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IDENTIFYING CUSTOMER VALUE
A case study in underground drilling devices

Master of Science Thesis
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ABSTRACT

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This study discusses customer value through two different perspectives. First, if offers a theoretical discussion on how customer value can be effectively researched and used in a company. Secondly, the study analyses interview and observation data collected in Sandvik mining and construction company. The interviews are used to map the current situation and identify critical areas for development.

The theoretical framework of the thesis deals with the concept of customer value and its importance in business, especially in a business-to-business (B2B) environment. Customer value is defined as the benefits experienced by the customer in relation to the sacrifices of a product or service. Its importance is increasing as the global competition intensifies. The literature review also discusses the different methods and metrics that can be used to identify and assess customer value. The literature identified customer interviews as the most common and most used method for researching customer value. Interviews provide a lot of useful information about the value experienced by the customer. In particular, interviews that take place in the customer's own environment emerge as a profitable tool.

The empirical part of the thesis consists of semi-structured interviews within Sandvik, which focus on identifying and addressing customer value in the target company. In the interviews, the questions were limited to long-hole drilling equipment. This allowed for a limited number of interviewees and targeted questions. In addition to the interviews, participant observation was used. Information on customer value research methods was obtained by talking to different people and reviewing company files. These provided a picture of how customer value is studied at Sandvik currently. The interviews revealed that although Sandvik has a wide range of methods and approaches to customer value research, there are differences in their application between departments.

The study makes suggestions to improve the way customer value is studied at Sandvik. Cooperation and knowledge sharing between departments could be strengthened to ensure that customer value is taken into account more consistently in decision-making. Secondly, the use of existing tools and procedures should be systematised and harmonised in order to make more effective use of the information they provide. Thirdly, the importance of customer value could be more widely promoted within the organisation, for example through training and awareness-raising.

Keywords: Keywords: customer value, value identification, customer needs, value assessment; B2B

TIIVISTELMÄ

Katariina Nilkku: Asiakasarvon tunnistaminen: Tapaustutkimus maanalaisista porauslaitteista
Diplomityö
Tampereen yliopisto
Konetekniikan diplomi-insinööri
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Työn tavoitteena oli selvittää, miten asiakasarvoa voidaan tehokkaasti tutkia ja mitata yrityksessä, ja tämän pohjalta tarjota suosituksia prosessin parantamiseksi. Tutkimus keskittyy erityisesti pitkäreikä poralaitteisiin ja perustuu Sandvikin sisäisiin työntekijöiden haastatteluihin. Haastattelujen avulla kartoitettiin nykytilanne ja tunnistettiin kriittiset kehityskohteet.

Työn teoreettinen viitekehys käsittelee asiakasarvon käsitettä ja sen merkitystä liiketoiminnassa, erityisesti yritysten välisessä (B2B) ympäristössä. Asiakasarvo määritellään asiakkaan kokemiksi hyödyiksi suhteessa tuotteen tai palvelun kustannuksiin, ja sen merkitys korostuu globaalin kilpailun lisääntyessä. Kirjallisuuskatsauksessa käsitellään myös eri menetelmiä ja mittareita, joita voidaan käyttää asiakasarvon tunnistamisessa ja arvioinnissa. Tutkimuksessa tunnistettiin monenlaisia eri metodeja asiakasarvon tutkimiseen. Yleisimmäksi ja yhdeksi käytetyimmäksi metodiksi tunnistettiin erilaiset asiakas haastattelut. Haastattelujen avulla saadaan paljon arvokasta tietoa asiakkaan kokemasta arvosta. Etenkin haastattelut, jotka tapahtuvat asiakkaan omassa toimintaympäristössä nousivat arvokkaiksi työkaluiksi.

Työn empiirinen osa koostuu Sandvikin sisäisistä puolistrukturoiduista haastatteluista, jotka keskittyvät asiakasarvon tunnistamiseen ja käsittelemiseen kohdeyrityksessä. Haastatteluissa kysymykset rajattiin koskemaan pitkäreikä poralaitteita. Näin ollen saatiin rajattua haastateltavien määrää sekä kohdennettua kysymyksiä. Haastatteluiden lisäksi työssä käytettiin havainnointia. Tietoa asiakasarvon tutkimisen menetelmistä saatiin keskustelemalla eri henkilöiden kanssa sekä yritysten tiedostoiden tarkastelusta. Näiden avulla saatiin nykykuva siitä, kuinka Sandvikilla tutkitaan asiakasarvoa. Haastattelut paljastivat, että vaikka Sandvikilla on laaja valikoima asiakasarvon tutkimiseen käytettäviä menetelmiä ja tapoja, niiden soveltamisessa on eroja osastojen välillä.

Tutkimus esittää ehdotuksia asiakasarvon tutkimisen parantamiseksi Sandvikilla. Yhteistyötä ja tiedon jakamista eri osastojen välillä voisi olla hyvä vahvistaa, jotta asiakasarvo huomioitaisiin johdonmukaisemmin päätöksenteossa. Toiseksi olemassa olevien työkalujen ja menetelmien käyttöä olisi kannattavaa systematisoida ja harmonisoida, jotta niiden tuottamaa tietoa voitaisiin hyödyntää tehokkaammin. Kolmanneksi asiakasarvon merkitystä voitaisiin korostaa laajemmin organisaatiossa esimerkiksi koulutuksen ja tietoisuuden lisäämisen kautta.

Avainsanat: asiakasarvo, arvon tunnistaminen, asiakas tarve, B2B

PREFACE

.
My student years were full of wonderful trips, events, experiences, and people. TTHP trips were the most memorable, UrOs brought safety, important people, and lovely moments, and KoRK offered great coffee breaks and even greater friends, which I am lucky to be able to keep with me even after this journey. I also had the opportunity to share a home with such amazing people, thank you, Ida and Janna.

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Special thanks to my dear aunt Maarit for the help and support with this thesis, your help was priceless, and I could not have done this without you!

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Lastly, thank you to my partner, Markus, for your patience, support, and love.

Sitten kohti uusia pettymyksiä.

Nokia, 28th August 2024

Katariina Nilkku

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LIST OF SYMBOLS AND ABBREVIATIONS

B2B	Business-to-business
CRM	Customer relationship management
DL	Long-hole drill rig
PDM	Product development management
SCM	Supply chain management
VoC	Voice of Customer

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1. INTRODUCTION

The aim of this thesis is to explore customer value and its role in the business, and how companies can systematically explore and develop customer value internally. In particular, it focuses on how understanding and measuring customer value can help companies improve product and service development, marketing strategies and customer experience, and most importantly, save time and reduce costs.

Earlier research and theory find identifying customer value important for a number of reasons. Customer value is recognized to be a key concept in marketing and management literature (Ulaga & Reinartz, 2011; Anderson et al., 2009; Gale and Woods, 1994). With understanding and knowing where the value resides from the standpoint of the customer, competitive advantage can be gained in the business markets (Ulaga, 2001). Anderson et al. (2009) state that one of the pillars of business-to-business (B2B) marketing is developing and providing exceptional customer value.

If customers do not clearly understand the potential value a supplier product or service, they often make purchasing decisions based on the lowest price. Therefore, in order to obtain a reasonable return on their offers, or sometimes to secure a contract, suppliers need to highlight performance enhancements, long-term cost reductions, and other advantages their products or services provide. To evaluate how their value propositions affect their customers' businesses, suppliers must conduct a customer value assessment. This involves evaluating and effectively communicating the value created for and with their customers. (Anderson et al., 2009; Payne and Frow, 2005)

Each and every supplier needs to research and develop effective and continuously renewing processes for identifying customer value, because it is a well-known fact that customer value is dynamic and can change over time (Belliveau et al., 2002). Identifying the needs of the customer in advance will also provide cost benefits in the product development process, because it saves time in the later phases of the development process, which in turn reduces the time needed for the whole process (Kärkkäinen et al., 1995).

1.1 Sandvik Mining and Construction Oy company presentation

This thesis is done in collaboration with Sandvik Mining and Construction Oy. Sandvik is a global high-tech company that is divided into three business areas (Sandvik n.d.). The current research project was carried out in particular with the Underground Drilling Division, which provides equipment and tools, parts, service and technical solutions for mining and infrastructure industries.

Sandvik offers underground drill rigs for mining development and productions. There are a variety of feed length, boom configurations and sizes. They provide to maximize the productivity while delivering lowest cos per meter. They offer both diesel and battery-driven rigs for all the different underground rigs. (Sandvik n.d.)

This thesis focuses on Long-hole drilling rigs. Long-hole drilling is utilized in various underground mining and construction applications like excavating raises, drilling injection grouting and drainage hole drilling. In long-hole drilling there is more than one drilling rod used to drill. The hole size, length and the drilling patters can vary depending on the application used. (Tamrock, 1997)

1.2 Objectives and research questions

The assignment for this work came from the product development side. The product development side became aware of the need to identify and verify the factors that create customer value. Initially the assignment from Sandvik was to collect a list of key features which create customer value. These key feature lists would then be used to verify how well their equipment meets the customer value criteria. Customer value attributes would enable creating a list of feature priorities which could be translated into clearly measurable values. These lists can also be used in NPD project when assessing project goals. After this, a similar value review could be repeated in connection with other equipment types.

At the beginning of the work, the baseline situation and the research problem were identified through open interviews with the product development employees. The interviews revealed that there was no clear understanding of how the customer value of the target company is studied internally. On the basis of these pre-liminary interviews, the research problem was narrowed down to the examination of the current state of customer value research in the company. No such work had been done in the target company before. The results of the preliminary interviews in combination with the new perspectives provided by the background theory also pointed out, that there possibly is a need to study issues concerning the flow of information in Sandvik. It seems that some of the problems in this area might be due to challenges in communication.

As mentioned earlier, customer value is dynamic and changes over time, there-fore it needs constant effort in identifying and evaluating customer needs and contexts. For this particular reason, this paper focuses on the process of studying the customer value at the target company in particular, rather than directly examining the drivers of customer value for drill rigs in general. The aim of the paper is to provide a clear picture of the current state of the processes of identifying customer value in Sandvik Underground Drilling Division and to suggest possible improvements.

The study uses long-hole drilling rig as a model product. Taking one model prod-uct helped to narrow down the number of interviewees to eight. In addition, it was possible to take into account if the differing perspectives of the interviewees were due to their placement in the company. Could it be that the personnel in marketing bring up different issues that those who work in product development?

This thesis is done from the suppliers perspective. The aim is to find out how Sandvik currently studies customer value and then compare it with theory and see if the internal data and knowledge can already be used to make a list of key features or if it is necessary to the customer interface. The work will result in suggestions on how customer value could potentially be further explored.

The research questions this thesis aims to answer are:

RQ1: What methods can be used to identify customer value in connection with mining equipment?

RQ2: How is customer value researched in Sandvik?

The rest of this thesis is divided into five main sections: theoretical background of customer value, research methodology, result analysis and discussion. The theoretical background concerning customer value identification is presented in Chapter 2. The goal is to acquire the necessary tools and techniques for identifying customer value in B2B contexts. Chapter 3 presents the chosen research methods, approaches and data analysis techniques used for the empirical part of the study. In Chapter 4, the findings of the empirical data are presented. The discussion of the findings will be presented in chapter 5. Chapter 6 summarizes the key findings and conclusions.

2. THEORETICAL BACKGROUND OF CUSTOMER VALUE

In this chapter a theoretical base for customer value and customer value assessment is gathered from the academic literature. The concept of value as well as customer value are described at the beginning of the chapter. The chapter continues by a review of value assessment methods used in B2B.

2.1 Value creating

These days many companies have made a shift from pure product or service offering to hybrid offering. Payne et al. (2008) states that suppliers create value not only with providing products or services but by sharing and integrating resources—such as skills and knowledge—that go beyond goods and services to help clients with their operations.

Suppliers usually have a product-centric view of customer solutions but in fact customers tend to have more relational process views of solutions. (Tuli et al., 2007) This means that customers view solutions as a set of customer-supplier rational processes which inclued customer requirements definition, customization and integration of goods and/or services and their deployment, and post deployment customer support.

Ulaga and Eggert (2005) identify four consistent traits: (1) customer value is inherently subjective, (2) it is viewed as a balance between the benefits received and the sacrifices made, (3) these benefits and sacrifices can take on many different forms, and (4) value perceptions are influenced by comparisons with competitors. They further conclude that, at a high level, customer value is essentially the balance between benefits and sacrifices in a market transaction.

Customers prioritize emotional, social, ethical, and environmental aspects in addition to practical and financial benefits, according to Nordin and Kowalkowski (2010).

Customer Value Management (CVM) focuses on enhancing the effectiveness of marketing efforts and increasing business profitability by determining the value of various customer segments and adjusting marketing strategies, plans, and resource allocation accordingly. (Evans, 2002)

2.2 Definition of customer value

Customer value and value itself have many different definitions in literature. There is no general definition of customer value. Here are a few of the most common definitions:

Anderson et al. (2009) describe value to be economic, technical, service and social benefits that the customer receives in exchange for the price it pays for a market offering. They express value in monetary terms. Benefits in this context are net benefits, i.e., only the purchase price is included in the price and the costs of using, such as the operating costs, are included in the benefits. Anderson et al. (2009) presents a calculation formula fundamental value equation,

$$(\mathrm{Value_f} - \mathrm{Price_f}) > (\mathrm{Value_a} - \mathrm{Price_a}),$$

where $\mathrm{Value_f}$ and $\mathrm{Price_f}$ are Offering f, so price and value of particular firm marker offering. $\mathrm{Value_a}$ and $\mathrm{Price_a}$ are Offering a, which is the next best alternative market offering. This formula takes into account the fact that the value experienced by the customer is also influenced by the value provided by the retailer. But Anderson notes, that value is always only an estimate by the supplier. Sometimes a supplier may overestimate the value that their product delivers to the customer, or the customer may underestimate the value that the offering brings. This makes the concept of value challenging to understand and measure. (Anderson et al., 2009)

Ulaga (2001) states that value is a multidimensional construction that can be described as benefits and sacrifices. These can be divided into monetary and non-monetary. Monetary benefits include increased, for example, revenue and decreased costs. Non-monetary benefits can include, for example, increased reputation, trust, comfort and ease of use, time, effort and energy spent in the exchange. (Keränen & Jalkala, 2014) In some cases sacrifices can be described widely.

Butz & Goodstein (1996) define customer value to be an emotional bond between a customer and a product or service. Customer thinks the product or service provides added value. This emotional bond makes the customer to buy again from the same supplier and also to recommend the supplier to others. This bond can be achieved by the supplier meeting or even exceeding the specific customer’s expectations about the product or service.

The term customer value can also be used when preferring the value of the customer, in other words, how much the customer is worth to the company (Roberts-Phelps, 2001). However, this research focuses on the value that the suppliers create for the customer.

From this it can be concluded that the literature generally defines customer value as a trade-off between benefits and costs or sacrifices that are involved in an exchange. In this study customer value is defined as tradeoff between benefits and sacrifices. This is visualized in figure 1 below.

Figure 1. *Visualization on customer value. (adapted from Evans, 2002)*

Customer value can also be visualized with a balance scale. (see figure 2) If the benefit side of the scale outweighs the sacrifices, it can be said that the customer perceives the product as creating value. This perception influences customer decisions and commitment. Customer value is the portion left after accounting for prices and benefits.

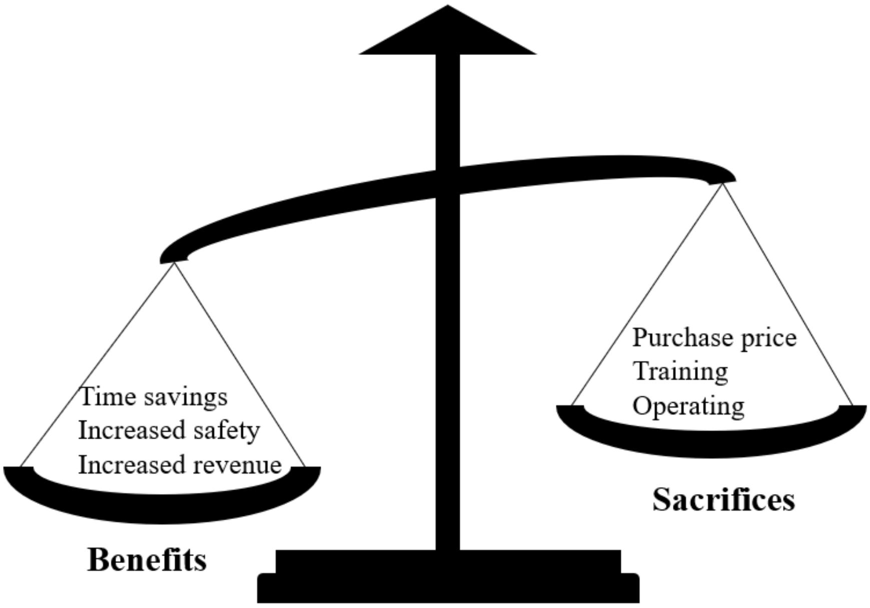

Figure 2. *Customer perceived value is always intuitively calculated by every customer. (adapted from Butz & Goodstein (1996) and Belliveau et al. (2002))*

Payne et al. (2008) state that customers can have different views on what the benefits and sacrifices are, as they depend on individual perception, which is determined in the cognitive and social processes in the customer's mind. According to Kärkkäinen and Lyytikäinen (2000) the influencing factors are the customer's needs, wishes, attitudes, opinions, beliefs, values and strategies.

The components of benefits and sacrifices (strategic, social, psychological, and economic) are often categorized either on the basis of what they offer (products and services) or on the basis of their measurability and observability. Benefits are the product, service, or a combination of them, that positively influences the customer's decision to buy. Conversely, sacrifices are characteristics that the customer perceives as negative. (Bucassa et al., 2008)

In her study, Lapierre (2000) found 13 value-based drives: ten for benefits and three for sacrifices. These drivers are product, service and relationship related. These drivers are listed below.

Table 1. *Benefit value-driver according to Lapierre (2000).*

Alternative solutions	Product related
Product quality	Product related
Product customization	Product related
Responsiveness	Service related
Flexibility	Service related
Reliability	Service related
Technical competence	Service related
Supplier's image	Relationship related
Trust	Relationship related
Supplier solidarity with customers	Relationship related

Table 2. *Sacrifice value-driver according to Lapierre (2000).*

Price	Product related
Time/effort/energy	Service related
Conflict	Relationship related

According to Lapierre (2000) customer sacrifices are the overall monetary and non-monetary costs the customer invests for the product or service or gives to the supplier in order to complete the offer or to maintain a relationship with a supplier. Non-monetary costs can be defined as the effort, energy or time invested by the customer to obtain and use the products or services or to create a relationship with a supplier (Lapierre, 2000)

2.3 What factors influence customer value?

Product development management (PDM), supply chain management (SCM) and customer relationship management (CRM) are the most important business processes for creating customer value. PDM focuses on customers' current and future needs and aims at developing solutions to meet those needs. SCM is concerned with how quickly and efficiently everything that is needed for the solution, i.e. physical things and information, is delivered to the product. CRM aims at identifying customers, creating customer knowledge, building customer relationship and creating customer perception of the company's product and the company itself. (Anderson et al., 2009)

It is important to understand the value creation logic of the customer. This begins with getting to know the industry of the customer, their business process, key decisions makers. It is also important to be able to find what are the features that the customer values. (Keränen ja Jalkala, 2014)

Finding value often starts with identifying the needs of the customer. However, it is not enough to simply collect a list of needs from customers. Often customers are not necessarily able to verbalize all their needs or, for example, do not identify all their needs. (Keränen et al., 2000) Or sometimes the parties might not "speak the same language". Customers might tell the needed attributes in their own terminology, while engineers and product developers might speak technical jargon, which might not be familiar to the customers. (Coppenhaver, 2018) It is therefore important for the company to have an understanding of the customer's behavior in order to identify any needs that the customer may not be able to express. (Keränen et al., 2000)

In addition, customer needs are a dynamic or changing characteristics. This is why a supplier can achieve greater customer value by understanding the customer's business domain and being able to assess future expectations. (Grönroos, 2011) Changes in customer value can also be influenced by changes in what a competitor offers. (Belliveau et al., 2002)

Customer identification starts with identifying clearly the customer, including everyone in the decision-making concerning the purchase. This can be quite difficult in the B2B environment, as decision-making process can be complex. The primary customer is usually easily pointed out but other strategically important people in decision-making process are often overlooked. Everyone in the decision-making process can have different aspects that they value in the product. It is good to understand all of these. It is quite rare that decisions are made by only one individual alone. Everyone that influences the buying decision to the smallest part must be defined as a customer. (Butz &

Goodstein, 1996) According to Anderson et al. (2009) the most important thing is to identify the key decision makers and be sure to meet their needs. Key decision makers are the ones who can derail any decision.

Customer value is defined by the customer, i.e. the customer defines the value of the product or software. (Leroi-Werelds et al., 2014) In the business world, purchasing decisions are often perceived as being based on purely rational behavior, with only economic benefits in mind. However, as VTT points out in its publication (Korhonen, Valjakka & Apilo 2011), that this is not entirely the case, and that psychological economics has shown that economic decisions are not taken on a completely rational basis. Humans are not capable of processing all information on a conscious level, and some of it is done unconsciously. The ability to think and make decisions can be divided into reasoning and intuition. Reasoning is a conscious activity like calculation and intuitive thoughts are spontaneously and effortlessly generated. The intuitive system is the basis for most human decision-making, as it is faster and less complex. (Korhonen, Valjakka & Apilo, 2011)

2.4 Customer Relationship Management (CRM)

One of the factors affecting customer value is Customer Relationship Management (CRM). It is a key tool for researching and managing customer value. CRM systems can be used to collect, store and analyze information about customers. This provides a valuable perspective for identifying and developing customer value. CRM enables the documentation of customer interactions and the use of this information in product development, marketing and sales. CRM systems help companies to understand better their customers by analyzing their buying behavior, needs and feedback. This information can be processed into insights that are important to the business and can be used to develop products and services to better meet customer expectations and needs. CRM can be used to improve communication and personalize customer encounters, increasing customer engagement and satisfaction. In customer value research, CRM acts as a strategic tool to systematically collect, comprehensively analyze and use customer data for decision making, ultimately improving the competitiveness of the company and the quality of customer relationships. (Buttle & Maklan, 2015)

Roberts-Phelps (2001) identifies four steps for the organization to move forward to relationship-based management: segmentation, analyzing current behavior, developing strategy to achieve target behaviors and behavior maintenance. By the term behavior

Roberts-Phelps means customers buying behavior and customer behavior in relationship to the supplier, the product and service. In Customer relationship management the information about customers is brought together to one central source. Every customer is someway unique.

Customer relationship value is a concept that describes the total value of the relationship between a customer and a company to the company. This value is not limited to direct purchases by the customer, but also includes many other factors such as customer loyalty, the power of referrals, the potential for collaboration and the value of customer feedback. Understanding and developing customer relationship value is critical to the long-term success of a business. Companies that are able to create and maintain high levels of customer loyalty are better able to anticipate their customers' needs, develop relevant products and services, and build long-lasting and profitable customer relationships. Therefore, analyzing and optimizing customer relationship value is a key part of a modern business strategy for sustainable growth and competitiveness. (Anderson et al., 2009)

2.5 Identifying customer value

In identifying customer value the goal is to understand what aspects of a product or service are most valuable to customers. This involves recognizing the specific features, benefits, and attributes that customers perceive as important. (Anderson et al., 2009)

According to Tuli et al. (2007) requirement definitions are considered as a key part of a solution. The challenge is, that customers are not always fully aware of what their business needs are, and/or cannot easily articulate them to the supplier. It is imperative for a supplier to ask the right questions with various stakeholders within a customer organization in order to ascertain both acknowledged and unacknowledged needs. In addition, requirements definition is not just about asking and writing down technical requirements but should understand the customer's wider business needs, employee situation, business model etc. In addition to this, it would also be good to define the current and future needs of the customer, so that these can be taken into account in the product design. Future needs should be taken into account, because as the customer's needs change, the value they perceive in the product will also change. Long term value can be taken into account, for example, by making the functions upgradeable / replaceable.

The introduction phase can deliver value to the customer by identifying the customer's skill level/capabilities and providing the necessary information and training on the product to enable the customer to get the desired benefits from the product. This is also a good opportunity to see if there are any new customer needs that arise during implementation that the customer has not previously been able to express. (Tuli et al., 2007)

In the post-implementation phase, value is created not only by providing spare parts, operational information and routine maintenance, but also by introducing new products as customer needs evolve and change. In other words, post-market value should be thought of as an ongoing relationship between a supplier and a customer. (Tuli et al., 2007)

When identifying customer needs, it's easy to prioritize the ones you think are most important based on your industry knowledge or personal experience. Avoid this mistake. To truly understand the customer's perspective, let them categorize and rank their needs into primary, secondary, and tertiary groups. Ask them to prioritize these needs statements based on importance or other relevant factors. This approach will help you grasp which needs matter most to the customer and which ones they are most likely to pay for. (Coppenhaver, 2018)

Customer need assessment according to Coppenhaver (2018) involves conducting VoC (voice of customer) research to uncover customer needs, wants, and preferences. This is typically done through face-to-face interviews or spending time with customers to observe their daily routines. Such engagement helps to understand what customers like, dislike, and the trade-offs they make when selecting product designs and functionalities. It aims to quantify what drives customer value and the potential benefits of new product, including what customers are willing to pay for these benefits. This information is also crucial for determining future product positioning and pricing.

According to Coppenhaver (2018) the product management is responsible for hearing and understanding the voice of customer. This does not mean that everyone else can forget and ignore customer value, but that product management is the responsible party for organizing the activities involving VoC.

In customer segmentation customers are divided into groups that can be targeted for future products, research or marketing. Similar to consumer markets, business markets can also be divided into segments based on variables such as geographic location, desired benefits, and usage patterns.

It is also possible to perform your own customer value analysis by asking your customers to identify your strengths and weaknesses compared to competitors (Woodruff, 1997). This could cover the following areas:

- Identify Major Attributes: Ask customers to specify the attributes and benefits they look for when selecting a product or vendor. These are often known as Key Performance Indicators (KPIs).
- Rate Importance: Have customers to rate the importance of each attribute identified in the first step.
- Assess Performance: Evaluate how well your company and competitors perform on each of these attributes.
- Segment Analysis: Examine how responses vary across different customer segments. If significant differences are found, opportunities to tailor your product positioning for different markets may occur.
- Ongoing Monitoring: Continuously track customer values as economic conditions, technology, and competitive landscapes evolve.

Suppliers often have a product-centric view of customer solutions, while customers see solutions more as a process, with an emphasis on the customer-supplier relationship. This means that customers see solutions as a series of processes that include defining customer needs, customizing and integrating products and/or services, deploying them and providing post-deployment support. Customers value ongoing support and the ability to adapt solutions to their changing needs, which underlines the importance of a long-term partnership rather than a one-off transaction. (Payne et al., 2008)

Keränen & Jalkala (2014) describe the process of customer value identification in B2B (business to business) companies through four key phases: value potential identification, baseline assessment, performance evaluation and systematic data management. Keränen and Jalkala (2013) also described performance evaluation to be a part of customer value assessment.

Value Potential Identification is a phase that involves understanding the customer's value creation logic, and demonstrating how a supplier can add value to the customer and their business. It includes defining customer needs and designing a product that will satisfy those needs. This phase is completed before the delivery. Baseline Assessment phase involves evaluating the customer's current performance in specific business areas. It is related to integrating and deploying the supplier's product into the customer's processes.

This assessment is also completed prior to the delivery. Performance Evaluation involves conducting trial runs. It will specify the impact that the product has on the customer's performance. Long-term Value Realization phase verifies and documents that the identified value potential has been realized after the delivery. It relates to the post-delivery phase, which can last from months to several years. Lastly, the Systematic Data Management is an ongoing phase, which involves managing relevant customer data throughout the value potential identification, baseline assessment, and long-term value realization phases. It ensures that customer data is systematically managed across all phases of the value process. The process is not strictly linear; phases may overlap and be iterative. However, for illustrative purposes, they are presented in this sequence in figure 3. (Keränen & Jalkala 2014)

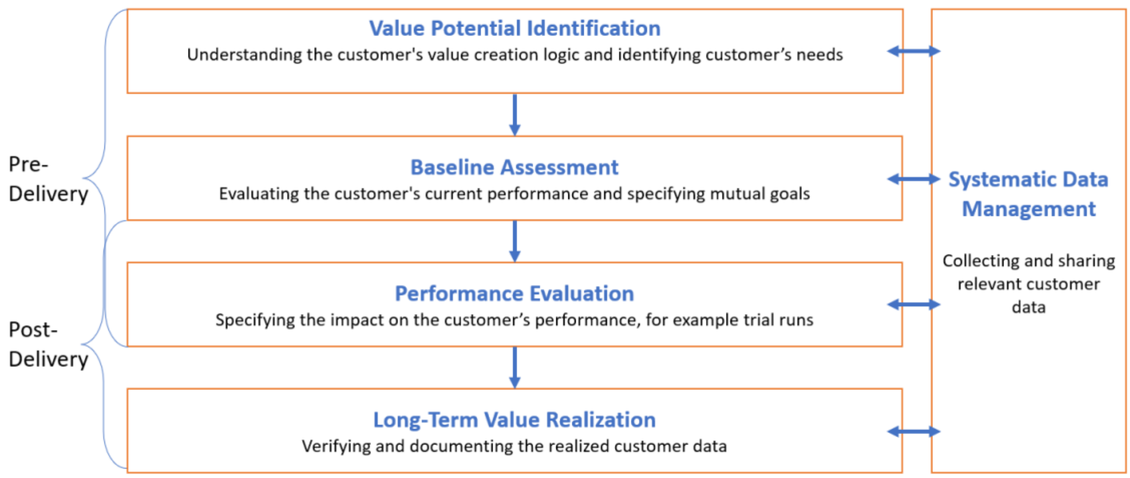

Figure 3. *Keränen & Jalkala (2013) framework for customer value assessment. (adapted from Keränen & Jalkala, 2013)*

2.6 Measuring customer value

Measuring customer value is not an easy job. This is due to its complex nature. Some benefits and sacrifices can be easily measured in monetary terms, but others can be more challenging to measure. For some, we can only guess what the monetary value might be. (Anderson et al., 2009)

When measuring customer value, it should be taken into account whether the company offers a product, a service or both. The traditional way has been to measure economic and operational value. The financial ratios provide information on whether a business is trading and what the trend in trading is at the moment, but they do not tell us about customer value or the relationship between customer types. Emotional and symbolic value may often have been left unmeasured even though they affect a company's business. Measures of customer value include service levels, customer satisfaction and supply chain performance. (Hemilä et al., 2016)

Service quality has a direct impact on supply chain costs and performance. Measures of supply chain performance can include response time, total cost of ownership, on-time delivery and delivery reliability. The number of products delivered on time is described by the service level. When setting service levels, it is useful to understand the components of customer value and their relationships. For example, the importance of delivery may be less important to the customer than the fact that the product can be tailored to the customer's requirements, the price remains low and the information is delivered on time. However, any metric should be set with a deep understanding of the customer's needs. The indicators should therefore be built on the basis of what customer value is being considered. (Hemilä et al., 2016)

In many companies, customer value has often been measured through customer satisfaction. Customer satisfaction surveys have often been short and to the point, making them easy to administer and respond to. It is also easy to evaluate the results of the surveys. However, Gale and Wood (1994) point out that this does not always tell the whole story. Even if customer satisfaction is good, customers may still switch to a competitor's product. The reasons for this are often that satisfaction surveys do not reach the customer

Ulaga (2001) states that customer value analysis is measuring the gaps in between customers and suppliers value perception, auditing customers' needs and comparison the business to competitors.

According to Belliveau et al., (2002) it is important to remember that when measuring CPV performance (customer perceived value), the customer evaluates also alternative products from other suppliers, not just the proposed one. If the supplier does not benchmark similar products produced by other providers, we are not measuring proper customer value, only the satisfaction with the product in question. If you find out the customer's opinions on some features without relating them to a comparison with another products, you get little information of real value of the product developer.

Collecting customer data can be challenging due to its complex nature (Keränen & Jalkala, 2013). It is difficult to measure because customer value encompasses various factors that are often subjective and context dependent. Therefore, it is imperative for businesses to employ multiple tools and methods to capture a comprehensive understanding of customer value accurately.

2.7 Methods for customer value assessment

In this chapter different kinds of customer value tools and methods are presented. For data gathering there are many different tools that can be used. The chapter lists the most common customer value tools and discusses a few of them in more detail.

Table 3. *Customer value assessment methods.*

Tool	Short description	Source
Importance rating	Customers are asked to rate the importance of given features of a product.	Anderson et al., 2009
Prioritization matrix	For documenting customer needs into technical characteristics before QFD (quality function deployment).	Peralta et al., 2020
Value analysis	Useful for making gradual improvements to an existing product.	Peralta et al., 2020
Value proposition canvas	Focus in the voice of customer in early stages of developing a business.	Peralta et al., 2020
Value engineering	For identifying value in the product.	Peralta et al., 2020

Tool	**Short description**	**Source**
Axiomatic design	For transforming customer needs into requirements.	Peralta et al., 2020
Interviews	Consist of face-to-face interaction with customers. There are many different kinds of interview methods.	Anderson et al., 2009; Kärkkäinen et al., 2014; Belliveau. et al., 2002;
Field value-in-use practice	Field value-in-use practice can be combined with interviews. Customers can be interviewed while using the product. This way the cost elements associated to the value attributes of a product.	Anderson et al., 2009
Quality Function Deployment	For identifying potential customer value for an innovation based on customer requirements and the quality characteristics of the product.	Peralta et al., 2020; Kärkkäinen et al., 2014: Lyytikäinen., 2000
Stakeholder map	Helps with understanding the entire value chain and the needs of different stakeholders for value adding.	Peralta et al., 2020
Direct survey	Customer value is assessed by giving the customer to use the product and then assess the value of the given product.	Peralta et al., 2020; Anderson et al., 2009

Tool	Short description	Source
Customer Journey Map	Visualizes customers decision journey process. A visual representation of the events through which customers interact with the service organization throughout the purchase process.	Rosenbaum et al., 2017

2.7.1 Interviews

Interviews can be done in many different ways. The location of the interviews and the size of the group interviewed may vary. These can be for example one-on-one interviews, focus group interviews, lead user interviews. (Kärkkäinen & Lyytikäinen., 2000)

According to Coppenhaver (2018), customer interviews are ranked to be very effective customer value / voice of customer research method. Potential customer sites and representatives are selected for interviews, focusing on key purchase influencers and users. Small teams of two to three people, usually from marketing and engineering (and sometimes sales), conduct the interviews. Including engineering is crucial to minimize misinformation and prevent loss of information from indirect communication. The interviews follow a structured guide, emphasizing open-ended questions that explore user needs, functions, and benefits related to their roles, rather than just product features. With the structured guide, the method is repeatable for gathering customer responses.

2.7.2 Observing product in use

This method can also be called field value-in-use assessment method (Anderson et al., 2009). One way to determine customer value is by observing the customer using the device. This may reveal customer needs. Observation and interviews can be conducted either by collaborating with the customer/using the device together or by passively observing from outside. The best approach is to observe the customer's use of the device in its actual usage environment. (Ulrich & Eppinger, 2012; Anderson et al., 2009) When observing customer using the product and doing daily tasks, true customer needs can be understood. (Coppenhaver, 2018) Unanticipated needs can be found more easily in product in-use-interviews. Problems that the user needs to resolve may occur over the course of their day, and these might be something that give new needs away, needs that the customer did not even think of. (Ulrich & Eppinger, 2012; Coppenhaver, 2018)

According to Coppenhaver (2018) relying solely on what customers say without considering their actual behavior, and how they use the product can lead to significant misunderstandings. This disconnection can create substantial errors between a product developer's or market researcher's perception of customer needs and the true voice of the customer.

2.7.3 Surveys

Surveys are a very easy feedback method that can be used to get feedback from small to bigger customer groups. They can be used for collecting feedback from existing or new products, but also to gather data regarding product features and functionalities. Once you have collected all the data, it will be necessary to analyze the results. (Coppenhaver, 2018) In Direct Surveys the product is described, and customers are asked to assess the value of the given product (Anderson et al., 2009; Peralta et al., 2020). The Surveys can be done by e-mail, telephone, internet based and many others (Kärkkäinen & Lyytikäinen, 2000).

3. RESEARCH METHODOLOGY AND MATERIALS

Chapter 3 describes the research methodology of this study. The methodology aims to provide a systematic and accurate approach to gathering, analyzing, and exhibiting data relevant to the research objectives. The chosen methodology aligns with the nature of the research questions and ensures the credibility and reliability of the findings. The purpose of this section is to explain how the research was designed and conducted in order to assess the company's current approach to customer value.

3.1 Research method and approaches

This study investigates the perception of the target company's customer value of DL equipment. It also aims to determine the current state of customer value research. The work is limited to exploring Sandvik's internal customer value research and data collection. The work is limited to long-hole devices. This will allow interviews to determine whether and how customer value perceptions differ internally.

This study is divided into a theoretical and an empirical part. Theoretical research is done as literature review. The research material used for the literature review was collected from publications from the libraries of the Tampere University, peer-reviewed articles, journal articles, open online publications and conference proceedings. The literature review provided theoretical information necessary for the study. The theory can be used to assess how well the target company has explored customer value as well as to give new ideas for improvements.

In the empirical part, qualitative research is conducted. A qualitative approach was selected as the methodological choice, because in qualitative research the aim is to collect broad information from the field and in real environment (Hirsjärvi et al., 2007). Qualitative research also uses non-numeric data like words, images, and audio records as quantitative would use numeric data (Saunders et al., 2019).

Given the research problem and the questions, numerical data would not provide the desired answers, and the necessary data is not available. It would be challenging to study numerically how customer value is studied within a company, and which features influence customer value in mining equipment.

According to Saunders et al. (2019) qualitative research can have various strategies. Common strategies are for example action research, case study research, grounded theory. Research strategy for this study was selected to be a case study, where the case was limited to the target company. Common data collection methods used in case studies are questionnaires, interviews, observation and documents (Saunder et al., 2019). In this study, data collection was based on interviews and documents. According to Hirsjärvi et al. (2007) and Hyvärinen et al. (2017) interviews are a good data collection method when you want to get in-depth information. In interviews, for example, it is easy to ask for additional information on the formation of opinions, unlike in surveys. Interviews are also better at motivating respondents than questionnaires, and easier to obtain a broad range of responses. Interviews are also a good data collection method when information is being collected from an unknown area. In this study, an interview was chosen as one of the methods of data collection, as it is the most suitable for research problems.

Hyvärinen et al. (2017) and Saunders et al. (2019) divide interviews into three types: structured, semi-structured and unstructured interviews. In this study, the semi-structured interview model, which is the most common for qualitative re-search, is used. It is typical for semi-structured interviews that the themes ad-dressed are the same in all interviews. In other words, the questions stay the same for all, but there are no answer options, and the order of the questions may vary between interviews. In semi-structured interviews there is also room for additional questions, if the situation requires them. These types of interviews allow the voice of the respondents to be heard (Saunders et al., 2019; Hirsjärvi & Hurme, 2022). This method serves the purpose of this study well, as one of the objectives of the research is to know how customer value is perceived in the company and how it is collected and studied in the company. EAC interviews ask each interviewee for their own opinions on, for example, what are the important features of mining equipment. This gives a fair picture of whether opinions vary within the company and allows us to consider what might be the reason for this.

Qualitative research favors people as a source of information and the target group are selected purposefully, not randomly (Hirsjärvi et al., 2007). Purposive sampling was used to select participants for interviews based on their roles, responsibilities, and expertise related to customer value within Sandvik. The sample will include individuals from various departments such as sales, marketing, front line and product development to ensure diverse perspectives. Cross-sectional studies are done for particular phenomenon at a particular time (Saunders et al., 2019). This study was carried out as a cross-sectional study. The cross-sectional approach was well suited to this study, as the data was collected over a short period of time, unlike what would be done in a longitudinal study (Hirsjärvi et al., 2007).

3.2 Data collection

Data for this research was collected with semi-structured expert interviews. The interviews in this study were conducted with seven experts in their field at Sandvik. The interview questions, themes and structure can be seen in Appendix A.

All interviews were conducted as team interviews and were recorded. The languages for the interviews were Finnish and English, based on the primary language of the respondent. After the interviews, the recordings were transcribed. The material was collected in one place so that it could be easily returned to during the analysis phase. Information on the interviewees can be seen in the table 2 below.

Table 4. *The roles of the interviewees and the length of the interviews.*

Job title	**Duration of interview**
Business Development	43 m
Sales	1 h 4 m
Marketing	1 h 5 m
Product Specialist	38 m
Product Engineer	1 h 21 m
Product Engineer	1 h 7 m
Product Manager	38 m

In addition to the interviews, one method for collecting data used in this study is participant observation. Participant observation is a method used in qualitive research especially by practitioners who use qualitative methods as means to develop more effective practices for the workplace (Eskola & Suoranta, 2001). Information was obtained in particular from the test team.

3.3 Data

The interviews were recorded and then transcribed accurately to text, after which the data was coded according to themes. To enable easier access, these coded data samples were organized in Excel spreadsheets.

According to Saunders et al. (2019) there is no standard approach on analyzing qualitative data. Deductive approach was used in the data analyzing. In the deductive approach the existing theory is used to shape the approach adapted in the research and data analyzing process. The analysis searched for answers to the research questions and examined similarities and differences between the interviews, in comparison with theory. (Saunders et al., 2019)

4. DATA ANALYSIS

In this chapter the results of the empirical study and the interview data are presented. The results are divided according to themes which emerge from the data. In presenting the results, direct quotes from the interviews have been used to reinforce the main observations made by the researcher.

4.1 Who is the customer?

The interviewees were able to define the customers quite clearly. Two were mentioned: the mining industry and the development industry.

> " …so we have the mining business. We also have channeling and construction…"

Each and every interview identified both the mining companies and their contractors as the customer. In addition, the interviews of marketing and product development brought up the consultants, especially in connection with new mines. However, all interviewees did not bring up the role of the consultants, which might suggest that their role is not always seen central when it comes to issues concerning customer value.

> "Asiakas voi olla kaivosyhtiö tai sitten urakoitsija, joka urakoi kaivoksissa ja joskus voi olla niinku täällä rakennuspuolellakin, muistan joskus meni…"

> "And then we also have another big group would be consultants."

Decisions makers are many and who are the most important depends on the size of the business. Especially in the small businesses the operator has a big role in decision making. This is true to some extent in bigger businesses as well, which is rather surprising. The management does not necessarily take as big a role in the decision-making process but are more or less responsible for financing.

> "…se riippuu niin paljon esimerkiksi kaivosyhtiöstä, ja se riippuu niin paljon sitten esimerkiksi yhtiön koostaa, millainen organisaatio siellä on ja tota ja tota. Mutta kyllähän me tietysti aina tiedetään sitten se, että ketkä vaikuttaa siihen siihen ostopäätökseen, että siinä nyt on ehkä joku skandinaavia nyt on semmoinen ääripää joku Ruotsi, että siellä on niinku aika semmoinen niin kun siellä on niinku se päätöksenteko siinä on, niin siinä on niinku mukana paljon sitä operatiivista porukkaa ja enemmän sitten taas jossain. Mennään jo ihan erilaisiin kulttuuriin johkin Intiaan niin sittenhän se on niinku se heidän niinku korkealla tasollaan, niin niin se on kaivosyhtiö. Ja sitten taas jos se on kaivos jossa sitten tehdään urakointina niinku enemmän siinä sen urakoitsijan joka omistaa sen firman niin ehkä se se niinku hyvin pitkälti se omistajapuoli aina päättää, että mitä laitteita ostetaan. Ja sitten sitten tunnelin

> urakoinnissa tunneli urakoinnissa taas on niin kun meillä on niinku pieniä urakoitsijoita esimerkiksi Intiassa paljon, jotka on niinku perheyrityksiä. Ne päättää tietysti kaiken itse sitten taas. Mutta sitten on myös isoja rakennusyhtiöitä niinku täällä pohjoismaissa joilla on sitten se niinku se tavallaan se tietty osasto mikä tekee tunnelin rakentamista ja se sitten niin kun päättää, että että kyllä me niinku tiedetään aina että että ei se niinku meille mikään mysteeri, että kyllä mä aina tiedetään että kuka ne kuka ne niinku ne laitteet sitten ostaa että.”.

Purchase has also a role in this process. Some businesses have given procurement specialists the power to make the decisions. In this case the purchasing decisions are made on the basis of comparing tables which list the technical details of the product. When the operators have a say, they are more often able to state more detailed, customer-related, requirements for the product.

> “, because of the different types of companies that we work, the decision making people look very different in each one. So, that's quite a difficult question to answer when it comes to like your influences, the buying decision”

The interview data collected from product development brought up that Sandvik categorizes customer segments in four different ways. The customer segments were not brought up in all interviews. The segments seemed to be particularly interesting for product development. However, the interviews brought up that the product development is not always aware of the customer segment they are working for, since this information is not necessarily shared with them.

> “Ne minkä segmentin asiakkaat niin tota se on semmoinen vähän semmoinen harmaa eikä sitä kovin paljon tuoda niinku tavallaan ilmi siinä siinä projektin määrittelyvaiheessa. Eli eli se ei näy mun mielestä kovin paljon.”

To sum up, the data shows that the interviewees are generally aware of the kind of customer they are working for and dealing with. Thus, Sandvik as a business has a good understanding of their customer type and this understanding is widely spread throughout the different divisions represented in this data. As mentioned earlier (chapter 2.5.), it is of utmost importance to identify the customer and the key decision makers (Keränen and Jalkala 2014, Anderson et al., 2009) and this Sandvik seems to be doing well.

4.2 Interacting with the Customer

Sandvik interacts with the customer in several ways. This chapter discusses the interactions, which in their part increase understanding of the needs of the customer. These interactions include processes such as visits to the businesses, discussion with the customer, customer visits in Sandvik, collaborative projects, ...

The interviews revealed that feedback from customers comes from many different directions. Information from the customer comes from both formal (for example surveys) and informal sources (through emails to different participants in the process). All of the departments involved in this case study participate in the process of information gathering. Knowledge of the customer needs travel through the sales department, product specialists and directly to the product owner. Salespersons are easy to approach by the customer, because they initially have a good number of contacts with the customer.

> ”…myyntitilanteessa esimerkiksi ja sitten muissa keskusteluissa asiakkaiden kanssa, että tota asiakas haluaisi esimerkiksi testata jotain uutta ominaisuutta mitä meillä ei joo. Ja sitten se kysyy, että onko semmoinen tehtävissä ja sitten se keskustelu niinku sitten saattaa johtaa siihen, että me sitten kehitetään jotain uutta. Uutta niinku tän nykyisen tarjonnan lisäksi.”

> ”… yhteyshenkilö siellä omassa maassa taikka omalla myyntialalla, joka sitten pystyy jotenkin ymmärtää sen tarpeen ja jolla on kontakti tänne meille, niin se sitten niin kun jatkaa sitä keskustelua sitten,”

The product owner was also identified to be a necessary link mainly between the sales and the product development to the direction of the product and not so much towards the customer. However, the product owner also participates the face-to-face meetings with the customer on site and in the premises of Sandvik. This information also often comes in the form of separate emails and is therefore not always documented. Sometimes the product owner is informed by the sales and technical support. The information is passed on through the product owner.

> ”Tämmöiset niin kun asiakasyhteistyön palaverit taikka testi tai tän tyyppiset, jossa siis asiakas esimerkiksi tulee vaikka tänne tehtaalle niin ne on yks muoto”

The third link to customer feedback is the product specialist. Product specialists work close to the customer. They have a lot of contact with the client in their own environment. Once the product is sold, it will be set up on site. During commissioning, a product specialist will go to the place of delivery and adjust the machine to suit the environment. During this same visit, it is also possible to train the operator on the new machine and its features. These visits allow the product specialist to talk to the user of the device in the user environment.

> “…sehän niinku sisältää kaikkien sehän mehän pidetään siis koulutuksia, koulutetaan asiakkaitamme, koulutetaan meidän etulinjaa. Joo ja jopa täällä on vietetty koulutuksia, jos on niinku joku tarvitsee, tarvitsee jotakin johonkin. Sitten laitteen startit, uusia laitteita kun menee asiakkaalle niin käydään siellä niinku kouluttamassa ja näyttämässä kuinka ne toimii. Sitten on vika kiekkoja välillä että siellä on joku joku vika päällä ja joku ei toimi.”

There is also a customer relationship side to these visits. When the product specialist is a familiar face on the customer site, the users will more easily give feedback and talk about their needs. Often a mine has equipment from more than one supplier. This provides good comparative data directly from the user as the customers are also able to identify the strong points of the equipment provided by competitors.

> Vertaa siis monessa paikassa on molempia... kyllä sitä vertailee aika paljon ja ja tota no toisille asioille toisella on tärkeätä toiselle toiselle mutta niinku kyllä ne usein sanoo että niinku tuossa kIpailijassa on tää ja tää parempi ja…”

Product specialists compile a trip report from their trips, in which they collect feedback from customers.

> ”sieltähän kerätään siis me kerätään aina aina tota noin ja sehän on tietysti hyvä tapa niin kun sen kerran paikalla oltiin tota noin niin sehän on hyvä kerätä sitä ja sitten sitä koitetaan tuoda tänne aina ja ja tehdään joka reissusta niinku tota semmoinen matkaraportti missä kirjataan niinku ne asiat ylös…”

These reports are regularly written by the product specialists, however, it is unclear to which extent they are efficiently used by all departments.

> ” Niin siis on joo mutta en en tiedä kuinka paljon niitä sitten, että kyllä niitä kaikennäköisiä palavereita kun tää on sitten aina pitää, mutta että en sitä niinku suoraan tavallaan niinku osa niistä päätyy sitten ihan suoraan niin kun muutostöihin mutta osaa sitä jää sinne että nice to have.”

> ”Itse en osallistu niihin vaan melkein kenttä palautteen tekijöiden tekijöiden edustaja osallistuu esimerkiksi niihin yleisesti, mutta niitä nyt on sanotaan nyt joillain alueilla sitten kerran kuussa tai jotain muuta vastaavaa, niin tää on kuitenkin joka viikko jollekin alueelle niin sanotusti että niitä niitä pyörii jatkuvasti. Elikkä sitten pyritään niinku informoimaan, että näitä palautteita miten niitten tilanne on, tehdäänkö eikö tehdä ja ja milloin ne on sitten mahdollisesti saatavilla tän tyyppisiä asioita”

In addition to product specialists, others, like for example test engineers and product owner, and sometimes product development as well, carry out company visits. But for these visiting on site is rarer. For example, the product development does not travel as often as the specialists do.

There is a lot of co-operation with customers, for example in the form of tests. Especially in connection with new equipment, Sandvik works with customers in the customer's mining environment doing tests with them. This allows the equipment to be tried in the customer's environment and valuable information about the performance of the equipment and the customer's views can be gathered. The issues raised in the device tests are recorded in the project excel sheets, but in the interviews and observations it was still unclear whether the information is actually used.

> ”Toinen puoli on tietysti kenttätestit itsessään kun meillä on tuote niin kun asiakkaalla”

> ”… tavallaan media on yleensä, mulle tulee sähköpostilla ja tai sitten jollain muullakin kirjoitetulla viestillä ja… esimerkiksi se saattaa tulla meidän tekniseen tukeen kanssa sähköpostilla tai muulla kirjoitetulla viestillä. Silloin se on nimenomaan niinku joku tekninen ongelma liittyen siihen kyseiseen laitteeseen.”
> “Aika yleensäkin asiakas yleensä niin kun sitten keskustelee semmoisten ihmisten kanssa meillä jotka niin kun osaa siitä keskustella että että ei välttämättä aina se myyntimies.”

When the test engineers walk around the sites in their Sandvik jackets, they are often asked about older equipment as well. It seems that the customers think that if you have this jacket on you know everything about every possible Sandvik product, which is not always the case. However, these encounters provide valuable information about older equipment. This is important because long-term customer value in long customer relationships is as important as is the short-term customer value (Lapierre, 2000).

> “… kun on vaan Sandvikin vaatteet päällä niin luullaan että sä tiedät kaiken…”

Thus, on-site training of the product and its features is a very important factor in terms of customer value. When the customer is guided through the first steps of using the new machinery, they feel that their needs are properly taken into account. With the aid of training, the customer will be able to get all intended value out of their new machinery (Anderson et al., 2006).

To sum up, the data shows that there is a fair amount of co-operation between Sandvik and their customers. The sales and the product specialists are clearly the actors who have the most frequent contact with the customers. The product specialists have the best access to feedback on the operator level. Part of the feedback gives information about malfunctioning products. The product specialists state that some of the feedback has a feel of personal opinions, and, furthermore, is mostly related to the particular habits that the customer has created over time. The rest consists of useful information about needs yet to be realized. The sales are mostly in contact with the customer’s purchasing department or other administrative level actors.

4.3 Existing Tools and Methods for Identifying Customer Value in Sandvik

The data brought up several different kinds of tools for identifying customer value in Sandvik. This chapter describes the tools mentioned in the data by the interviewees and how they are used in Sandvik. Most of them are not straight forward tools for analyzing customer value, but instead they are mainly used for other purposes, for example, in marketing and sales. However, at the same time these tools provide useful information from the perspective of identifying customer value.

Many interviewees thought that they have not used any tools for identifying and analyzing customer value. Despite this outspoken impression, all kinds of tools which can be of use for this purpose were mentioned in the data.

> ”En enkä edes enkä edes tiedä mitkä semmoiset olisi.”

When asked about *the CRM-system* (customer relationship management), different participants expressed differing views on its role. Some did not see the system as a tool for identifying customer value, whereas especially the sales considered the CRM-system useful. However, it seems that this system is not widely used in other departments even if it is available for them as well.

> “Probably the most common tool will be that the Net Promoter score NPS. Tool which is part of the CRM. So part of sales force, the sales area teams are primarily responsible for running the NPS activities in their customer in their region because their voices to the customers.”

> ”Joo jos sieltä tulee laitteisiin liittyviä toiveita niin niin tuota tokihan se tieto välitetään sitten tuonne meidän tuotelinjaan, keinoja on monia. Meillä on nykyisin aika hyvä CRM järjestelmä Customer Relationship Management järjestelmä käytössä, johon pyritään pistämään kaikista niin kun asiakastapaamisista ja jopa puhelinsoitosta niin tota tekemään tämmöiset niinku visit report”

Customer satisfaction surveys are systematically conducted in connection with every product delivery. However, the interview data did not reveal, how this survey data is used after it is collected and does it lead to concrete actions.

> ”…teemme niin kun asiakaskyselyä laitetoimituksista.”

When asked about which tools there are available the product owner interviewed for this data brought up *Polarion*. Polarion is an internet-based tool, which is mainly and ordinarily used as a tool for engineering process management. It can be used, for example, in requirement management. In Sandvik, Polarion is one of the tools in which observations on customer value could be recorded. This tool exists and has been used to some extent, but not effectively. However, it became clear that even if some customer value-related observations had earlier been recorded in Polarion, this data had not been put to use. For example, a list of key features was compiled in this tool.

Another tool for documenting customer value in marketing is *a case story*. These stories are written especially when new products have been put to use for the first time. The stories are produced in collaboration with the customer. The customers are interviewed about the success of the product on the basis of which the stories are written. The stories are instruments for selling mainly, as they provide online content for marketing, but at the same time, they provide detailed information about customer value.

> "And then we all also in addition to that, the main place that we store our content like that is called Solid Ground. Solid Ground is Sandvik owned customer magazine… have a magazine of all of these great stories."

The data thus brings up several different kinds of tools, which are already used in Sandvik. *Customer Journey Map* was mentioned in the initial discussions as an interesting possibility. Customer journey map is a Customer Journey Map is a visual representation of the customer's experience and interaction with the company at different stages and touch points. The interviews did not come up, but a Customer Journey Map was obtained from the data outside the interviews. The dataset was created in 2021, but it is unclear whether the dataset has been updated since then. In a few interviews, interviewees were asked if they had heard of this file, but the answer was no.

Different kinds of *interviews* are identified to be customer value assessment tools in the literature review. Chapter 4.2. (Interacting with the Customer) discussed these in detail. However, the interviewees did not categorize these as tools for analyzing customer value as such.

Power BI is a data visualization software in which for example customer feedback can be stored and analyzed. This software has at least been used before for gathering customer feedback to one place, but it is unclear whether it is still in active use.

> "…Vieläköhän se on hengissä? Siellä näkyy niinku tää kaikki palaute kaikista laitteista ja sitä voi seurata ja eritellä…"

On the sales side, many different tools were identified. The interviews showed that in the coming years, sales has become more customer-centric and tools focusing on customer value have been added to the daily operations. Examples of tools used in the sale were Value Solution Selling and Feature Advantage Benefit. The FAB tool was subscribed to be a commonly known tool. This could lead to the conclusion that the idea and understanding of customer value research on the sales side is at a different level than on the product development side. On the product development side, this tool was not raised.

> "…meillähän on tämmöisiä koulutusohjelmiakin niin kun nää Value Sales liittyen ja sitten näin Value Solution Selling on nyt uutena tämmöisenä koulutusohjelmana tullut tullut tuota mitä myyntialueella ruvetaan pitämään kaikille myynnissä myynnin kanssa tekemisissä oleville henkilöille ja toki siellä on niin kun myynnille tällaisia tällaisia tota. Työkaluja mitä käytetään siihen arvon määrittelemiseen tai sitten niin kun arvon todentamiseen asiakkaalle. Ja ja tota nää on enemmän niinku tämmöisiä olemassa olevia yleisesti tiedossa olevia työkaluja. Yksi nyt minkä voisi mainita vaikka tämmöinen FAB työkalu, elikkä Feature Advantage Benefit, elikkä siinä vaiheessa kun

> me ollaan asiakkaalle vaikkapa laite esittelyjä tai tuote esittelyjä pitämässä niin niin niin kun jo jo lähtökohtaisesti ylipäätään se, että me paneudutaan tai pureudutaan siihen asiakkaan tarpeeseen tai ongelman ongelmaan, mikä meidän täytyy ratkaista, niin sitä kautta lähdetään sitten etsimään sitä oikeanlaista ratkaisua, mikä tuottaa asiakkaalle sitten optimaalisen ratkaisun sekä sekä maksimoi arvon mitä mitä tota kyseisellä tuotteella tai palvelulla tai mikä ikinä se onkaan, niin pystytään sitten tuottamaan. Mutta tää Feature Advantage Benefit on on juurikin niinku yks tämmöinen työkalu eli eli yksinkertaisuudessaan me voidaan esitellä joku uusi ominaisuus vaikkapa laitteessa. Mitä se tekee? Tää on sitten se advantage puoli. Elikkä mitä asiakas sillä saa verrattuna vaikka edelliseen laitemalliin tai edelliseen ominaisuuteen. Plus sitten benefit puoli on se, että mitä asiakasarvoa se itse asiassa tuo elikkä lisääkö se tuottavuutta? Parantaako sitten turvallisuutta tai näin poispäin elikkä elikkä mikä on se arvo mitä mitä asiakas sillä saa?"

4.4 A Comparison of Key Values in Polarion and the Interview Data

On the basis of the theory on customer value (see chapter 2), it can be concluded that the key value listing that already exists in Polarion software could be useful as a basis for creating an effective customer value tool for Sandvik's product development. Appendix C takes a look at the key features. As the listing of key-features is not public information because it is property of Sandvik and confidential as such, it cannot be discussed here in detail. The detailed discussion of the key values will be delivered to Sandvik. However, when cross-referencing the key values with the interview and observation data, we can state that these features are widely recognized in Sandvik, but some kind of a shared action plan between the different departments still needs to be developed.

5. CONCLUSIONS AND DISCUSSION

In this chapter the research is summarized, and practical implications are offered. While Sandvik already employs various methods for studying customer value, the research also identified areas for improvement. These improvements could promote a more systematic and cohesive approach to analyzing and utilizing customer value across different functions within the organization

5.1 Conclusions

This study focused on the current state and development needs of Sandvik's customer value research processes. The aim of the study was to understand how Sandvik currently identifies and analyses customer value, and to compare these processes with theories and methods presented in the literature. It also aimed to provide recommendations on how to further develop the study of customer value.

The study first looked at the literature on customer value theory and examined the methods that can be used to study customer value. In the second phase of the research, Sandvik's approach to customer value was explored through expert interviews and observation. The data obtained was then compared with the literature. The approach described above aimed at answering the question whether the internal data and knowledge is enough for drawing a list of key features in different underground drilling devices or do we need more customer contacts to make their voice heard. It can be concluded that internal data provides a lot of information. However, the processes of collecting, storing and sharing the data still need processing.

In the following, I will go through the research questions:

What methods can be used to identify customer value in connection with mining equipment?

Exploring customer value is a key part of a business strategy to improve the customer experience and gain a competitive advantage. Customer value can be defined as the ratio of benefits and sacrifices experienced by customers that influence their purchasing decisions and commitment.

Exploring customer value starts with identifying customer needs and expectations. This requires a deep understanding of the customer's business, processes and decision makers. It is important for the company to identify which attributes and factors are valuable to the customer. This can involve assessing both economic and non-economic factors such as the quality, flexibility and reliability of the product or service.

In Chapter 2.7 literature review identified many different kinds of methods for customer value analysis. One key approach to exploring customer value is through customer interviews, where customer opinions and experiences are gathered directly. These help to identify the value factors that customers consider important and that influence their purchasing decisions. In addition to this, it is important in interviews to identify who are they talking to and who influences the purchasing decision in the client company. Other methods for analyzing and identifying customer value are for example indirect surveys, field-in-use assessment, value engineering, value analysis and customer journey maps. In addition, customer value can be assessed using analytical tools such as Customer Relationship Management (CRM) systems, which allow for the systematic collection and analysis of customer data. Research methods can help a company to develop products and services that better meet customer expectations and needs, leading to a better customer experience and loyalty.

How is customer value researched in Sandvik?

The thesis showed that Sandvik has several ways of collecting customer value data. Customer value is studied in different departments and data is collected through both formal and informal channels. Eight different methods of customer value research emerged from the interviews and observations. According to this study, information comes in particular in the form of different types of interviews. This is an important and useful source of information, especially as it is widely available from the various decision-makers in the customer base. The interviews gave the impression that customers are happy to give their opinions and share information when they see a person in a Sandvik's jacket. The conversations that take place with clients in their own environment are particularly valuable. However, the processing and systematic use of data are areas where there is still room for improvement. In addition, some of the tools for identifying customer value have been forgotten and are therefore not used.

The study revealed that Sandvik already has tools in place to study customer value, but their use is not always consistent across departments. In addition, the understanding of the concept of customer value and its importance was highlighted in the study, but the lack of a common action plan between departments undermines the effective use of customer value.

In addition to the research questions, the work identified the need to highlight customer value in the company. The study found that the concept of customer value is recognized but could be more presented in the company. Therefore, it would be important to increase education and awareness of the importance of customer value at different levels of the business.

The interviews gave the impression that the company's employees do not feel that customer value is sufficiently visible. Awareness of customer value research and how to influence customer value could be increased. Many felt that customer value is not necessarily reflected in day-to-day work. In addition, it was felt that the sharing of customer value information relies heavily on coffee table discussions. Differences could be seen between departments in the way customer value is perceived. On the sales side, customer value was much more visible than on the product development side. Nevertheless, when asked in the interviews about the characteristics that create customer value, everyone seemed to have a similar perception. Broadly the same issues emerged in all interviews.

The study highlights the differences between departments. The study shows that although Sandvik has effective tools for customer value research, their use varies between departments. This can lead to a situation where customer value research is not always as consistent or systematic across the company.

5.2 Assessment of the study

This study provides an analysis of how customer value is researched within Sandvik Mining and Construction Oy. The research combines theoretical framework with empirical data gathered through interviews and internal document analysis. The use of multiple data sources (participant observation, interviews, internal documentation) strengthens the validity of the findings, offering an understanding of the current practices and challenges in customer value research at Sandvik.

The number of personnel interviewed is not as such big. However, since these interviews cover different actor roles within the company, they provide a wide variety of detailed perspectives on the topic and, therefore, give a good view to the challenges and strengths that Sandvik has in relation to customer value. However, the size of the interviews was smaller than planned for external reasons. Further research could widen the scope by interviewing more people on the managerial level and frontline. These could used to obtain an even more complete picture. It should also be noted that the interviews were conducted in two different languages, which may have had some influence on the interpretations. The work also showed in practice how much the interviewer's interviewing skills affect the quantity and quality of the information obtained. During the research, it was clearly observed that later interviews provided more detailed data as the interviewer learned.

The literature review also identified a challenge in distinguishing between the terms of ‘identifying customer value’ and ‘assessing customer value’. In some cases, it seemed that the terms were used interchangeably.

The data was limited due to external factors, but still provided valuable information for the company and raised the profile of customer value thinking. The work helped to clarify existing customer value tools. The work highlighted areas for further development and the concept of customer value was brought to the surface.

5.3 Further Research and practical implications

The study showed that Sandvik has a variety of ways to research and collect information on customer value. However, these interviews bring up the question if the data they collect is processed and exploited as much as it could be. Therefore, the direction for further research could be to build a systematic model on how to use this vast amount of data in a more efficient way. Especially the product development could benefit from the usage of a systematic model or a tool for accessing and processing the data. It also seems, that information between the different departments does not travel easily. A shared tool might help to share data between different departments.

First, the study clearly showed that the company already uses several kinds of tools for storing and collecting the data. To develop a more efficient procedure, it might be a good idea to select and adopt a few specific ones, and to agree on their use more widely, also between the different departments. Losing the tools which are not in active use would also give more clarity to the process. At the moment there seems that there are many tools which are used to a very small extent. It follows that these tools are not updated regularly and, therefore, in the worst case might contain old and misguiding information.

Secondly, a more organized approach to interaction between different types of personnel could also be beneficial. For this purpose, for example, workshops could be used to collaboratively produce a listing of all the important features of a particular type of equipment. The listings could then be sent to key customers, asking for their opinions on the features. For example, they could be asked to rank the features in three different categories according to their importance. These categories could later be used as a reference for product development. Inviting representatives from more than one department to the workshop is recommendable. These workshops could be a platform to generate discussion, which would allow new ideas about customer value to emerge. The information already collected in Polarion (appendix c) could be used as a point of departure for developing the more focused tool for customer value.

Thirdly, the interviews also raised the idea of annual or biannual customer value training sessions. These would allow for a good sharing of knowledge within the company. They could also generate a fruitful discussion on the subject and bring up new perspectives. These sessions could also be a good place to share and agree on the tools that will be taken to active use in the different departments and by different personnel types.

To conclude, a coherent action plan for customer value needs to be created. The necessary steps towards efficient use of customer value are 1) selecting the tools and narrowing down their number, 2) organizing workshops for collaborative problem-solving discussions and developing new ideas, 3) organizing training sessions for both the tools and the different aspects of customer value. This would help to ensure that customer value is treated in a coherent way and taken into account in decision-making in all levels of activity.

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APPENDIX A: INTERVIEW QUESTIONS IN FINNISH

Haastatteluiden kysymysrunko:

Henkilötausta:

Kertoisitko lyhyesti itsestäsi, mikä on vastuualueesi Sandvikilla?

Asiakasarvon tutkiminen yrityksessä:

Mitä on mielestäsi asiakasarvo?

Kuinka Sandvikilla tutkitaan asiakasarvoa?

Kuinka asiakastarpeet tunnistetaan?

Oletko käyttänyt Sandvikilla joitain asiakasarvo-työkaluja? Mitä?

Kenen vastuulla asiakasarvon selvitys on Sandvikilla?

Kuinka Sandvik viestii asiakasarvosta sisäisesti?

Asiakasarvo:

Kuka on mielestäsi asiakas?

Ketkä kaikki mielestäsi vaikuttavat osto päätökseen?

Kuinka paljon eri asiakkaiden mieltymykset mielestäsi vaihtelevat? Miksi?

Mitkä ovat asiakkaalle tärkeimmät ominaisuudet DL laitteissa?

Millaisia heikkouksia DL laitteilla tiedostetaan olevan? Mikä asiakkaita epäilyttää?

Mitä kilpailijan samanlaisesta laitteesta tiedetään?

Mistä tietämyksesi on peräisin? Mistä tiedät, että tämä tieto on paikkaansa pitävää?

Onko sinulla kysymyksiä, joihin sinun kiinnostaisi kuulla mielipidettä asiakkailta?

APPENDIX B: INTERVIEW QUESTIONS IN ENGLISH

Interview questions:

Can you first tell me something about your background and current role in Sandvik?

Customer value assessment:

How would you define customer value?

How is customer value assessed and identified at Sandvik?

How are the needs of different customers identified?

Have you used any customer value tools at Sandvik? What?

Who is responsible for the customer value assessment at Sandvik?

How does Sandvik communicate customer value internally?

Customer value:

Who is customer?

who all influence the customer's buying decision?

What are the most important features of DL devices for the customer?

How much do you think the preferences of different customers differ? Why?

What are the perceived weaknesses of DL devices? What are customers suspicious of?

What is Sandvik's understanding of the profitability of long-hole equipment for the customer? How does accurate?

What is known about a competitor's similar device?

Do you have any questions that you would like to hear from customers?

What is the customer decision-making process based on?