scott et al. 2011, 10).

In a business of small or nonrecurring orders, the traditional order-to-deliver process without deeper cooperation can work adequately fine. However, the more frequent or larger the orders get, the greater is the importance of more efficient communication between the company and the customer. If the information about the future requirements and availability are shared actively, the performance of the supply chain operations increase. Collaborative forecasting defines the situation where the mutual data is constantly shared and both the company and the customer aim to the mutual interest of building more effective process chain. Naturally, this kind of cooperation first requires functional forecasting procedures from each party. (Syyslahti 2017, 44.)

The final goals and advantages for advanced forecasting process can be defined as creating a realistic supply plan, aiming to good product availability, planning contingency and being able to give early warnings about shortages. These together attribute to better customer service level. (Kotzab et al. 2005, 181-182; Ritter & Walter 2008, 142; Scott et al. 2011,

10.) Further, the perceived value through quality cooperation is often mentioned as an advantage (Kotzab et al. 2005, 181-182; Cheverton 2010, 139). The value of communication is also recognized by Buttle & Maklan (2015, 179). In addition, Woodside et al. (2008, 10) state supplier commitment as one of the perceived benefit elements.

3.2   Order placement

Order placement and management can be shortly described as capturing the customer order and managing it throughout the process. As the customer sends in an order, the customer service is in a crucial role providing the time and place utility for the purchasing event. (Scott et al. 2011, 79.) From the customer perspective, the service is visible in all operations of the order-to-deliver process. Further, the customer service level is often under examination as a key tool for performance measurement, since it has a simultaneous impact on both company profit objectives and customer satisfaction and loyalty. (Ballou 2004, 91.)

Generally recognized value-adding factors in the ordering process are for example ease of ordering and quality of sales representation (Hollensen 2004, 97; Christopher 2011, 35). Also fluent ordering procedures and quality and promptness of customer service are often under discussion, as well as easy and quick access to order status information (Kotzab et al. 2005, 196; Christopher 2011, 32; Buttle & Maklan 2015, 168).

3.3   Deliveries

The function of distribution and deliveries is a crucial component in the supply chain since the deliveries connect the suppliers and factories to the customer (Güsmüs et al. 2008, 502-503). It is even stated that the product itself does not have value until it reaches the customer at the required time and place (Christopher 2011, 22).

Delivery reliability, referring commonly to delivering goods in time and undamaged, is an often-mentioned service-related feature in the literature (Hollensen 2004, 97; Ritter & Walter 2008, 143; Christopher 2011, 31). The significance of delivery reliability is constantly increasing since many customers aim at maintaining their inventory levels low and simultaneously rationalizing their supplier base by doing business with fewer suppliers. (Christopher 2011, 33). The concept of delivery reliability can concern and include several minor parts, like delivery at right time and place, delivery at right content and condition and deliveries with proper documentation (Kalinainen 2013, 8).

Further, in today's business, security aspects and process sustainability and responsibility features are constantly more common outcomes of the supply chains (Melnyk, Davis, Spekman & Sandor 2010, 34). Also the agility and flexibility of the delivery systems can be seen as one increasing customer requirement (Baker 2008, 32; Christopher 2011, 31). Good supplier-customer cooperation is considered as one key factor when aiming to good delivery procedures and reliability (Kalinainen 2013, 44).

3.4   After-sales services

The activities after the purchasing event can be seen either supporting the product in use or supporting the customer's actions (Finne & Holmström 2013, 24). Product support, product warranty and repair services are often under discussion when considering post-delivery actions (Kotzab et al. 2005, 196; Christopher 2011, 31). The services might also include package or delivery tracking (Ballou 2004, 94).

The operations bringing value to the customer in the after-sales services can also concern order discrepancy handling and customer complaint procedures (Hollensen 2004, 97; Kotzab et al. 2005, 196; Christopher 2011, 31). A successful claim-handling aims at controlling the customer complaints before the customer takes actions of spreading the word or taking their business elsewhere (Buttle & Maklan 2015, 176).

4   CASE: UPM PLYWOOD

4.1   Company presentation

UPM company has annual sales of over €10 million. Altogether, UPM includes six business areas which integrate bio and forest industries and develop sustainable and innovative products and solutions. Aiming to offer alternatives for non-renewable raw materials, all UPM businesses utilize renewable and responsibly sourced materials in their production. (UPM 2018a, 4-5.)

- UPM Biorefining includes pulp, timber and biofuels businesses. End-use possibilities are for example tissues and specialty papers and timber for construction or furniture. Biofuels offer wood-based renewable diesel.
- UPM Energy focuses on energy production and financial trading.
- UPM Raflatac produces various label materials for example for product labeling in food and pharmaceutical segments.
- UPM Speciality Papers is the market leader in labeling materials globally and in office paper in Asia Pacific region.
- UPM Paper ENA is globally leading producer in graphic papers, in other words, papers with the end-use of advertising, magazines or newspaper publishing.
- UPM Plywood manufactures plywood and veneer products mainly for three end-use categories: construction, vehicle flooring and shipbuilding. UPM Plywood is currently the leading supplier in the world in these segments.
- Other operations: UPM Biocomposites, UPM Biochemicals, Wood Sourcing and Forestry. (UPM 2018a, 4-5.)

UPM Plywood operates in ten countries, with about 2500 employees and nine European factories. (UPM 2018b.)

UPM company and all the businesses aim at "creating value by seizing the limitless potential of bio-economy". The company aims at creating value both by product and service superiority. In general strategy of UPM, performance, growth, innovation and responsibility are listed as the key factors for adding the company value in all operations and business areas. From supply chain and order-to-deliver process value aspect, this means, for example, sustainable and safe solutions, new technologies, service and process development, responsible operations and value chain and compliance. (UPM 2018a, 9-11.)

Global megatrends, like population growth, climate change and resource scarcity, drive the increasing demand for sustainable and safe operations and innovations. Sustainability and responsibility in the business mean constantly seeking sustainable solutions in cooperation with the suppliers and customers. Hence, responsibility is seen as an integral part of UPM's strategy and as one source of its competitive advantage. (UPM 2018a, 19-21.) Considering UPM Plywood, the forest certificates guarantee the sustainability of the wood sources. (UPM 2018a, 38.)

UPM Plywood lists its value creation attributes as shown in Figure 11 below. It is notable that both the product- and service-related factors gain attention and appreciation on this list. (UPM 2018a, 38-39).

- Thorough customer insight
- Professional technical and supply chain services
- High-quality, reliable supplier
- Wide distribution and customer service network
- Leading supplier in demanding end-uses
- Strong brand
- Efficient and competitive production
- Renewable energy production

Figure 11. UPM Plywood value creation (applied from UPM 2018, 39).

Along with this information, it is easy to understand that from strategic perspective UPM Plywood aims both in providing superior customer experience and operational excellence. Simultaneously, UPM Plywood targets in strengthening the market position in certain businesses by increasing the value and service offering. Further, to mention some performance development actions in the near future, enhancing the in-depth understanding of market drivers in certain businesses and strengthening the supply chain service models are brought up, in addition to production-related improvements. (UPM 2018a, 24-25.)

The product range of UPM Plywood consists of various uncoated and coated plywood products for demanding end-use applications. In building and construction, the products may be utilized in floors, walls, roofs or formwork. The established distribution and customer service network and the recovering construction activity are the main contributors to UPM Plywood's success in European construction markets. (UPM 2018a, 38-39; UPM 2018b.)

The transportation equipment industry uses plywood in vehicle and trailer flooring. While fleet repairment need levels off, the trailer demand is constantly increasing in Europe due to improving economic activity. Thus, in the logistics field parcel deliveries and needs for flexible delivery systems are growing, creating demand for light vehicles and new solutions. In transportation equipment segment, UPM Plywood is continuously looking into growth opportunities and markets. (UPM 2018a, 38-39; UPM 2018b.)

In recent years, UPM Plywood has shown constant growth in liquefied natural gas (LNG) shipbuilding segment. The strength and stability at low temperatures represent WISA Birch plywood's ideal features for insulation in the LNG sea carriers. In LNG shipbuilding, UPM Plywood works through long-term partnerships and provides on-time deliveries of certified, high-quality products. In the future, UPM Plywood will aim in securing the leading market position and simultaneously seek for expansion to

applications using similar technology. (UPM 2018a, 38-39; UPM 2018b.) Besides these three main segments, the plywood and veneer products can also be utilized in parquet flooring and furniture industry. (UPM 2018b.)

Regardless of the product's end-use, the case company's order-to-deliver process starts usually from the annual contract base. Among pricing and other specification, they include the customer's estimate of the required future volumes in certain timeframes. This information is generated in the forecasting process. As the customer sends in an order, the availability of the required capacity is checked before entering the order into the system. After the order has been entered, the manufacturing mill confirms the order specification and delivery time and the order confirmation is sent to the customer.

The customer order is the signal for the mill to start production planning and the production. After the goods are manufactured they are delivered to the customer. The customer relationship management continues after the process and if there occurs for example damage in the products during the transportation, the customer can send in a claim concerning the damages. These possible post-delivery activities are referred as after-sales services.

4.2   Case study implementation

The thesis process started in autumn 2017 by seeking and discussing suitable study aims and targets with the case company representatives. The literature review was started to put together in November 2017, continuing until the questionnaire form was created in February 2018. The survey data were collected during one week in the same month. In addition to the first round of the e-mail distribution, two reminders were sent to the customers in the same week. The collected data was analyzed in the following week, ending up with finishing the thesis and presenting

the results in March 2018. The study implementation timeline is demonstrated in Figure 12.
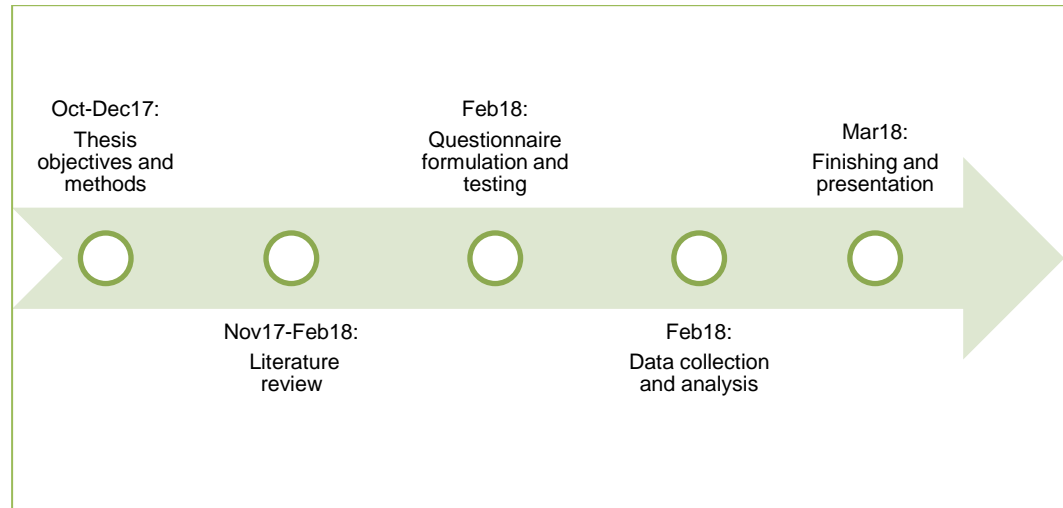

Figure 12. Study implementation timeline.

In the creation of the questionnaire form, the literature review output of the order-to-deliver process quality factors was first analyzed and quality factors were identified. The material was then simplified and classified in cooperation with the author and the company representative, by utilizing both the company representative's and the author's observations and expertise to support the findings in the literature. The same order-to-deliver process chart headlines that were introduced earlier (forecasting, order placement, deliveries and after-sales services) were used to create categories for the process elements, which assisted in creating a balanced and comprehensive questionnaire structure. The selected items were later in the role of the variants in the survey form.

The results of the literature review analysis and feature classification can be seen in Figure 13. Under the Forecasting headline, the selected features were related to forecasting process, product availability and fluent cooperation between the company and the customer. These were seen as the key quality factors at the beginning of the order-to-deliver process (in the literature section, these features were recognized by Kotzab et al. 2005; Ritter & Walter 2008; Cheverton 2010; Scott et al. 2011). The

second headline was determined as Order placement, which included two features, firstly sales representation quality and secondly ease of ordering (also found by Hollensen 2004; Christopher 2011; Buttle & Maklan 2015). The third headline of Deliveries was seen representing a crucial part of the process concerned, and it included finally altogether three factors: delivery reliability, delivery safety and process sustainability (as per Hollensen 2004; Ritter & Walter 2008; Christopher 2011; Kalinainen 2013). Lastly, the After-sales services category was represented by one feature, the total quality of the after-sales services (found earlier by Hollensen 2004; Kotzab et al. 2005; Christopher 2011; Finne & Holmström 2013; Buttle & Maklan 2015).

Figure 13. Classification of the quality factors.

The case study aim was finding out the significance of the order-to-deliver process components as part of the quality experience. Hence, the intention was to survey which features the customers prefer and which they do not and the questionnaire was created to respond directly to this need. The first task in the questionnaire form was to organize the provided variants in three categories according to their significance as part of the process value experience. Secondly, an open question was added allowing the subjects to point out other significant features that were not

provided in the questionnaire. By this opportunity, the risk of any important features being left out was minimized.

The structure of the questionnaire was aimed to be simple, easy-read and quick to complete. In the creation of the covering letter, the company's earlier customer satisfaction surveys were utilized. Before finalizing the covering letter and the questionnaire form, they were sent to three test subjects within the company. The test persons, who were not familiar with the study aims or the objectives, were requested to analyze both the covering letter and the questionnaire. The aspects under consideration were, for example, the structure and length of the covering letter, clarity and understandability of the questionnaire and ease of participation. The covering letter and the questionnaire gained their final appearance according to the improvement suggestions received from the test subjects (Appendices 1 and 2).

The form was sent to the subjects by email attachment, which they would send back by return. Altogether 11 customers in the market area were selected for the survey, and they were determined and selected in cooperation between the case company and the author. Finally, ten out of the 11 respondents (n=10) replied and no further questions about the questionnaire or the instructions came up during the data collection.

Table 1. Modifying the ordinal scale to interval scale.

3	2	1
= The most important	= In the middle	= The least important

As starting the analysis phase, the received e-mail replies were first printed out and checked for errors and missing information. There occurred no errors or contradictions in the replies. After this, the value scale was amended by determining the most important category value 3, the middle category value 2 and the least important value 1 (Table 1). By

this way, each feature's set in the responses was representing a certain amount of value points. After this, each variant was given a number demonstrating the mean (arithmetic average) value number in the replies. Also the standard deviation (SD) rate was calculated for each variant. Microsoft Excel was utilized as a tool in the analysis process.

4.3   Results

At first, all the data collected from the ten replies was gathered to one table, an X representing each respond (Table 2).

Table 2. Questionnaire data summary (n=10).

Variant	3 The most important	2 In the middle	1 The least important
1. Fluent forecasting process	XX	XX	XXXXXX
2. Good product availability	XXXXXXX	XX	X
3. Fluent communication and cooperation	XXXX	XXXXX	X
4. Quality of sales representation		XXXXX	XXXXX
5. Ease of ordering	XX	XX	XXXXXX
6. Delivery reliability	XXXXXXXXX	X	
7. Delivery safety	XXX	XXXXX	XX
8. Process sustainability	XX	X	XXXXXXX
9. Quality of the after-sales services and claim handling	X	XXXXXXX	XX

This data summary table already suggested that some features were more often placed in the most important category than the others. To look further into this and to achieve objective information, the modification of the scale and calculations for mean and standard deviation figures was performed and all the variants were sorted in descending order according to their mean value. Also standard deviation figures are shown in the following Table 3.

Table 3. Variants sorted by scale value mean (n=10).

Variant	Mean	Standard deviation
6. Delivery reliability	2,8	0,3
2. Good product availability	2,6	0,7
3. Fluent communication and cooperation	2,3	0,6
7. Delivery safety	2,1	0,7
9. Quality of the after-sales services and claim handling	1,9	0,5
1. Fluent forecasting process	1,6	0,8
5. Ease of ordering	1,6	0,8
4. Quality of sales representation	1,5	0,5
8. Process sustainability	1,5	0,8

The results in Table 3 were then put together and presented in graphic form, including both mean values and SD values (Figure 14).
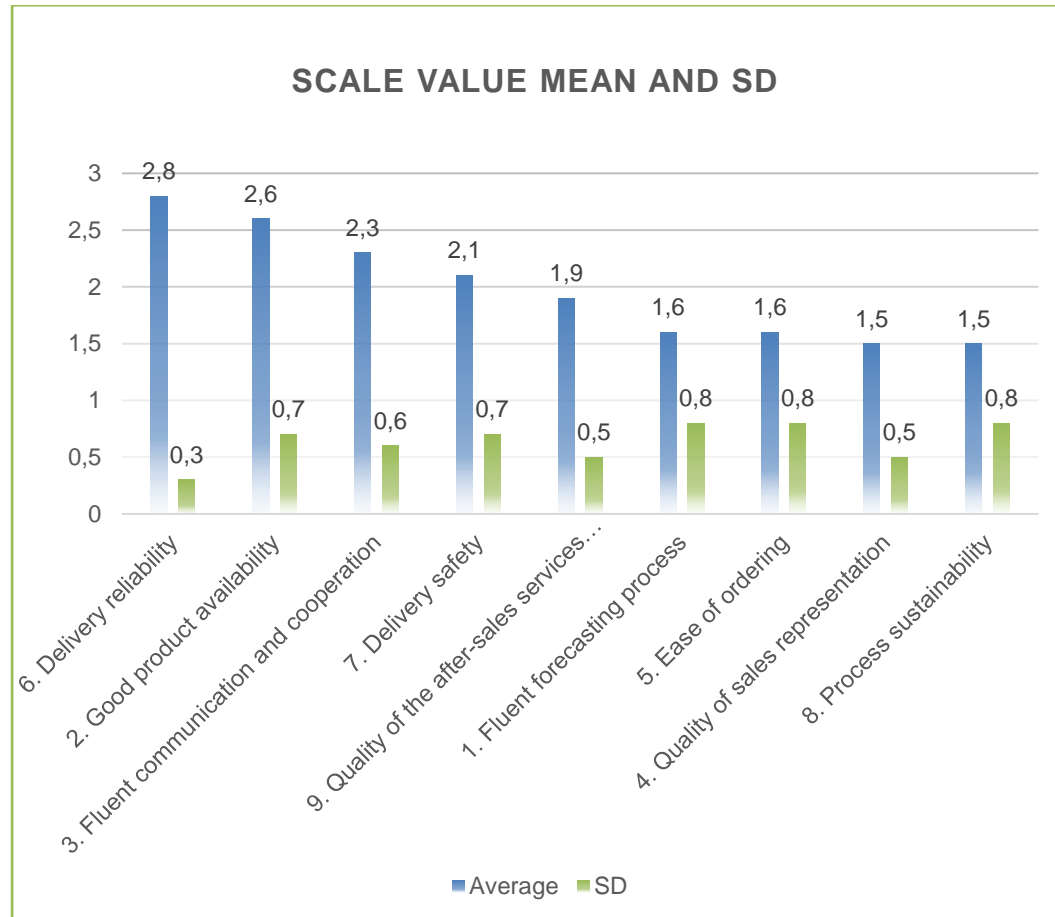

Figure 14. Variant mean and standard deviation (n=10).

Further, the survey form also included one open question with the opportunity to mention other important quality factors in the order-to-deliver process, if not already existing in the questionnaire. This resulted in the following statements:

- Comprehensive understanding of the customer's purchase pattern
- Confirmation of the delivery unloading time slot
- The flexibility of the logistics chain and deliveries

5 DISCUSSION

5.1 Conclusion

According to the tables above, delivery reliability (avg. 2,8) gained the highest average value. The replies were very solid concerning this feature since nine out of ten respondents placed this item in the most important category, which made this feature the most popular in the category of highest important items. The replies concerning delivery reliability also showed clearly the lowest level of deviation. Also good product availability (2,6) gained high average score, but with slightly more dispersion – still seven out of ten subjects assessed this feature in the category of greatest importance. Third place in the value mean ranking was held by fluent cooperation and communication (2,3), which possessed four replies in most important and five replies in the middle category, with one reply in the least important category.

In the middle of the ranking were delivery safety (2,1), quality of the after-sales services and claim handling (1,9), fluent forecasting process (1,6) and ease of ordering (1,6). These items appeared in all three value categories, mostly in the middle or the least important categories. The lowest averages were gained by features of quality of sales representation (1,5) and process sustainability (1,5). Placements of quality of sales representation were evenly distributed between the middle and least important category, while process sustainability gained score in all categories, including seven replies in the least important category. Process sustainability was the item that was most often placed in the category of the least important features, however relatively high deviation occurred with a standard deviation of 0,8.

Altogether three replies to the open question were received. Firstly, comprehensive understanding of the customer's purchase pattern was mentioned. This aspect was partly discussed in the literature section and it is strongly related to supplier commitment, fluent communication and

cooperation, but any direct references to this feature as part of the value experience was not found, resulting in the feature not ending up to the questionnaire form. The second feature mentioned in the open replies was the confirmation of the delivery unloading time slot, which can be seen connected to the flexibility of the delivery systems, and actually, the third response was directly referring to the flexibility of the process and deliveries. The flexibility view came up in the literature section but was not ultimately picked to the questionnaire form.

Delivery reliability's first standing in the customer's priorities was predictable since this feature was commonly strongly represented already in the literature section (previously recognized by Hollensen 2004; Ritter & Walter 2008; Christopher 2011). Delivery reliability seems to be a critical feature of customer value experience, and the high reliability level should be maintained and improved in the future as well by utilizing performance measurement tools concerning delivery reliability. This concerns also the feature of good product availability, which was also rated high in the responses (and earlier identified by Kotzab et al. 2005; Ritter & Walter 2008; Scott et al. 2011). Enhanced collaboration with the suppliers and customers in supply chain and process development provides a good baseline to yet improve these features.

Interestingly, with these two very practical features, fluent cooperation and communication appeared among three most significant factors. This result also gets support in the existing literature (earlier found by Woodside et al. 2008; Cheverton 2010; Buttle & Maklan 2015). The appreciation of these aspects can originate from the fact that fluent cooperation and communication create the basis for several other quality features and for the long-term relationships. Therefore, it is plausible that fluent cooperation and communication are seen as a crucial element in the business relationship as a key contributor to other benefits. Still, this speculation doesn't limit out the possibility that these features are considered important in daily business, enabling to ease the order-to-deliver process operations. Customer relationship management is to be

developed onwards and with a more collaborative approach – targeting to examine the customer perspective even further.

Considering the UPM vision and values, it is rather surprising that process sustainability didn't get higher mean score in the results. Further, on despite the global megatrends that strongly support the need for the development of sustainable solutions and operations, this aspect wasn't seen in the replies. As discussing the reasons for this outcome, for example, the respondents' practical approach to the matter can be one affecting cause. For the respondents, it might be challenging to prioritize features of different categories and nature, like for example very practical features and features with value attitude. If a similar study set would be executed again, dividing the features into several smaller tasks might help the respondents to accomplish the questionnaire.

However, as Salo & Hanski (2009) have previously stated, when targeting process improvement, it is not adequate to only recognize the quality factors but also find relevant measurement tools. Regardless of the tools chosen, it should be remembered that the commonly utilized performance measurement tools are mainly internally oriented and developed for monitoring and controlling the performance quality from the company aspect only. This means that the customer point of view stays with lesser attention. The companies should constantly focus on measuring the service level also from customer perspective. Therefore, as an important study outcome, the results of this study suggest guidelines that might assist in selection and formulation of new customer-oriented process performance measurement systems in the future. The results could also contribute to structures of customer satisfaction surveys. Of course, it is important to note that due to a small and carefully selected group of respondents the results of the study aren't intended to be generalized to the whole sales area or other customers. Still, the aims and outcome of this study can be seen supporting the company's order-to-deliver process development and are therefore in line with UPM Plywood's strategic targets.

5.2   Validity and reliability

Validity describes how well a given study measures the feature under consideration and if research methods and results can justify the suggested conclusions. Common features that might affect the validity level are, for example, time, interruptions in the measuring and observation situations, the features of the measurement tools, bias in subject selection criteria and lost or inaccurate data. In a valid study set, it is essential that research methods and the analysis have a connection that can be explained based on literature and external sources. If the results are not intended to be generalized, the study and indicator validity gain more relative nature. (Hiltunen 2009, 3-8; Vilpas 2018, 11.) Since this case study does not aim at providing generalizable results or external validity, only the features and contributors related to internal validity are under further discussion.

Research reliability describes the repeatability and reliability of the study methods. The first part of reliability is stability, which represents the permanence of the measurement tool, and can be evaluated in recurring measurement events. Secondly, the method consistency describes the similarity and equality of the features in the indicator. The reliability can be increased by utilizing and comparing several measurement tools, raising the accuracy of the indicator and securing the objectivity in the measurement situation. Furthermore, the effect of coincidence should be eliminated. Importantly, if the research reliability level turns out low, also the study validity level decreases. (Hiltunen 2009, 9-11; Vilpas 2018, 11.)

The decision to utilize the literature section in the creation of the questionnaire form was made in order to raise the levels of research validity and reliability. The basic outcome of the literature section concerning the order-to-deliver process quality factors was targeting to be objective and comprehensive, but due to the nature of a qualitative case study set, also the author's and company representative's view was strongly utilized in the questionnaire creation. Therefore, it is obvious that

if the literature section was repeated and relevant quality factors for the questionnaire were identified again, researchers could also end up with different outcomes. Especially the study results for open questions clearly indicate this – as an example of those results delivery flexibility appeared in the literature section but was not ultimately selected to the questionnaire set for this study.

Aiming to improve measurement tool validity, the questionnaire form structure was paid special attention to. Firstly, the survey was constructed so that the customers' responses would give as straight answers to the research question as possible. Secondly, the data received from the subjects was designed so that it would be easy to be organized and analyzed. An encouraging fact in reliability consideration was that all the received replies to the e-mail survey were filled in correctly and with no contradictions. Further on, the author received no questions or requests for clarification. The reliability and validity of the survey form were supposed to improve by sending the questionnaire to the test subjects before the actual subjects, and the questionnaire got its final form according to this feedback. Still, as suggested earlier, variant division into separate smaller tasks could be one way to improve the clarity of the questionnaire and to assist the subjects to give their replies. However, as also Hiltunen (2009, 8) has pointed out, in this kind of study set the indicator validity is a relative feature and the adequate validity level is defined case by case. Based on the achieved results and taking into consideration the justification basis in the literature, the unique nature of the case study set and aim in descriptive results, the created indicator and data collection methodology can be seen adequately reliable and valid for this study set.

As in every study with subjects chosen after author's consideration, the selection of the subjects and the bias in selection criteria could be discussed further. However, as this case study was aiming to describe the customer value experience in this certain process and market area only, the subject determination method can be seen supportive for the research

validity. Further, the study reached remarkably high rate in replies (10 out of 11), so no notable loss or bias through the received responses appeared.

The data analysis utilized the conventions of descriptive statistics, with selected values of mean and standard deviation. As Mattila (2003, 74) points out, mean is commonly used and popular, but there are also some issues related. The problems often occur in very small groups of respondents with a wide range of values. The deviant values might greatly affect the mean figures, converting the result into misleading direction. (Mattila 2003, 74.) However, in this study, the mean values combined with standard deviation evaluation was considered to give adequately relevant information about the study objectives.

5.3   Further research

As Christopher (2011, 39) points out, customers are often divided into separate segments according to their service requirements and surveying their value attributes is the first step in this process. In this study, the comparison between the subjects was not made. Further research with a larger respondent group and background statistics would bring more detailed information about a single customer's needs and priorities, enabling to compare the individual replies and to conclude customer groups or segments according to their service requirements.

Of course, this kind of study could be expanded to several directions. One aspect could be a comparing study of the customer and the company view about the relevant quality factors and their significance. In addition, to meet the customer aspect even better, this kind of survey and conclusions could provide valuable information for employee training, customer service practices and quality level improvement.

The logistics field and technologies are in constant rapid change. To ensure a comprehensive understanding of the customer needs and value formulation also in the future, the emphasis on the customer satisfaction

and market research could be in this change. One especially interesting aspect could be executing studies about the customer view of the changing logistics environment; how significant they consider upcoming trends and how they see their needs and quality requirements adapting to the change. With the help of the research outcome, the company could put more effort into the most relevant technologies and processes. Further, studying customer attitudes towards upcoming logistics trends could be especially fruitful in cooperation between the company and universities and other learning institutions. These would also benefit from learning further the needs of the logistics field in order to develop their business and logistics education programmes.

6   SUMMARY

The study target was first to find out what order-to-deliver process quality factors can be found in the literature and secondly to examine, which factors the case company customers consider the most important parts of their order-to-deliver process value experience. The final aim was concluding guidelines for the case company to adapt their supply chain quality management to meet the customer interest.

This thesis was considered a qualitative case study from the strategic aspect. Among the qualitative techniques, literature review and observation, a quantitative e-mail questionnaire was utilized in data collection process. In the creation of the questionnaire form, the quality factors were identified in the literature review output and the material was then simplified and classified in cooperation with the company representative and the author. For the case study, 11 customers were selected. The data was collected during one week in February 2018, and the received data was analysed in the following week. The data analysis phase applied descriptive analysis techniques by examining the appearance of each variant in the data, by utilizing mean and standard deviation figures.

As the result of this study, delivery reliability gained the highest mean value and this item was placed to the most important category by nine out of ten respondents. Simultaneously, delivery reliability showed clearly the lowest level of standard deviation, meaning that the replies were very solid concerning this feature. Also good product availability gained high average score, and seven out of ten subjects assessed this feature in the category of greatest importance. Third place in the value mean ranking was held by fluent cooperation and communication, which was usually placed in most important or the middle category, with one reply in the least important category. In the open question section, comprehensive understanding of the customer's purchase pattern, confirmation of the delivery unloading time slot and the flexibility of the process and deliveries were mentioned.

Delivery reliability was commonly strongly represented already in the literature section and its first standing in the customers' priorities was predictable. Based on the results, it seems to be a critical feature for customer value experience, and the high reliability level should be maintained in the future. This concerns also the feature of good product availability. The third important feature of fluent communication and cooperation can be supporting the other features. Enhanced collaboration with the suppliers and customers throughout the supply chain and process development provides a good baseline to yet improve these features. Customer relationship management is to be developed onwards and with a more collaborative approach – targeting to examine the customer perspective and priorities even further. Importantly, the companies should constantly focus on measuring the service level also from customer perspective, and these results suggest guidelines that might assist in the formulation of new customer-oriented performance measurement systems or customer satisfaction surveys.

As the study outcome, the significant order-to-deliver process quality factors were found in the literature and their priorities in the customer mindset were discovered. Further, development conclusions and suggestions were made according to the study aims. The aims and outcome of this study can be seen supporting the company's supply chain and order-to-deliver process development and are therefore in line with UPM Plywood's strategic targets.

Further research with a larger respondent group would bring more detailed information about a single customer's needs and priorities, enabling to conclude customer groups or segments according to their service requirements. Also a comparing study about the customer and the company view about the relevant quality factors could provide valuable information for employee training, customer service practices and quality level improvement, as well as the impact of the changing logistics environment.

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APPENDICES

Appendix 1. Covering letter.

Dear UPM Plywood customer,

This survey is part of my bachelor's thesis at Lahti University of Applied Sciences. My study aim has been assigned by UPM Plywood, at which I've been working as business operator during my studies. My thesis aims in surveying what UPM Plywood customers find the most important quality factors of the order-to-deliver process, finally targeting to achieve new information for developing our operations and improving the customer value experience. Importantly, kindly note that in this study the aim **is not** to assess or measure the current level of the quality.

Please participate in the survey by replying this e-mail message and in the message reply mode scroll down and follow further instructions. After finishing the two tasks, press 'send'.

The survey data will be handled anonymously and the respondents can't be identified in the survey results. If any questions concerning the study procedures or the questionnaire arise, please don't hesitate to contact – I'll be glad to advise you further.

Thanks in advance, we greatly appreciate your effort.

Appendix 2. Questionnaire form.

The questionnaire

Task 1/2.

Here below are listed nine features that affect the customer value experience of order-to-deliver process, please read them through carefully.

1. Fluent forecasting process
2. Good product availability
3. Fluent communication and cooperation
4. Quality of sales representation
5. Ease of ordering
6. Delivery reliability
7. Delivery safety
8. Process sustainability
9. Quality of the after-sales services and claim handling

Then, please sort the features according to their importance, by dividing all nine items to three categories provided in the table below. Kindly type the number of the feature in suitable category field and mark three items to each category.

Please keep in mind that the aim **is not** to evaluate the current level of quality.

The most important (3 items)	In the middle (3 items)	The least important (3 items)

Task 2/2.

Are there any other significant quality factors related to order-to-deliver process, that you would like to point out? Please type in the box provided below.