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Recommendations of potential customer need categories and their value drivers

Metropolia University of Applied Sciences

Master of Engineering

Industrial Management

Master's Thesis

May 15 2022

Preface

A master's degree has been on my wish list for a long time and now it's finally been finished. It's an incredible feeling when you complete your thesis and realize you've accomplished something meaningful.

The journey that began in September 2021 and ended in July 2022 was productive and helped me gain a lot of new knowledge and the best practices from the industrial management theories that will assist me in my work life.

I would like to thank the case company for giving me the opportunity and granting me time to work on this thesis. Especially big thanks to my team leader that made this thesis possible and guided me through the entire study. Big thanks also go to the entire project team of the service design project including consultants from the consultancy agency.

I would like to thank the entire staff from the Industrial Management department for making this study program possible. Especially I'd like to thank my thesis advisor, Dr. Thomas Rohweder for giving valuable feedback during the thesis and Sonja Holappa for steering my professional language for this thesis work.

Finally, I want to express my gratitude to my wife Yulia and son Stefan for their constant support and for giving me the time I needed to complete this program.

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15.05.2022

Abstract

Author:	Valerijs Davidko
Title:	Recommendations of potential customer need categories and their value drivers
Number of Pages:	83 pages + 1 appendices
Date:	15 May 2022
Degree:	Master of Engineering
Degree Programme:	Industrial Management
Professional Major:	Service Management
Supervisors:	Dr. Thomas Rohweder, Principal Lecturer Sonja Holappa, Senior Lecturer

The objective of the study was to create recommendations of potential customer need categories and their value drivers to be utilized in the service design project outside of the thesis scope that aimed to develop customer oriented practical service concepts. Identifying customers' needs and their value drivers played a crucial role in developing customer oriented practical service concepts.

This thesis followed the design research approach with qualitative data collection method and included four stages. In the first stage the relevant literature was reviewed to find the best practices on identification of customer needs and performing customer segmentation and then compiled into the conceptual framework. In the second stage current state analysis were done by conducting one workshop with the internal stakeholders to define customer profiles and eight customer interviews to identify the customers' current data management practices, needs and their value drivers. The third stage included co-creating initial recommendations with the members of the joint project team of the service design project. The fourth stage included validation of the initial recommendation based on the feedback received from the advisors of the service design project.

Eight costumers were interviewed at the current state analysis stage. Customers were selected to cover as many industries as allowed, including those of which the case organization was least informed. This ensured a broad range of responses and perspectives, as well as as much new information as possible to deepen the customer understanding. The initial and final recommendations were created based on the new information gained from interviews as well as on the expertise and experience of each member of the service design project's team.

The outcome of the thesis is a validated set of recommendations of customer need categories and their value drivers, which were then used for the service design project to create customer oriented practical service concepts.

Keywords: real estate, facility management, data, data management

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List of Abbreviations

MEP:	Mechanical, Electrical and Plumbing.
CSA:	Current state analyses
B2B:	Business to Business
B2C:	Business to consumer
CVP:	Customer value proposition
BIM:	Building information model
AI:	Artificial intelligence
FM:	Facility maintenance

1 Introduction

Complexity of the rapidly changing business environment sets certain challenges to the organizations, as change is one of the most significant aspects that affect businesses. Therefore, the ability to manage changes has become crucial for companies that want to survive, to be competitive and achieve growth. Adopting a new operation model or adjusting an old one alone is not enough; businesses must also be ready to adjust their services and products to fulfil customer needs and promises. Hence, truly understanding of customers and their demands and fulfilling their needs by offering goods or services at the right time to the right group of customers with the right combination of goods or services or both is one of the essential elements that makes companies successful.

This thesis focuses on developing recommendations of customer need categories and their value drivers which are needed for creating practical service concepts for a certain service portfolio and for a particular customer category. One of the main advantages of service concepts is that it will help the case organization to shift from short lasting project type services toward continuous service offering model and eventually result in better customer engagement.

1.1 Business Context of the Case Organization

This thesis was carried out for Granlund Oy, which represents a Finnish group of companies operating globally in the real estate and construction sector in the Nordic, Asian, Middle East, and Baltic countries. The organization provides various services for a wide range of customers such as municipalities, healthcare, industry, retail, culture, infrastructure, sports, and data centres. Granlund specializes in MEP design, property management services and software, energy, environmental and real estate sector consulting, construction management and supervision and building management. The organization employs approximately 1100 experts and has 2 business units: Lifecycle Management & Software and Construction & Real Estate Development Services. Approximately 700 experts

work in Construction and Real Estate development service unit, which also generated in 2020 most of the revenue which was 103,3 million euros. By the year 2025, the case organization wants to double its revenue to 200 million euros.

In the company's strategy, the organization has specified customer engagement as one of the key elements in achieving strategic goals. The Construction and Real Estate Development Services unit's revenue is generated from various projects which are not considered as continuous, projects lifecycle ends after it is finished. While in Lifecycle Management & Software unit, its services are both: short or long-lasting projects type services (one-time services) and continuous ones. Therefore, in order to stay ahead of competition, achieve strategic targets and ensure high customer engagement, the management of the Lifecycle Management & Software unit has made a strategic decision to start developing and increasing the portfolio of continuous services.

1.2 Business Challenge, Objective and Outcome

In 2021 the case organization went through a significant reorganization of its structure where the mother company merged one of its biggest daughter companies. As a result of the merger, the entire structure of the mother company was redefined, new units with new departments and expert teams were established. The Lifecycle Management and Software unit experienced the most changes since it was formed by different experts from the mother and daughter companies. The service portfolios of the Lifecycle Management and Software unit was formed in accordance with the expertise of experts. The main problem occurred to be that the services of the new service portfolios turned out to be very broad and complex. From the customer perspective services offered by the unit are fragmented, the customer is unable to see the overall picture or benefits of synergy where different services are combined. The fragmentation and complexity of services also result in low customer engagement.

Therefore, The Lifecycle Management and Software unit has made a strategic decision to start the project where service portfolios of the unit will be redesigned

and conceptualized into customer-orientated service concepts. This service conceptualizing project covers services of the Data Management service portfolio.

The target of conceptualization of the service portfolio is to simplify the structure of it and make it more understandable from the customer perspective. More structured, more customer target-oriented service concepts are also expected to create a strong base for a long-lasting customer ship and thus will increase customer engagement. The structure of customer target-oriented practical service concepts is also wanted to be designed in a way which allows shifting from one-time service model toward continuous one.

The conceptualization project is carried out in cooperation with business consultancy company. The project is implemented by a joint project team, where the consultancy company's service designers work closely together with the selected amount of people from the case company and develop the concepts for the chosen service portfolio. The team from the case organization consists of 11 main members including the author of this study and 10 advisors. The main members are involved in every stage of the project and the advisors are involved in the validation stages and also in case company's inner conversations and meetings. The Project team from the case organization side is responsible for bringing internal understanding of the current services offered by the case company and understanding of the industry overall, its insights and trends in general. Together with the consultancy company, the project team aims to find out and to define customer's current data management practices, needs and their value drivers. The project team participates also actively in other stages of the project as well in the creation of the concepts them self. The author of this study is responsible for conducting customer interviews together with the consultant from consultancy company and then recommending potential customer need categories and their value drivers which are needed for the creation of practical service concepts within the Data Management service portfolio.

The objective of this thesis is to recommend potential customer need categories and their value drivers which are then utilized in creation of practical service concepts out of the services offered by the Data Management service portfolio, and the outcome of the thesis is the recommendations of potential customer need categories and their value drivers. The outcome allows the case organization to create a service concept for the certain customer categories within the certain service portfolio.

1.3 Outline of the Thesis

The scope of this thesis includes developing recommendations of potential customer need categories and their value drivers which are one of the key elements needed for creation of practical service concepts within the Data Management service portfolio. This thesis does not include creation of service concepts themself.

This study contains 7 sections. The introduction is followed by section 2, which explains the outline of the thesis including project plan, data collection plan and explanation of chosen research approach. Section 3 includes gaining knowledge of the best practices from the relevant literature and outlines the conceptual framework of the study. Section 4 captures the current state analyses and summarizes the findings. Section 5 is built on the outcomes of sections 3 and 4 and focuses on the creation of initial recommendations. The initial recommendations created in section 5 are then validated in section 6. The final section of this thesis provides the conclusions, self-evaluation of the thesis and some final words.

The next section describes the project plan of this thesis providing details of the chosen research approach, the research design, and the collection of the data.

2 Project Plan

The previous section introduced the business challenge, objective and outcome. This section describes the Research Approach chosen to carry out this thesis, followed by the Research Design which shows in visual format how the study was conducted. Next, it explains how data was collected and provides details and reasoning on the data collection and descriptions of the data type and its significance. Finally, this section finishes by description of next section.

2.1 Research Approach

Research projects can be conducted using different research approaches and data collection methods. Research approach and data collection methods must be chosen in accordance to purpose and context of the project. The following paragraphs in this section describe differences between different research approaches, data collection methods and thus grounds the chosen ones.

According to Saunders et al. (2016: p.177-178) basic research approach which is also known as fundamental or pure research targets to expand knowledge of processes of business or management or to develop new or improved theory resulting in universal principles relating to the process and its relationships to outcome and therefore serves general purpose only. This research approach is usually used by people based in universities and other research institutes, where the topic is determined by researcher itself and in accordance interests of him.

Saunders et. al (2016: p.9-10) determines that applied research approach targets to improve understanding of a particular business or management challenge resulting in a solution to the challenge. Knowledge gained in this research approach is limited to the challenge itself in specific firm or organization only and thus is not serving a general purpose and is less relevant in academic sense.

According to Hedrick et al. (1993: p.5-6) basic and applied research have more commonalities than differences, however differences are critical. The basic

research method targets to answer single questions and develop universal knowledge whereas applied research gives answers for multiple questions and helps to understand the addressed problems only. The context of the applied research is usually client initiated and thus is inflexible and time limited whereas context of basic research is self-initiated, flexible and has less time pressure.

Kananen (2013: p.20-22) states that applied research and particularly one of its types which is design research targets to develop practical solution for the business challenge of specific firm or organization by combining development and research. According to Kananen design research and inner development process of organizations have commonalities which is why design research is commonly used.

According to Julia Brannen (1992: p.4-5) Quantitative data collection method is suitable for issues which are clearly defined where the researcher tries to test or confirm theories and assumptions. The quantitative data collection method is less flexible, questions are pre-defined and requires unambiguous and less imaginative answers from the respondents. One of the most popular tool for conducting quantitative data collection method is a questionnaire with pre-defined questions or statements. The qualitative method gives more flexibility to the researcher, allowing open-ended questions which may result in complex answers and thus is more suitable for the issues which are less clear-cut. Interviews are one of the most popular data collection methods of the qualitative method.

In this thesis, design research and use of qualitative data collection method is chosen as a research approach based on the nature and context of the challenge and the intensions of the author of this thesis. Design research was selected as most suitable approach since the context of this study is given by case organization and is targeting to solve a specific challenge within short time, the objective is to recommend potential customer need categories and their value drivers which are then utilized in creation of practical service concepts out of the services offered by the Data Management service portfolio, and the outcome of the thesis is the recommendations of potential customer need categories and

their value drivers. This study is also limited to development of recommendations only, creation of practical service concepts themselves or evaluation of them is beyond the scope of this thesis, therefore qualitative data collection method is chosen instead of quantitative.

2.2 Research Design

This thesis is carried out according to the design research approach and includes four stages that follows a strict logic in order to achieve the objective of this thesis. Figure 1 presents the Research Design of this thesis. The outcomes of each stage have a crucial role in building the final outcome of this thesis.

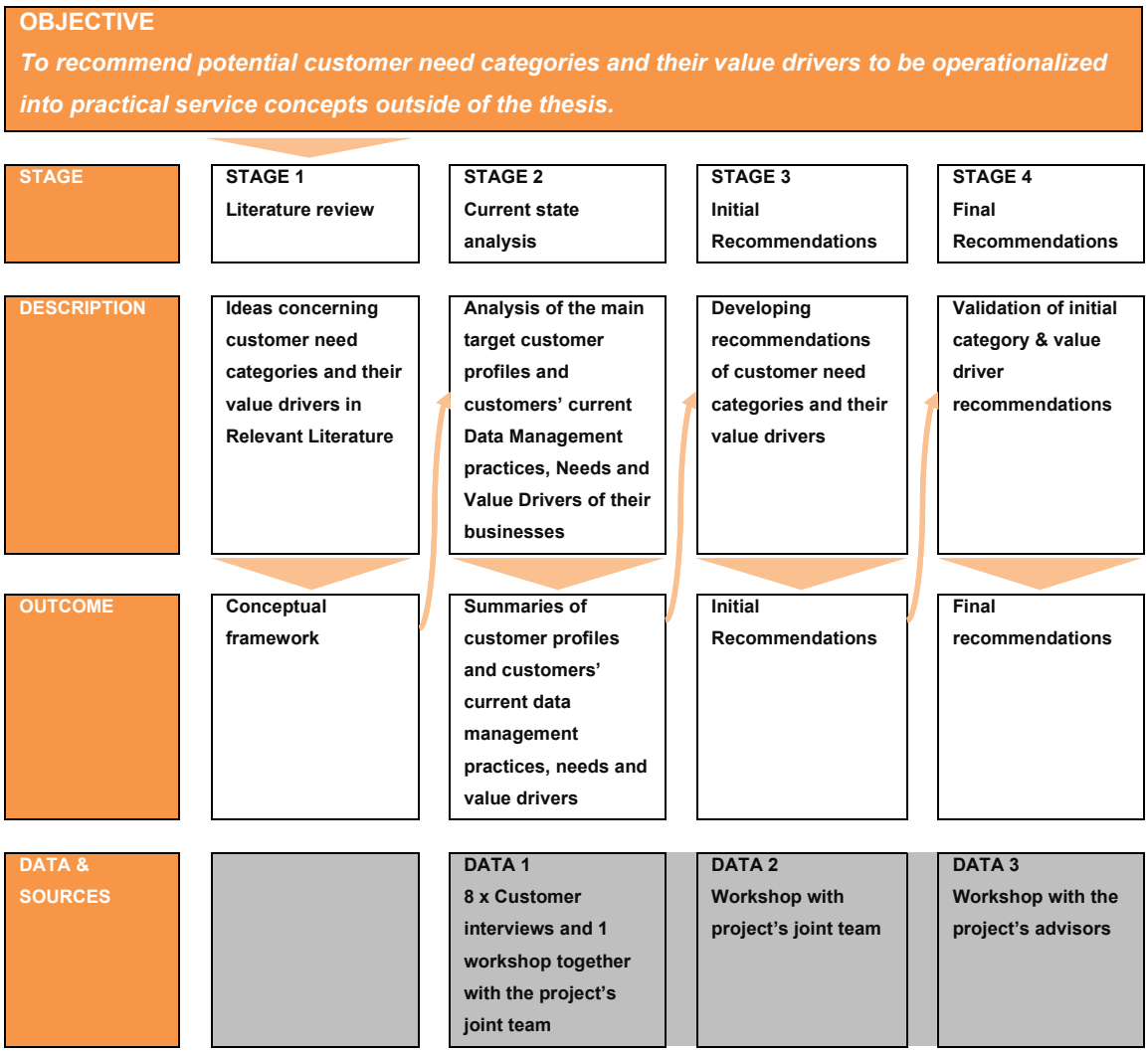


Figure 1. Research Design of this Thesis

As can be seen in Figure 1, for this particular thesis, the literature review comes before the Current state analysis. The study starts from searching for best practices from the relevant literature on identification of customer needs and performing customer segmentation. All the key findings are then compiled into the conceptual framework.

Literature review as shown in Figure 1 is followed by stage two, current state analyses. In order to develop customer target-oriented practical service concepts, it was essential first to identify the main target customer group and its different profiles and then customers' needs, value drivers and their current data management practices. The current state analysis was carried out in two stages. First, various customer profiles were identified during the workshop which was held as a part of service design project, where other topics relevant to service design project were dealt. Workshop was conducted together with the members of the project's join team and the advisors. Second, by conducting customer interviews where all together 8 key customers were interviewed. The outcome of workshop together with the information and author's observations gained from interviews were then analyzed and compiled into the summaries of customer profiles and customers' current data management practices, needs and value drivers.

As shown in the Figure 1, the third stage contains the co-creation of initial recommendations of customer need categories and their value drivers. The initial recommendations were developed based on the conceptual framework gained from the literature review and the findings made in CSA stage. Workshop with the joint project team was held to create initial recommendations. The outcome of the third stage was the initial category and value driver recommendations.

The fourth stage shown in Figure 1 was validation of the recommendations. First the key findings of the CSA stage and then the initial recommendations were presented to the advisors. The feedback and comments received were utilized and recommendations were corrected accordingly. The outcome of this stage was the final recommendations.

2.3 Data Collection

The data in this thesis was gathered in 3 different rounds from a variety of sources, such as customer interviews via teams, one to one meetings, and meetings with the joint project team that are presented in Table 1.

DATA 1 – Current state analysis					
#	Informant	Data type	Topic, description	Time	Documented
1	2 x Account manager 3 x Director of Customer Relation 2 x Product owner 2 x Group manager 1 x Director of development 2 x Head of department 1 x Business development director 1 x Business Unit Director 1 x Technology Director 1 x Project Manager 1 x Leading Expert	Workshop (online, teams)	• Identifying main target customer profiles • Creating the initial body of the interviews	18.2.2022 9-12	Miro dashboard
2	Key customer	Interview (online, teams)	• Own role and background in the organization of the interviewee • Organization's current state: size of Real Estate portfolio, importance of data and its relevance from the core business perspective • Currents data management tools and the processes where data is utilized • Case organization vs. competitors • "From construction to operational phase" real estate data type, the process of its management; gains, pains and challenges. Its importance and impact on other processes or core business. • "Real time data" real estate data type, its use, its importance and impact on internal processes or core business. • General development suggestions, wishes, needs and requirements regarding real estate data and its management	2.3.2022 10-11	Field Notes + video recording
3	Key customer	Interview (online, teams)		7.3.2022 10-11	Field Notes + video recording
4	Key customer	Interview (online, teams)		9.3.2022 14:30-15:30	Field Notes + video recording
5	Key customer	Interview (online, teams)		9.3.2022 16-17	Field Notes + video recording
6	Key customer	Interview (online, teams)		11.3.2022 12-13	Field Notes + video recording
7	Key customer	Interview (online, teams)		17.3.2022 13-14	Field Notes + video recording
8	Key customer	Interview (online, teams)		18.3.2022 9-10	Field Notes + video recording
9	Key customer	Interview (online, teams)		18.3.2022 10-11	Field Notes + video recording
DATA 2 – Developing recommendations of customer need categories and value drivers					
10	Project joint team	workshop (online, teams & office)	• Overview of the interviews' key findings • Creating the initial recommendations	6.4.2022 9-15	Miro dashboard

DATA 3 – Validation of the initial category and value driver recommendations					
11	Advisors	workshop (online, teams)	• An overview of the interviews' key findings • An overview of the initial recommendations • Creating the final recommendations	11.4.2022 12-15	Miro dashboard

Table 1. Data 1-3 Collection.

As seen in Table 1, Data 1 was collected and used to perform the current state analysis. In the workshop, main target customer profiles were identified and the information for creating the initial body of the interview was gathered. The customer interviews were conducted in order to gain an understanding of the customer's current data management practices, their needs and value drivers. Workshop was conducted via teams and the participants used the Miro dashboard to pool their knowledge and inputs. All Interviews were conducted in teams and documented with field notes and video recordings. The general interview guide approach was chosen as a format of interviews, which is less structured than standard open-ended interview method, but still allows information to be collected from the same topics and enables the interviewer to be flexible. Customer interviews and workshop were conducted together with the consultancy agency.

The second round of data collection, Data 2 was drawn from the workshop with the joint project team. Workshop aimed to expand on information gained from the previous data collection round and began co-creation of the initial customer need category and value driver recommendations. As seen in Table 1, Data 2 workshop was documented by utilizing Miro dashboard and held partly online and in live.

The last round of data collection, Data 3 as presented in Table 1, was drawn as well as in previous round from workshop with the advisors. The purpose of this data collection round was to validate the initial recommendations. Workshop was organized online, via Teams and documented as well as previous round utilizing Miro dashboard.

The next section discusses the knowledge gained on value and its creation, then it describes how the best practices for the identification of customer needs and customer segmentation were gathered from relevant literature and then compiled into a conceptual framework of this thesis.

3 Ideas Concerning Customer Need Categories and their Value Drivers in Relevant Literature

This section discusses best practice used for identifying customer needs and customer segmentation. The section begins with a discussion of value, process of its creation and its significance in the business market, which also includes the discussion on customer value proposition (CVP) and its key elements. After CVP, this section moves on to practices regarding identifying customer needs and then moves to the knowledge found regarding costumer segmentation. Finally, the last part of this section summarizes all the key findings and compiles them into the conceptual framework of this thesis. The conceptual framework created in this section is used later during the CSA stage and later with its findings to build the initial recommendations of customer need categories and value drivers which are then used for developing practical customer-oriented service concepts.

3.1 Value and Process of Value Creation

This section discusses existing knowledge on value, process of its creation and CVP's key elements. Developing recommendations of customer need categories and their value drivers requires understanding the concept of value, the role of companies and customers in its creation and the importance of value to businesses. Furthermore, when it comes to developing new service concepts, understanding value and its significance is fundamental since the customer-oriented practical service concepts are about co-creating and delivering value to the targeted customers.

3.1.1 Definition of Value in the Business Environment

Value can have many different meanings in different contexts. For some it means price, for others, it means benefit. Worth is another meaning of value. According to Anderson et al. (1998: p. 6) value in business market is determined by the technical, economic, service, and social benefits a customer receives in exchange for the price it pays. Value is measured in different ways in different

contexts. In a business-to-business (B2B) setting, value is measured by potential growth, premium pricing, or cost savings for a customer. In the context of business-to-customer (B2C), value can also be measured by emotional factors, such as increased trust, attraction, or comfort.

When examining value closely, it can be broken down into several specific terms. First, in monetary terms, such as euros per unit, euros per liter or euros per hour. Second, by the net benefit, which includes all costs incurred by a customer, apart from the purchase price, in order to obtain the desired benefit. Lastly, value is what the customer gets for the price it pays.

All market offerings have two essential characteristics: its value and its price. Price is not linked directly to the value, meaning that raising or lowering the price does not change the value, it only changes the customer's willingness to buy that offering. Further Anderson and Narus (1998: p. 6) argue that even when there are no comparable market offerings existing, there is always a viable alternative: customers might make the product or provide the service themselves, rather than buy it from the market. This essence is captured in the following equation, which determines whether the offering is valuable or not:

$$(Value\ S - Price\ S) > (Value\ A - Price\ A)$$

$Value\ S$ and $Price\ S$ are the value and the price of the supplier's offering and $Value\ A$ and $Price\ A$ are the value and price of the next best alternative. Price minus value equals the customer's willingness to purchase. To put it simply, the equation states that the customer's willingness to buy a supplier's offering must exceed its incentive to look for another alternative.

3.1.2 Value Creation

According to Prahalad et al. (2004: p. 6) in the traditional goods-dominant logic, the value of a service or a product is determined by the producer, so value creation take place inside the supplier company and thus outside of the market.

In this logic, the market has no role in value creation and the customer is seen as a target for the supplier's offerings only. Thus, market is seen purely as a place for value exchange and extraction, which represents to a large extent a company-centric view where interaction between suppliers and customers are not seen as a source of value creation and also the communication is one-way, flowing from the supplier to the customer.

Grönroos (2008: p. 302-304) argues in his article that traditional value creation process, where value is created by supplier only is not relevant anymore. Old traditional way is challenged by the alternative way where value is co-created together with the customer. In other words, customers are value producers and suppliers are the value facilitators. According to Grönroos et al. (2011: p. 7) in this logic, the suppliers produce resources that are then integrated at the costumer's side where value creation then takes place: the potential value is transformed into real value for the costumer.

According to Wikström et al. (2010: p. 5 & 19) in B2C the value of offering is seen similarly as in B2B as a resource which helps to create real value in the complex everyday lives of the customers, in ways that fulfill their own goals and make them feel good. Customers are the ones that decide what value is, they are so-called value specifiers and thus they are the ones that manage the ultimate value creating process. Applying a customer perspective, which in turn requires understanding of customer needs, their higher goals and business drivers, results in the product or a service or in the resource that helps them to achieve their goals which make meaning in their businesses and thus creates real value for them.

From the customer's perspective, understanding suppliers' products and services, their purpose and the real value of them, may be quite difficult, often requiring even some kind of expertise and understanding of the whole picture. Therefore, suppliers have begun communicating with customers through customer value propositions which helps customers understand clearly what the product or service is about and how they can benefit from it.

3.1.3 Customer Value Proposition

Value propositions are defined differently in different studies. Osterwalder et al. (2014: p. 16) defines value proposition as a bundle of products and services that create value for a customer segment. Grönroos et al. (2011: p. 14) describes it as a promise about what future value customers can be expected to create out of goods and service activities offered by the supplier. Payne et al. (2017: p. 467) offer slightly different definition for customer value proposition (CVP), according to them CVP is a tool used by company to communicate the company's ability to share resources and offer a superior value package to the targeted customers. Even with slight differences in the definitions presented, they all share something in common, namely the view that the supplier is simply a facilitator of value, rather than a value creator. Value is created by customers; customers define what value is and manage their own processes of value creation. Suppliers operate outside of it; they only deliver resources to customers who then transform those resources into real value.

Based on the discussion above, suppliers are in a challenging position. According to Simons (2014: p. 52-53), it is crucial that suppliers understand who their target customers are, what are their real needs and what they value the most. Furthermore, the fact that business environment changes over time and the fact that customers themselves undergo internal changes, which aren't visible to others, but result in changed behavior or redefined value, forces suppliers to constantly gather customer information, analyze it and, if necessary, reorient their offering model or products and services to match the new conditions. In order to be competitive and ahead of competitors, the creation of a customer value proposition must be a continuous process, where the supplier systematically revises targeted customers, their real needs, and values. Osterwalder et al. (2014: p. 20) shares with Simons the same thoughts, a value proposition design is a never-ending process, which needs to be evolved constantly to keep it relevant to the customers.

According to Osterwalder et al. (2014) and other researchers, a key element in the value proposition is understanding of customer's needs and the ability of organization to fulfill them by offering products and services which in turn will create gains and alleviate pains of the customer. The figure below shows in visual framework developed by Osterwalder et al. (2014: p. 40-47) for customer value proposition creation, where the right-hand side represents the understanding of the costumers' jobs, pains and gains, the left-hand side represents the supplier's offering similarly broken down into gain creators, pain relievers and products & services and the arrows between them shows that those two need to be fitted with each other to ensure that the products and services, the pain relievers and the gain creators offered by supplier are aligned with the customer's most important jobs, pains, and gains. The synthesis between those two creates the CVP.

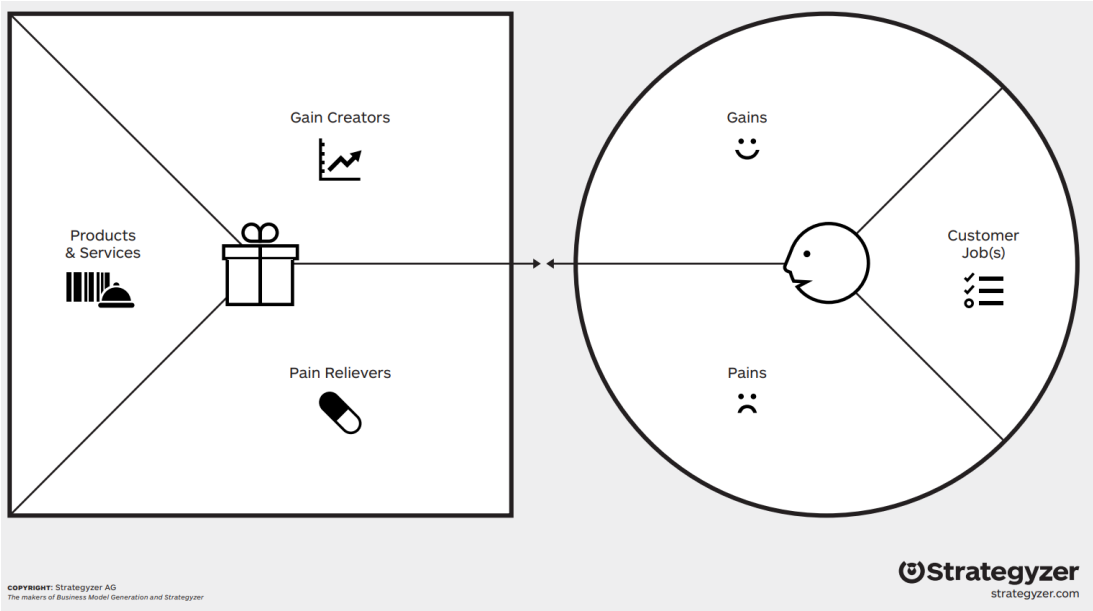


Figure 2. Value map fits Customer Profile

The importance of understanding customers' needs and the role of the customer as a co-creator of value has been emphasized in many research studies. The next section discusses best practices found from the literature on understanding the customers and identifying their needs. It also presents the practical tool found that helps to clarify the customer understanding.

3.2 Identification of Customer Needs Literature

This section discusses best practices found from literature on understanding customers and identifying of their needs. Customers are the ones who manage the ultimate value creating processes, therefore in product or service concept development it is vital to understand what customers need, what they value the most and what they pursue. Taking customer needs into account in the process of creating new service concepts or developing old ones is seen as very powerful, as this way it is known whether concepts resonate the customer or not. According to Drucker (1994), already in 1920, the English company Marks and Spencer saw potential in the new thinking where the customer's needs are in the main focus and therefore transformed its business model according to it. Marks and Spencer is still in business and its business runs successfully. Companies must know their customers and their needs in order to provide them with products and services they will find satisfying.

3.2.1 Kano's Model

As Xu et al. (2009: p. 87-110) point out, Kano's model divides the understanding of the customer need into the understanding of three major issues, the first is understanding of customer preferences, the second is understanding of priority of the preferences, and the third is requirement classification. The model, developed by Kano et al. (1984), helps to prioritize new product features based on how likely they will be to satisfy customers. This model is primarily used in the industry that offers tangible products; therefore, it is not entirely suitable for the purpose of this thesis even though it has some similarities with the model presented in next section.

3.2.2 Customer Profile Tool by Osterwalder et al. (2014)

According to the model, presented by Osterwalder et al. (2014: p. 10-17), the understanding of the customers need includes understanding of customers' so-called gains, pains, and jobs. To clarify customer understanding, Osterwalder et

al. (2014: p. 9) suggest using Customer Profile tool. Figure 2. presents what information is needed when identifying customer needs.

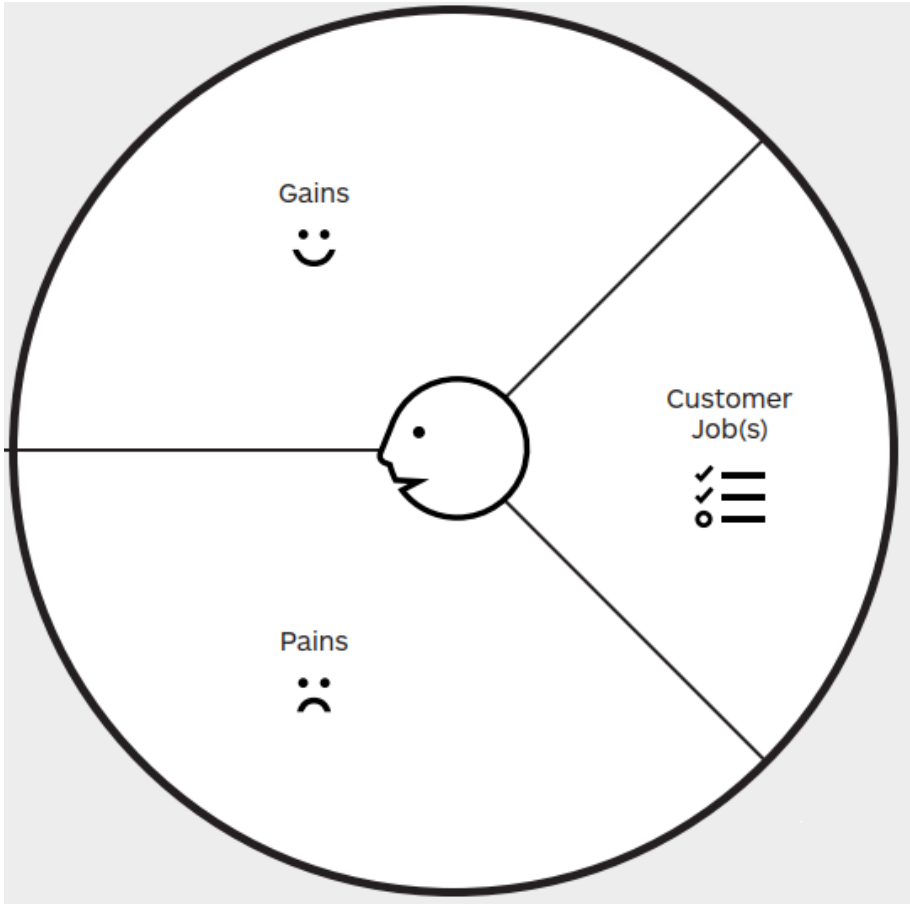


Figure 3. Customer Profile Tool

The idea of this tool is that it breaks down the understanding of the customer into its jobs, pains and gains and thus offers a more structured and detailed view of customer needs and what is behind them.

The Customer Profile tool is accordingly divided into 3 sections: Customer Jobs, Gains and Pains. Customer jobs describes what the customers' goal is, what they are trying to accomplish in their work. Customer jobs could be the tasks that customers are trying to complete, some problems they are trying to solve, or some needs to satisfy. Depending on the nature of costumer job to be done, jobs are categorized as followed: functional jobs, social jobs, personal/emotional jobs. In addition to the previous ones Customer jobs can also be categorized as

Supporting jobs. Completing tasks or solving specific problem are Functional jobs. Jobs dealing with the image of the customer, for example how the customer wants to appear to the others are Social jobs. Jobs regarding improvement of the emotional states or achievement of a certain feelings are Personal/emotional jobs. Supporting jobs are the jobs which help customer to perform jobs related to the core business. While identifying the jobs, it is important to put them in accordance of their priority. Some jobs are insignificant while others are very important.

The Pains section describes the factors that make completing the jobs difficult or impossible. Pains also describe the risks that affect the outcome of the job. The tool presents three types of customer pains: (1) Undesired outcomes, problems and characteristics, (2) Obstacles and (3) Risks (undesired potential outcomes). Functional pains, where some solution doesn't work or has negative side effects, emotional pains, where completing the jobs doesn't feel good or ancillary pains are classified as Undesired outcomes, Problems and Characteristics. The pains that prevent getting the jobs to be done or slow down the performance are pains classified as Obstacles. Risks are the pains which describe the potential problems or negative consequences. Similar to how Customer jobs can be important or insignificant, the Pains as well can be extreme or moderate so prioritizing them is important.

The Gains section focuses on identifying the outcomes, results, characteristics and benefits that customers want or require. Similarly, as customer jobs and pains, gains are divided into different types: (1) Required gains, (2) Expected gains, (3) Desired gains and (4) Unexpected gains. The gain without which a solution would not work is a Required gain. Expected gains are the basic gains that customer expect from a product or a service. Desired gains are something that the customer cannot expect but would like to have. And the gains which go beyond the customer expectation and desires are the Unexpected gains. While investigating the gains, they also need to be listed in accordance of their relevance.

Osterwalder et al. (2014: p. 24) point out that during utilizing the customer profile tool, putting all information together and prioritizing it, it is important not to mix different customers into one profile, thus is desirable that the customers are profiled and segmented as well. The next subsection describes the best practices found on customer segmentation and profiling.

3.3 Customer Segmentation Literature

Customer profiling and segmentation is an essential part of customer understanding process, especially in customer centric business environment. Grouping customers in certain segments also allows organizations to develop their products and services in an efficient and productive way by prioritizing and allocating their resources into the right direction. This section discusses the importance of segmentation in businesses, its principles and segmentation processes found from relevant literature.

3.3.1 Definition of Segmentation

Loshin et. al. (2013: chapter 8) describes customer segmentation as a process where customers are grouped based on common factors like same characteristics and certain behaviour under similar circumstances. Loshin et. al. (2013) in their book states that customer segmentation positively affects customer relationships. Segmentation helps organizations to build trust and loyalty by ensuring that every interaction with the customer is positive, and customers' needs are fulfilled.

Hassan et al. (2018: p.24) describes the customer segmentation as a process of dividing customer base into discrete, homogenous customer groups according to customer characteristics, attributes and demands that results in identification of groups of the customers that are similar in nature. Hassan et al. (2008: p.24) also point out that customer segmentation is a key element in deepening customers' understanding and gaining customers insights which influence customer engagement.

Dibb et al. (2008: p.2) underlines the importance of the segmentation and states that it is a cornerstone of a modern marketing. Authors use the term market segmentation and they describe it as a process where similar customers are grouped together in a market segment based on similar needs and buying behaviour. According to the authors, segmentation enables businesses to utilize and allocate their resources into the right direction in most effective manner, differentiate themselves from competitors, and develop more effective, valuable, and more targeted services. The authors point out that in the customer centric business environment, where success relies on the ability to fulfil the customer's needs, market segmentation is one of the key elements to achieve that objective.

As described above segmentation is simply a grouping of customers into the smaller groups based on their needs and behaviours. Customer segmentation is often seen as an end result. To get to this stage, other actions need to be taken first. One of the actions is customer profiling. Both Hassan et al. (2018: p. 24) and Loshin et. al. (2013: chapter 8) also use the term customer profiling while discussing about customer segmentation. Customer profiling is a classification of customers based on certain characteristics or behaviour. Characteristics could be customer's location, sector, or size of the company. And behaviour factors could be customer's product preferences, buying pattern and purchase history. According to them, customer profiling needs to be done before customer segmentation. Customer profiling gathers customer's information from existing databases of the organizations and analyses it. That data is then used to create different customer profiles based on chosen variables or characteristics which then can be combined and used for customer segmentation.

Dibb et al. (2008: p.6) and Loshin et. al. (2013: chapter 8) state that segmentation helps organizations to tailor and to improve certain products or services for certain customer segment. Customers whose needs are satisfied are more likely to be loyal.

3.3.2 Segmentation Process

According to Dibb et al. (2008: p.7-8) the entire process of market segmentation is divided into three stages: Segmenting, Targeting and Positioning. Considering the topic of this thesis, only the segmenting stage is relevant. The segmentation stage includes the identification of segments in the chosen market. In that stage customers are grouped based on different segmentation variables. According to Hassan et al. (2008: p. 24-25) and Dibb et al. (2008: p. 7), the main criteria in segmentation, which also applies to this stage, is that the customers can be grouped into the same segment only if they have similar needs or behavior. Customers with different needs or with entirely different behavior do not belong into the same segment. Therefore, at this point it is very important to identify variables that may reveal these differences to avoid grouping dissimilar customers. The next table (table 2) presents variables related to B2B environment introduced by Dibb et al. (2008: p. 9).

Business demographics	Business, location, age, industry, sector, size, competitive set
Operating variables	Technologies implemented or manner in which products or services are used
Purchasing approach	Purchasing policy, buying center structure, balance of power among decision makers
Situational factors	Size or order, context in which purchase is being made or urgency
Personal characteristics of the buyers	Demographics, socioeconomics, lifestyle, and personality of those in the buying center

Table 2. Segmentation Variables in B2B

According to Dibb et al. (2008: p. 8) segments can be created using single variables or a combination of them. Once the segments are identified, they

need to be justified and evaluated for their stability, usefulness, accessibility, substantiality, and measurability in order to guarantee effectiveness of them.

Loshin et. al. (2013: chapter 8) states in his book that customer segments are often linked to the business goals. This approach allows companies to develop protocols for treating customers within each segment in order to attain different business goals. According to Loshin et. al. (2013: chapter 8), customer profiling is dependent on three different data type: Demographic, Psychographic and Behavioral. Demographic attributes are ones that are used to identify individual entities within a population. These characteristics can be combined to describe the makeup of groups in a population. The psychographic attribute describes the acquired qualities of an entity. Behavioral attributes are characteristics associated with analysis of historical data that reflect common patterns. Purchase frequency, quantity, or purchasing certain products together are examples of product usage patterns. Kaufmann argues that companies which are working in the customer centric environment, in order to achieve effective segments should use a different combination of various characteristics.

McDonald et al. (2012: p. 1-17) discuss several approaches to market segmentation and conclude that understanding the needs of customers is the most effective approach to group the customers. The essence of segmentation is to understand the customers so they can be given exactly what they need. Furthermore, companies are able to gain the insights they need to create winning propositions with this approach. McDonald et al. (2012: p. 37) also emphasize that all segments must be revisited as markets change over time.

The approaches required for different industries and cases vary. In some situations, certain characteristics and single or multiple variables will work, while they will not work in others. For each unique case, each characteristic and variable used for profiling and segmenting needs to be carefully selected.

The next subsection gathers all the key findings from the literature presented in the previous sections and compiles them into conceptual framework of this thesis and presents it in visual format.

3.4 Conceptual Framework of the Study

Best practices regarding customer segmentation and identifying customer needs found from the relevant literature are described in the previous sections. This section compiled those findings into a conceptual framework of this thesis. Table 3 below presents the key findings that are combined and captured into a visually compact format.

CONCEPTUL FRAMEWORK	
HOW TO DO CUSTOMER SEGMENTATION Kaufmann (2013) Dibb et al. (2008) Hassan et al. (2018), McDonald et al. (2012)	**1. CUSTOMER PROFILING BASED ON THE CERTAIN CHARACTERISTIC OR BEHAVIOR** • Characteristics (industry position / role) **2. GROUPING CUSTOMERS BASED ON DIFFERENT PROFILES AND USING SOME OF THE FOLLOWIG VARIABLES (SINGLE/MULTIPLE)** • Needs • Behavior • Maturity level • Interest in the product/service • Technologies implemented or manner in which products or services are used
HOW TO IDENTFY CUSTOMER NEEDS Osterwalder et al. (2014)	**UNDERSTANDING CUSTOMER'S REAL NEEDS BY IDENTIFYING CUSTOMER'S JOBS, PAINS AND GAINS** • Identifying and prioritizing different customer's JOBS – Functional, Social and Personal/Emotional • Identifying and prioritizing different customer's PAINS – Undesired outcomes, problems and characteristics, Obstacles and Risks • Identifying and prioritizing different customer's GAINS – required gains, expected gains, Desired gains and Unexpected gains

Table 3. Conceptual Framework of the Study

As shown in Table 3, the conceptual framework consists of 2 categories: customer segmentation and identifying customer needs. The customer segmentation category is also divided into two parts, the first one includes findings that helps to break down the chosen target customer group into different customer profiles and second part includes findings for customer segmentation that are then utilized for co-creation of the potential customer need categories.

The characteristics and types of behaviours for profiling and variables for segmentation presented in the customer segmentation category were chosen in accordance of the specification of the industry. The identifying customer needs category combines findings on customer understanding, that provides a practical tool for deepening the customer's understanding and breaking it down in smaller pieces.

The conceptual framework was utilized during the current state analysis and the co-creation of the initial recommendations stages. Customer interviews and workshop were structured to incorporate information required for deepening customer understanding, profiling, and segmentation and thus to fulfil the objective of this thesis and also the objective of the entire service design project.

The following section presents the results of Data 1 collection as the findings of the current state of customer profiles, customers' data management practices, needs and their value drivers gained by conducting one workshop and eight customer interviews.

4 Current State Analysis of Customer Profiles, Customers' Current Data Management Practices, Needs and their Value Drivers

This section describes the current state of customer profiles, customers' data management practices and findings on their needs and value drivers. The collection of the data to establish a conception of the current state was gained by organizing one workshop and conducting 8 customer interviews. The data collection of this stage is introduced in more detail in section two.

The section starts with an overview of this stage, then it proceeds to findings that are divided into four sections: summary of customer profiles and summaries of customer's current data management practices, needs and their value drivers. All findings are then summarized and presented in visual format. Summary of the findings are then followed by sub section where key findings to elaborate are presented as well in visual format.

4.1 Overview of the Current State Analysis

As the objective of this thesis was to recommend customer need categories and their value drivers, the Current State Analysis started from a workshop, where customers' current profiles were identified which created a foundation for further customers need investigation and creation of the customers need categories and their value drivers.

As the customer profiling had to be done first, the data collection was started by organizing the workshop, which was held as a part of the service design project. Including the author of this thesis and 2 consultancy agency specialists, 20 other relevant stakeholders participated in that workshop. The aim of this workshop was, among the other things related to the service design project, to identify the main target customer profiles that are interested in the data management services and to form the initial body and questions of the interview. The participants from the case organization's side of this workshop were the members

of the joint project team and the advisors. Table 4 on the next page presents the case organization's members of the joint project team and the advisors.

Number of participants	Position	Member of joint project team	Advisor
1	Account manager	x	
1	Account manager		x
3	Director of Customer Relation	x	
2	Product owner	x	
1	Group manager	x	
1	Group manager		x
1	Director of development		x
2	Business Unit Director		x
1	Business Unit Director	x	
1	Business development executive	x	
2	Department director	x	
1	Department director		x
1	Technology Director		x
1	Project Manager		x
1	Leading Expert		x
1	Specialist		x

Table 4. Case Organization's Joint Project Team and Advisors

The wide variety of the joint project team which participated in the workshop, ensured that all the possible knowledge, experience and various viewpoints from the different units and from the different levels of the case organization's hierarchy were utilized to identify the current customers' profiles. Despite the diverse backgrounds and experiences of the participants, the input gathered on customer profiles included a great deal of similarity demonstrating that the joint project team was on the same page and at the right track.

After the workshop, the CSA stage proceeded to customer interviews. All together 8 customer interviews were held together with the specialist from the consultancy agency. The body of the interview including the questions were formed based on the inputs from the joint project team and the advisors gathered during the

workshop and then tailored utilizing the framework of this thesis to meet the needs of the objective of this thesis as well as to fulfil the overall objective of the service design project. The customers to be interviewed were selected by the members of the joint project team and the advisors in order to cover as many industries as possible and those customers the case organization knows the least about. To keep the interviews efficient and more convenient for the customer, only one customer representative was asked to participate in the interviews, and they lasted no more than 1 hour. In addition, for the sake of convenience, all interviews were organized in Teams. Observations during the interviews were logged into field notes and the entire interview was also video recorded. All information gained during the interviews was handled anonymously, and the recordings were destroyed later. The general interview guide approach was chosen as a format of the interview. This format allowed for flexibility in the course of the interviews enabling at the same time collection of the data from the same topics. The interviews were conducted in a conversational manner with open-ended questions.

The body of the interview consisted of 7 sections. The interview started with a question [1] where the informant was asked to introduce himself, his role and background. The interview then proceeded with the questions [2] in which the interviewee was asked to describe the starting point of the client's organization in terms of real estate data, real estate data management process and whether this type of data is used to make decisions, as well as its importance from a core business perspective and its linkage to it. Then the interview proceeded to the section [3] where the interviewee was asked to describe the tools that are used for real estate data management and the processes where they are used. After this the interview moved to the questions [4] where the interviewee was asked to give an opinion of case organization’s current offerings of the real estate data management services versus its competitors. Additionally, the interviewee was asked to describe how he/she views the case organization's current offering in terms of how well it meets the customer's needs and, more importantly, how it generates value for them. The following section [5] moved then to questions regarding “From construction to operational phase” the real estate data type,

where the interviewee was asked to describe how well data moves from construction phase to operational phase, what tools or processes are used and if challenges occur, to describe them. Along with the previous questions, the interviewee was asked to describe the level of understanding among other organization's stakeholders about the meaning of that type of data, as well as how it impacts their core business or any other internal processes. Then [6] the interviewee was asked to describe the use of the "Real time data" real estate data type, its importance or meaningless and its linkage to their other internal processes or to the core business. The last section [7] concerned the general development suggestions, wishes, needs and requirements regarding real estate data and its management. The complete set of questions is shown in Appendix 1.

During the interviews, the same findings appeared across different customers from different industries. Similar findings were noted during workshops conducted throughout the course of the service design project, which demonstrated the status of the case organization's understanding of the customers.

4.2 Summary of Customer Profiles

At the start of the CSA, the main target customer group to which the case organization aims to offer data management services is very well known and categorized as property owners, property occupants and the construction companies. However, a better understanding of the customers' needs requires a deeper understanding of the differences between same-category customers. Under the property owner category, there are a variety of subcategories that can be divided for instance based on their core businesses, structure of organizations and needs. Property occupants can be also subcategorized into smaller groups for instance in accordance of the lease agreement type or the maintenance liability. Thus, the main target group was broken down into different customer profiles based on the customers' characteristics or their behaviours that were derived from the conceptual framework of this thesis.

During the workshop conducted together with the consultancy agency company, the customer profiles were identified with the input of the joint project team and the advisors. The joint project team and the advisors were asked to identify the customer's industry position or role based on their experience for three subsections of the data management needs: "From construction to operational phase data", "Real Estate Business data" and the "Real time data". Table 5, on the next page shows the identified customer profiles.

	Customer's Data Management needs		
	From construction to operational phase data	Real Estate Business data	Real time data
Customer's industry position / role	Property owner-occupants	All property owners with a focus on keeping the property in their possession for a long time	Property owner-occupants that are willing to own property for a long period of time
	Real Estate Operators / Occupants (hotels) who have maintenance liability		Customers with a large portfolio of real estate
	Construction companies		
	Property owners contractees		
	Contractors / Subcontractors for a warranty period		

Table 5. Customer Profiles Identified for three Subsections of the Data Management Needs

As can be seen in table 5, some of the identified positions and roles are similar to each other. Similar positions / roles are highlighted using the same font colour. Customers with a large portfolio of real estate are typically the owners of those properties, so they can be grouped together with the property owners and can be classified as a "Property owners" customer profile. Property owners that also occupy own properties can be classified as "Owner-occupants" customer profile.

The construction companies, as well as the contractors and subcontractors can be grouped together due to the similarity of the nature of their business and classified as “Constriction companies” profile. Real Estate operators or the occupants who are also responsible for the maintenance of the property can also be grouped into the same customer profile “Operators / Occupants”. And the units (contractees) of the property owner organizations that are responsible for construction contracting can be classified as a “Property owner’s contractees” customer profile.

Narrowing down the data by grouping similar profiles resulted in the following customer profiles:

- Property owners
- Owners-occupants
- Operators / Occupants (who have maintenance liability)
- Construction companies
- Property owner’s contractees

Despite that some customer profiles have only been identified for specific subsections of data management services, as shown in Table 6 on the following page, does not mean they are not interested in other services. Based on the experience of the case organization, the nature of the identified profiles and their relation to the property they operate or occupy, indicate an interest in the other subservices of the data management package as well.

From construction to operational phase data	Real Estate Business data	Real time data
Owner-occupants		Owner-occupants
	Property owners	Property owners
Operators / Occupants (who have maintenance liability)		
Construction companies		
Property owner's contractees		

Table 6. Customer Profiles Presented by Subcategories

Therefore, all the identified customer profiles were chosen to be operationalized for the all subsections of the data management service package in the later stages of this thesis.

4.3 Identifying Customer's Current Data Management Practices, Needs and Value Drivers

After identifying customer profiles, CSA proceeded to the customer interview stage. Eight customers were selected to be interviewed in order to identify their current data management practices, needs and value drivers. Customers for interviews were chosen based on the certain criteria: (1) existing relationships and their importance to the case organization, which made approaching them convenient, (2) customers represented different industries, which provided variety of perspectives in the responses and (3) the degree of customers understanding, some of the interviewed customers and their current level of the data management practices were quite well known, which helped to improve and

deepen their understanding, while the understanding of the other customers wasn't as deep, which helped to find out their current status, needs and value drivers.

Based on interviews, significant differences were observed regarding customer needs, current practices, and value drivers. Some customers have very modest data management practices and needs due to the small amount of data they manage, while other customers showed a deep understanding of data and the importance of it, and their tools and practices are selected with a view to managing it effectively. In the following subsections, the summaries are presented in accordance with the framework presented in the previous section. The summaries of the different interviews are grouped based on a variable, namely the maturity level of the customer's data management practices, needs, and value drivers. At this stage, three different maturity levels were identified to group the answers: Low, Medium, and High. Accordingly, the upcoming subsections present summaries of different customers' data management practices, needs, and value drivers based on the maturity level of those practices, needs, and drivers along with the short description of the customer's profile and its job.

4.3.1 Current Data Management Practices, Needs, and Value Drivers of Low Maturity Data Management

Based on the information gained during interviews regarding customers' current data management practices, needs and value drivers, two customers out of eight were identified as a low maturity customers. Those customers are property owners / operators with relatively small portfolios and accordingly, they have smaller amounts of data to manage. The period of ownership of their properties varies, properties are owned for short period of time as well as for the whole lifecycle of the building or even over it. Despite the differences in their roles, one is a property owner and a lesser and the other one is an owner-operator who provides facilities services for different needs – they still have similarities in their

jobs. Both costumers are responsible for providing following facility management services:

- Capital project planning and management
- Management of maintenance and operations
- Energy management
- Lease management
- Property management
- Indoor condition management

These services ensure the functionality, safety, and sustainability of the property, as well as the satisfaction of the tenants, and the tenants' operations without interruption.

According to the interviewees, their organizations are not yet data-driven, and they do not have a data management strategy that would be integrated with their business strategies and, therefore, help to achieve strategic objectives. According to one of the interviewees, the reason is simply a lack of understanding of the data's importance, potential, and benefits, in addition to not fully understanding how it fits with other processes. As a result, data is not collected and managed purposefully.
When asked whether the data is used to assist in decision making processes, both responses were negative. Data is not used as a decision-making tool in either cases. One of the interviewees completed his answer as follows:

> "Yes, we do acknowledge that management based on data is a trend of the day, and the aim is to be able to justify the decisions by data, create quality, cost-effectiveness, and predictability". Data 1, Key customer X.

Both organizations data management is fragmented, none of those organizations have a master data system for gathering data from different systems and further processing it, according to the interviewees. The data is managed in several different systems, which aren't connected by integration, so combining data is usually done manually by using Excel. Another reason for poor data management, according to both interviewees, is the lack of users'

involvement. It is hard to get all the stakeholders to use all the available systems.

As it was mentioned before, in both organizations data is managed by people in several different systems that are not connected to each other, which eventually led to data fragmentation. Data fragmentation is one of the biggest challenges, which according to interviewees makes the data unreliable, non-accessible, and non-comparable. As well as, the lack of intelligent reporting tools makes it difficult to understand and use the data. Both interviewees underlined that data visualization is vital, visualization makes data understandable and readable and thus usable. Additionally, one of the interviewees pointed out that the lack of a centralized system for data management is contributing to personalization of the data in their organization, and even in some cases data is purposely possessed in someone's hands and is used as power.

The interviewees indicated that data management practices need to be changed in a way that ensures that data is understandable, reliable, and accessible. If the amount of the systems cannot be reduced, then data management systems have to support integrations between each other. One of the interviewees opened it up as follows:

"The amount of manual work needs to be reduced, the data should be uploaded into one data management system only and from there, through integration, moved to another." Data 1, Key customer X.

The features needed in a data management tool were described by both interviewees quite similarly: data management tools have to be suitable for different purposes for instance lifecycle management and portfolio management, and for different users: operational and managerial level. Another interviewee also added:

"Data management tools must also support cross-checking of the data from various sources. Cross-checking is expected to make easier to understand how

one process affects the other for instance maintenance and tenant satisfaction."

Data 1, Key customer X.

As said before, despite the differences in roles of interviewed customers and their core businesses, both have very similar jobs when it comes to facility management and thus have quite similar value drivers. Their facility management activities focus on two things: (1) tenants'/occupant's satisfaction and (2) maintaining the technical conditions of their properties. One of the interviewee said:

"We aim to offer safe, healthy, functional and quality premises for our tenants."

Data 1, Key customer X.

Another interviewee also emphasized the importance of tenants' satisfaction and the goal of providing suitable premises, as well as the development of the property's value, since the property is an investment tool that is expected to grow in value. Both interviewees acknowledged that technical conditions of the property have a direct impact in the first place on the value of the property and secondly on the tenants' satisfaction. Therefore, the data management practices, and the tools that are used are expected to help to complete those jobs efficiently and cost effectively.

4.3.2 Current Data Management Practices, Needs, and Value Drivers of Medium Maturity Data Management

Similarly, as in previous subsections, based on the answers given regarding customers' current data management practices, needs and value drivers, three customers out of eight were identified as medium maturity level customers. This group is represented by the property owner / owner-occupant customer profile. Those customers told that they manage large property portfolios that generate both a large amount and different types of real-estate data. Properties are owned for a long time period, often for the entire lifecycle of the buildings.

As with low maturity customers, medium maturity customers provide the facilities services that aim to ensure functionality, safety, sustainability, and the satisfaction of the properties' users. These customers emphasized that one of their main aims is to ensure property users can conduct their operations or businesses uninterrupted. In addition to providing facility services, that customer group is responsible for developing and constructing new properties and renovating existing ones, all of which generates a substantial amount of data that must be managed.

In the interviewees' perspective, the organizations they represent are slowly transforming themselves into data-driven organizations: they recognize the potential and power of data and want to use it as a decision-making tool. On a practical level, however, current data management practices and the processes related to them are inefficient, resulting in an inefficient use of data. One of the interviewees described it as follows:

> “The importance of this theme is identified and even noted at a strategic level, but implementation is lacking.” Data 1, Key customer X.

Another interviewee explained this in the following way:

> “Leading with data is a part of the company’s strategy, but no practical actions have been taken in order to achieve that goal.” Data 1, Key customer X.

According to the interviewees the problem is in the lack of the dedication: even though the importance and the benefits of the proper data management is identified and noted on the strategic level, the organizations have not allocated any resources or budget to it.

All interviewees stated that they do not have a central data collection system. Data in their organizations is being managed in various systems that are not interconnected and if needed manually compiled using Excel software and visualized for later use. When asked if the data management software

architecture is outlined and controlled, one of the interviewees responded "No," but added that his company has recognised the need for it. He completed his answer as follows:

> “We are working on a project that aims to provide a description of information systems and the data they manage” Data 1, Key customer X.

Other interviewees stated that even though the data is managed in various different systems, their software architecture is fairly straightforward, and that there is no need to outline it in detail.

According to all interviewees among the medium maturity customers, data fragmentation is a major challenge, as it is with low maturity customers. The interviewees explained that, data fragmentation is caused by a lack of communication and a tendency for companies to operate in silos. Thus, data is isolated because different business units operate independently. One of the interviewees described it as follows:

> “Data flow between different units is unsystematic and incomplete.” Data 1, Key customer X.

Interviewees emphasized that data fragmentation occurs not only at the organization level, but within each division as well. There are too many different systems where they manage the data that are not interconnected, they explained. According to them, fragmented data is unreliable, hard to access, difficult to compare and cannot be used as a basis for decision making. All interviewees stressed the need for a modern reporting tool as well. One of the interviewees described it as follows:

> “A lack of modern reporting tools makes it difficult to make informed decisions. At the moment, the data is compiled by Excel spreadsheets.” Data 1, Key customer X.

It is expected that modern reporting tools will allow data cross-checking and facilitate understanding, thereby simplifying decision-making processes.

Medium maturity and low maturity customers agreed on the same approach when asked what needs to be done regarding the data management. They stated that data management practices should be revised so that data is accessible, understandable, and reliable. If the number of systems cannot be reduced, then data management systems must support integrations among themselves. One of the interviewee said that it is crucial to understand what data informed decision-making processes need, and then adapt the data management practices accordingly. Another interviewee explained the need for structured and understandable data in the decision-making process and the need for understanding of the overall picture of the data management as follows:

> "Reliable and up-to date data is the base for decision-making process. But first, we need to know what improvement actions we need to take in order to complete our jobs and fulfil constantly changing customer needs. Moreover, we need to understand the overall impact of those actions." Data 1, Key customer X.

Other interviewees indicated they wanted data management tools to be user-friendly that suits for the needs of the different type of users. They emphasized that data management tools are expected to reduce manual work as much as possible to simplify and enhance day-to-day tasks.

Similarly, as the low maturity level customers, tenant's satisfaction and ensuring that they are able to run their businesses without interruptions are one of the most important jobs that medium level customers are trying to complete. One of the interviewees described it as follows:

> "The main objective of our organization is to ensure property user's trouble-free operations and the safety of their clients." Data 1, Key customer X.

All interviewees also emphasized the importance of the technical maintenance of their properties. According to them it is critical to ensure that their properties remain in good condition, safe and in compliance with regulation and meet constantly the needs of the tenants. Their organizations value the long-term strategic management that focuses on the preventive maintenance of the properties which in turn helps to optimize maintenance costs and investment needs and thus ensures that the buildings remain in good condition for the entire lifecycle and moreover, improving their value.

Consequently, the data management practices, and tools that are employed are expected to provide efficient and cost-effective execution of these jobs.

4.3.3 Current Data Management Practices, Needs, and Value Drivers of High Maturity Data Management

The other three customers interviewed, based on their responses regarding their current data management practices, needs and value drivers, have been classified as a high maturity level customers.

The high maturity customers group represents the property owner-occupant / operator customer profiles. The property owner-occupants are the ones who own and occupies their properties and bear all the liabilities associated with them. The property operators are the ones that are responsible for providing and managing the facility management services. Even though they do not own the properties, similarly as the property owners they have full maintenance liability which includes ensuring that the properties that are under their custody are kept in proper condition as agreed in the lease agreement.

The property portfolios of that group are significant in size, and there are numerous types of data they need to handle. Property owners own their properties for a long period of time, usually for the entire lifecycle of the building or even over it. Lease agreements for operators are also on a long-term basis.

Similarly, as low and medium maturity customers, high maturity customers are responsible for providing and managing the facility services. The objective of those services is to ensure properties' functionality, safety, sustainability, and the satisfaction of the properties' users, as well as to guarantee trouble-free operations of their jobs.

That customer group is also responsible for developing and constructing new properties, as well as renovating existing ones, all of which generate a considerable amount of data to manage.

According to the interviewees, their organizations are data-driven, the data and its governance is a part of the strategy. In all three interviews, the interviewees emphasized that data plays a very crucial role in their businesses, one of the interviewees described it as follows:

> “Currently, data is at the very center of our operations, we want to make data flow smoother and more connected, we want to get rid of the fact that information is widespread, and we want to combine data from different sources. A lot of efforts have been made.” Data 1, Key customer X.

Second interviewee explained it as follows:

> “Our employees are a key part of network management, which relies on high-quality data. The collection and analysis of high-quality data and the associated visualizations and reporting are incredibly important.” Data 1, Key customer X.

Third interviewee said as follows:

> “Data is a key component of the strategy. I am responsible for real estate data.” Data 1, Key customer X.

According to all three interviewees, data’s potential, its application and tangible benefits are identified at all levels of their organizations. The data on real estate is also operationalized to support or guide other processes. For example,

maintenance quality or maintenance costs are continuously compared with tenant satisfaction which is a vital measure.

The data management practices and tools used by customers that are at high maturity are more sophisticated than those at low or medium maturity. In all three organizations, the data is collected and managed purposefully. Some of the data management systems that deal with different data types are interconnected, enabling a continuous data flow, and maintaining data integrity. Two of the interviewees said that they have a central data collection system, where data is brought together, cross-checked, and made more understandable via utilizations of modern reporting tools. Even though their existing reporting tools are modern and can be used for multiple purposes, they still create reports manually with excel sheets.

When asked a question regarding the decision-making process, all interviewees said that the decision-making process in their organizations is purely based on data, and thus a lot of work has been done in ensuring that the right data is available in the right form to the right stakeholders. According to interviewees, in order to utilize data in decision-making process, it is necessary to identify meaningful data out of a huge amount of data generated every day. All interviewees mentioned that finding the correct data is challenging at the moment.

Another important difference between high and low or medium maturity levels is that the high maturity level customers have clearly defined and controlled software architectures. According to the interviewees, they know where the data comes from, how it is managed and what the potential challenges are.

High maturity level customers have stressed quite similar needs as low and medium levels but in a different scale. According to all three interviewees, the data is fragmented and one of the reasons for that is the number of different data management systems and tools and also the number of processes where each is used. Even though the software architecture is clearly defined, not all the systems are interconnected with each other, increasing the difficulty of data

management. One of the interviewees mentioned that data fragmentation harms the quality of the data. According to him the fragmented data is unreliable, and therefore different data from different sources cannot be cross checked which is vital for seeing how processes interact. In addition, all interviewees mentioned that data flow between different units is unsystematic and incomplete, and a lot of data is lost during the data transfer process.

During the interview, all three interviewees agreed that the current number of the different systems must to be reduced, which will help remove the complex software architecture, reduce the number of integrations and eventually increase data reliability. One of the interviewees said data integrity and accuracy are the foundations of data-driven organizations, which is why companies put a lot of efforts into those aspects and also face a lot of challenges. He described it as follows:

> “There is a challenge of accuracy and integrity of data, whether the data is the same across all sources. The system challenge is also, for example, what data comes from different processes and whether it remains the same. Our goal is to keep the data the same, up to date in all data sources. Reducing the number of data sources will ensure the data is more complete and then easier to maintain.” Data 1, Key customer X.

Additionally, other interviewees emphasized the importance of maintaining integrity and accuracy of the data as well, according to them, their organizations experience data quality issues. In all respects, data is not standardized, unreliable reliable, out-of-date, and difficult to use. Data’s poor quality is also result of human factor, one of the interviewees described it as follows:

> “Despite processes and instructions, data does not stay current. There are a lot of changes going on, 22000 events a year. Many of these that are not recorded. Data management is surprisingly difficult even if you put a great deal of effort into it. There are a lot of changes continuously happening, so managing is difficult, and there is no automation yet.” Data 1, Key customer X.

According to him, despite the processes for managing the data being established and instructions being given, the amount of data and number of changes as well as the number of different systems where the data must to be updated make data management inefficient and eventually results in loss of the data quality.

To eliminate human factor, interviewees wished for the data management tools that are user-friendly and suits for the needs of the different type of users and for various purposes such as portfolio management, lifecycle management and operational management. It was stressed that data management tools should minimize manual work as much as possible to simplify and enhance day-to-day processes. As a result, data management tools are expected to provide efficient and cost-effective execution of those tasks. Additionally, interviewees noted that data management tools should support the integration of maintenance activities into 3D building information models (BIM) as well as features for utilizing artificial intelligence.

4.4 Summary of the Findings

The findings and information collected during the workshop and the customer interviews which formed Data 1 collection of this thesis, assisted the author in gaining a comprehensive view of the current state of the customer profiles and customers' current data management practices, needs and their value drivers. The findings are presented in the tables 7 and 8 on the following pages. Table 7 on the next page, presents the summary of customer profiles identified in CSA workshop and table 8 presents the summary of interviews concerning customers' current data management practices, needs and their value drivers.

	Customer's data management needs		
	From construction to operational phase data	**Real Estate Business data**	**Real time data**
Customer's industry position / role	Property owner-occupants	All property owners with a focus on keeping the property in their possession for a long time	Property owner-occupants that are willing to own property for a long period of time
	Real Estate Operators / Occupants (hotels) who have maintenance liability		Customers with a large portfolio of real estate
	Construction companies		
	Property owner's contractees		
	Contractors / Subcontractors for a warranty period		

Customer profiles

1. Property owners
2. Owners-occupants
3. Operators / Occupants (who have maintenance liability)
4. Construction companies
5. Property owner's contractees

Table 7. Summary of Customer Profiles Identified in CSA Workshop

As can be seen from the table above, during the workshop attended by the joint project team and the advisors, the customer's industry roles and positions were

identified for their various demands on data management. As a result of further processing, all together five customer profiles were identified.

On the following page, table 8 presents in a visual format the findings derived during the customer interviews as well as the identified customer profile for each interviewed customer. Information and findings collected during interviews are presented in accordance with the identified maturity level of each customer. The current data management practices were the most important factors in arranging customers according to their maturity level among the indicated needs, gains and current data management practices.

Customer profile	Property owner	Owner-occupants						
	Operator							
Maturity level of the customer based on data management practices and needs	Key customer 1	Key customer 2	Key customer 3	Key customer 4	Key customer 5	Key customer 6	Key customer 7	Key customer 8
	Low							*High*
Current data management practices			Data-driven organization					
						Data on real estate is operationalized to support other processes in an organization		
			Data-driven decision-making has been partially implemented				Meaningful data is used for decision making process both on management and operational levels	
							Power BI or Master data management tool with data dashboards	
	Software architecture is NOT outlined and in control						Software architecture is outlined and in control	
Needs / Pains	Too many different systems/tools							
	Data fragmentation, data cannot be cross-checked, data cannot be managed from the same system							
	Data quality, data types not specified/standardized, data is not understandable							
	Data is not reliable, not accessible and out of date							
						Meaningful data identification and its collection (Data Architecture)		
		Reporting is fragmented, reports done manually using excels						
	Data flow between different units is unsystematic and incomplete							
Value drivers / Gains	Data management tool with integration capabilities							
	Reliable, accessible and understandable data							
	Reporting tools that compile data from multiple sources and visualize it							
	Data that can be cross-checked							
				Integration of BIM and Facility Maintenance				
								AI-enabled capabilities
	User-friendly data management software that meets multiple needs: portfolio and operations management						Data management tool that is user friendly and is applicable for various needs: portfolio, lifecycle and operational management	

Table 8. Summary of CSA Interviews Concerning Customer Needs and Value Drivers

The data in this table is presented in 5 different sections: (1) customer profiles sections indicates the profile of the interviewed customer, (2) maturity level of the customer based on data management practices and needs section indicates the identified maturity level of each customer, (3) current data management practices section presents the key finding regarding customers' current data management practices, (4) Needs / Pains section presents the key challenges and the (5) Value drivers / Gains section presents the key findings regarding the results, outcomes and benefits that customers want or require regarding data management. This table also shows how customers on the different maturity levels differ from each other and also how they are similar.

4.5 Key Findings to Elaborate

The current state analysis of customers' current data management practices, needs and value drivers revealed characteristics that are critical to distinguishing customers' maturity levels. The table 9 on the following page highlights the differences between different customers in regard to their current data management practices, needs and value drivers. Different colours have been used to highlight the specific characteristics of the high and medium maturity levels.

The high-end maturity level customers have nine (9) characteristics that set them apart from other customers. In the table 9, they are highlighted using the purple colour and dotted red purple line to make them visible. The dotted red purple line means that this characteristic is identified for more than one maturity level. (1) They are data driven organizations (2) that use the real estate data in other functions of their organizations. (3) Their modern tools such as Power BI reporting tools and master data management system, help them (4) make better business decisions based on data. (5) Even though their software architecture is well defined and controlled, they are still having difficulty (6) identifying relevant data among the large amounts of data generated daily. They see great potential (7) in incorporating BIM models with facility maintenance and using (8) AI technology

at the same time. (9) User-friendly data management tools, which are applicable to multiple needs and users, add value to them.

Maturity level of the customer based on data management practices and needs	Key customer 1 — *Low* — *High* (Specific characteristics of a medium maturity level customers; Specific characteristics of a high maturity level customers)
Current data management practices	Data-driven organization
	Data on real estate is operationalized to support other processes in an organization
	Data-driven decision-making has been partially implemented
	Meaningful data is used for decision making process both on management and operational levels
	Power BI or Master data management tool with data dashboards
	Software architecture is NOT outlined and in control
	Software architecture is outlined and in control
Needs / Pains	Too many different systems/tools
	Data fragmentation, data cannot be cross-checked, data cannot be managed from the same system
	Data quality, data types not specified/standardized, data is not understandable
	Data is not reliable, not accessible and out of date
	Meaningful data identification and its collection (Data Architecture)
	Reporting is fragmented, reports done manually using excels
	Data flow between different units is unsystematic and incomplete
Value drivers / Gains	Data management tool with integration capabilities
	Reliable, accessible and understandable data
	Reporting tools that compile data from multiple sources and visualize it
	Data that can be cross-checked
	Integration of BIM and Facility Maintenance
	AI-enabled capabilities
	User-friendly data management software that meets multiple needs: portfolio and operations management
	Data management tool that is user friendly and is applicable for various needs: portfolio, lifecycle and operational management

Table 9. Specific Characteristics of the Medium and High Maturity Levels

The specific characteristics of the medium level customers are as follows: they are also data driven organizations that are not yet fully utilizing the data for decision-making process. They are highlighted in red colour and dotted red purple line. They also recognize the potential in combining BIM models with facility maintenance in order to enhance the maintenance management and its quality.

The low maturity level has no unique characteristics that only applies to it. In terms of needs and value drivers, it has the same ones as the medium level, except for one: Integration of BIM and Facility Maintenance.

The summaries and all the findings, especially the specific characteristics are preserved to be used by the joint project team of the service design project for co-creating initial recommendations at the next stage of this thesis.

This completes the current state analysis stage of this study. In the following section 5, the summaries of the CSA stage together with the conceptual framework facilitates the co-creation of the initial recommendations of potential customer need categories and their value drivers to be operationalized into practical service concepts outside of the thesis.

5 Developing Recommendations of Customer Need Categories and their Value Drivers

This section combines the findings of the current state analysis and the conceptual framework into the co-creation of the initial recommendations. This section first provides an overview to how this stage of the thesis was carried out. Second, it provides the illustration and description of the initial recommendations.

5.1 Overview of the Recommendations Creation

As the objective of this study was to recommend potential customer need categories and their value drivers that are then was operationalized into practical service concepts in the service design project outside of the thesis, this section concentrates on originating the initial recommendations, which are then validated during a following stage, and then the final recommendations are derived from the feedback received.

The initial recommendations were co-created in one development workshop with the members of the joint project team of the service design project and two service design consultants. More information about the team members and their roles in the case organization are introduced in more detail in 4.1 section of this thesis. The workshop that lasted all day was divided into two sessions; the morning session began by reviewing Data 1 summaries and the evening session covered co-creation of recommendations for the initial customer need categories and their value drivers. The workshop was organized in a hybrid mode, some participants participated online, while others were at the office including the author of this thesis and consultants from design agency.

The morning session began with overview of the identified customer profiles and then discussed the summaries of the customer interviews.

Profiles of customers that were identified by the same joint project team in the CSA workshop were quickly reviewed and tied to the interviews with the

customers. The customers that were interviewed were all the property owners, owner-occupants, and operators. The joint project team concluded that there is no need for further processing of customer profiles or their validation as such profiles did not play a significant role in the development of practical service concepts as the profiles' needs and values did. In order to create value for a specific customer group, practical service concepts put the customer's needs and values as the core of the service.

Following an overview of the customer profiles, the summaries of the interviews were reviewed and discussed with the joint project team. The summaries of the interviews were presented in three different sets: (1) summaries of the current data management practices, needs, and value drivers of low maturity data management customers, (2) summaries of the current data management practices, needs, and value drivers of medium maturity data management customers and the (3) summaries of the current data management practices, needs, and value drivers of high maturity data management customers. After reviewing the summaries of the interviews and analysing the findings of the CSA stage during the morning session, the members of the joint project team agreed to focus on developing two different customer need categories only: (1) low + medium and (2) high maturity. The decision was based on the key findings from the CSA stage that are presented in the previous section. As can be seen from the previous section, it is evident that the low-level is the base level. In terms of its needs and value drivers it shares the same factors as the medium and high levels expect for four. Three of them applies to high level only and one for medium and high levels. Consequently, only one factor of the value drivers / gains section differs between the low maturity level and the medium maturity level. Having so many similar needs and value drivers makes low and medium levels a logical combination. Whereas the modern data management practices, unique needs and value drivers set high level organizations apart from the low and medium ones, which is why the high maturity level was decided to be separated from the other ones. Table 10 on the following page presents in visual format co-created customer need categories.

Specific characteristics of a medium maturity level customers

Specific characteristics of a high maturity level customers

Maturity level	*Low*						*High*
Current data management practices			Data-driven organization			Data on real estate is operationalized to support other processes in an organization	
			Data-driven decision-making has been partially implemented				Meaningful data is used for decision making process both on management and operational levels
							Power BI or Master data management tool with data dashboards
	Software architecture is NOT outlined and in control						Software architecture is outlined and in control
Needs Customer need categories	Too many different systems/tools						
	Data fragmentation, data cannot be cross-checked, data cannot be managed from the same system						
	Data quality, data types not specified/standardized, data is not understandable						
	Data is not reliable, not accessible and out of date						
						Meaningful data identification and its collection (Data Architecture)	
		Reporting is fragmented, reports done manually using excels					
	Data flow between different units is unsystematic and incomplete						
Value drivers / Gains	Data management tool with integration capabilities						
	Reliable, accessible and understandable data						
	Reporting tools that compile data from multiple sources and visualize it						
	Data that can be cross-checked						
			Integration of BIM and Facility Maintenance				
							AI-enabled capabilities
	User-friendly data management software that meets multiple needs: portfolio and operations management						Data management tool that is user friendly and is applicable for various needs: portfolio, lifecycle and operational management

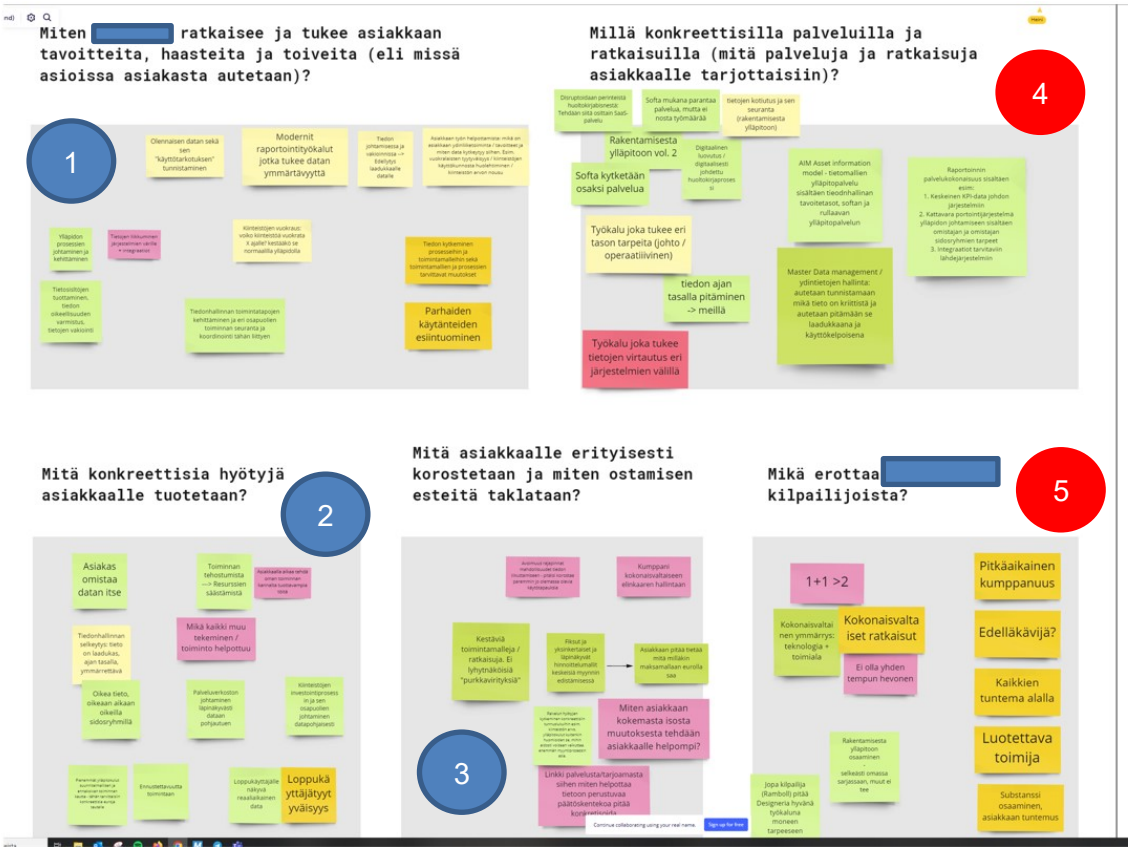
LOW + MEDIUM maturity

HIGH maturity

Table 10. Customer Need Categories.

During the evening session, the joint project team worked in groups to define the value drivers of the initial need categories that were co-created in the morning

session. Participants at the office were put into one group, while participants online were put into a second group. Using the findings from the CSA stage, the joint project team was asked to define value drivers across three areas: (1) What are the goals, challenges, and aspirations for customer data management that your case organization is trying to address? (2) Secondly, what are the tangible benefits for the customer? and (3) How are the barriers to purchase removed, and what is especially emphasized to the customer? Those areas are based on the Osterwalder et al. (2014) model, that is discussed in greater depth in section 3. The area number 1 is considered as a Functional Jobs of the customer, the area 2 considered as an Expected gains and area 3 as obstacles that prevent completing the jobs. The office-based group defined value drivers for high-maturity level customer need category, the online group took care of low + medium-maturity level customer need category. Figures 4 below and 5 on the following page present the results of round 2 data collection along with the results of the group work. Round 2 data collection was conducted from the evening session, the input from the participants were captured using the Miro dashboard.


Miten [redacted] ratkaisee ja tukee asiakkaan tavoitteita, haasteita ja toiveita (eli missä asioissa asiakasta autetaan)?
1
Olennaisen datan sekä sen "käyttötarkituksen" tunnistaminen
Modernit raportointityökalut jotka tukee datan ymmärtävyyttä
Tiedon johtamisesta ja vakioinnista --> tiiviitä laadukkaalle datalle
Asiakkaan työn helpottamisia: mikä on asiakkaan ydinlisäarvoinnin / tavoitteen ja miten data kytkeytyy siihen. Esim. vuokraäkisen tyytyväisyys / toimeksiojan käyttöönottoa hudeltoimnan / toimeksiojan arvon muutu
Ylläpidon prosessien johtaminen ja kehittäminen
Tietojen liiii

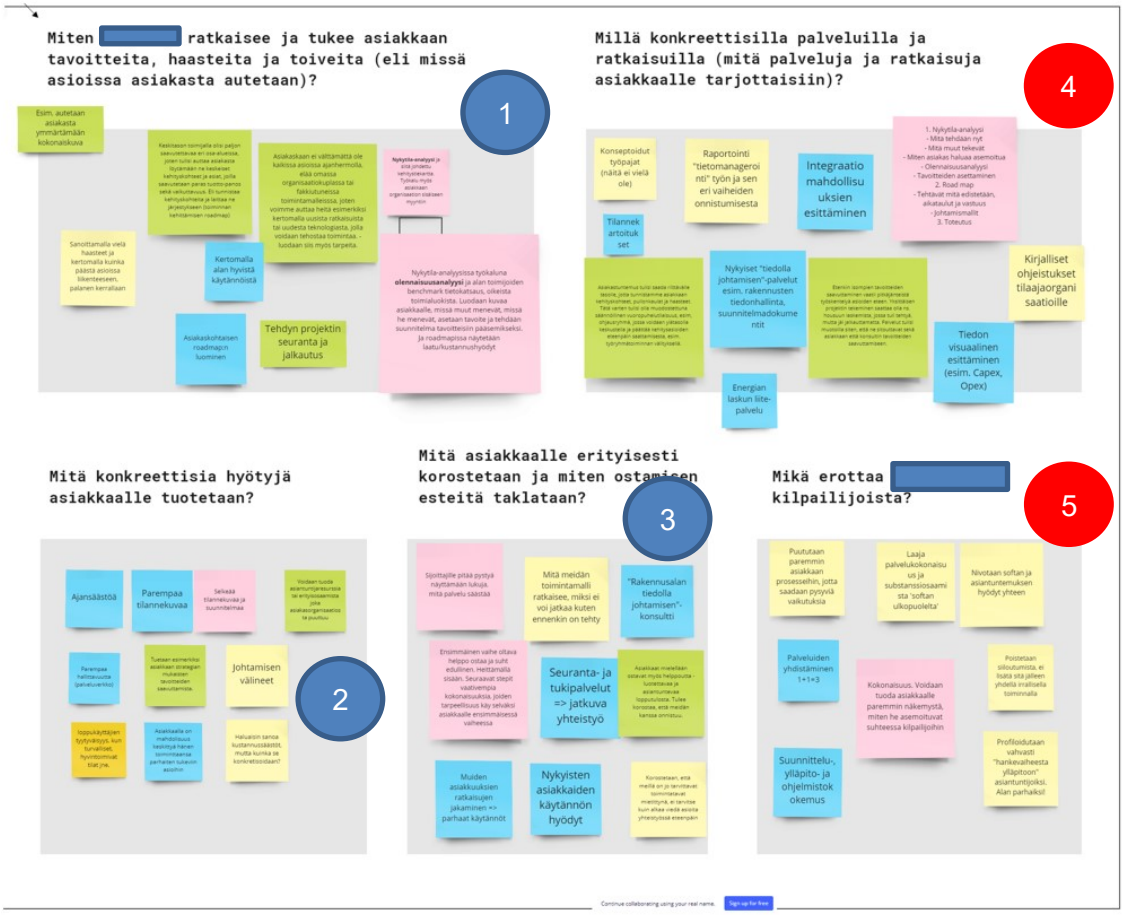


Figure 5. Miro dashboard, Co-creation of the Initial Recommendations, Low + Medium.

The Miro dashboard allowed participants to work together and provide input simultaneously. The sticky notes in the table above represent the participants' input. Participants' input is based on the CSA stage findings, which were discussed in the morning session, as well as their own professional experience and understanding of the industry. In the workshop, participants were asked for input on topics that are outside the scope of the thesis, but that are relevant to the entire service design project. The numbers 1,2,3 refers to the topics within the scope of the thesis, whilst numbers 4 and 5 that do not.

5.2 Illustration and Description of the Initial Recommendations

As stated at the beginning of this study, the outcome is the recommendations of potential customer need categories and their value drivers. Tables 11 and 12 on

this and following page show an illustration of the outcome. As depicted in Tables 11 and 12, the initial recommendations are built from the following elements: the value drivers for the low and medium maturity level need category and the high maturity level need category's value drivers. The customer need categories and value drivers were co-created with the joint project team based on the findings of the CSA stage and the personal expertise and understanding of the industry of each member of the joint project team, as described in the previous part. The tables below describe the findings of the initial recommendation creation stage, in which participants' input regarding the value drivers across three areas is gathered for further validation within the scope of this thesis and operationalization outside of this thesis but inside the service design project.

Customer need category	LOW+ MEDIUM maturity		
Value drivers	Functional JOBS: What are the goals, challenges, and aspirations for customer data management that your case organization is trying to address? • To Identify current data management status • To identify customer's needs, challenges, and goals • To build data management strategy • A look into industry trends and insights	Expected GAINS: What are the tangible benefits for the customer? • Increased efficiency: time & costs • Makes Facilities Management transparent • Makes data visual and understandable • Improved tenants' satisfaction • Stay focused on core business • Data management's road map • (low->medium->high)	OBSTACLES: How are the barriers to purchase removed, and what is specifically emphasized to the customer? • Reference stories with actual savings • Arguments supporting why our model/offering works and a customer's current approach doesn't • Offerings that are available in modules, the "starting package" is affordable and easy to implement • Pre-planned detailed implementation plans -> easy to implement • Clearly defined outcome/results

Table 11. Low & medium Maturity Level Customer Need Category and its Value Drivers.

Customer need category	The HIGH maturity		
Value drivers	Functional JOBS: What are the goals, challenges, and aspirations for customer data management that your case organization is trying to address? • To Identify relevant data and its application • To establish a link between data, processes and operating models • To improve data accessibility • To provide a reporting tool that make data more understandable • Data standardization • Development of data management practices • Management and development of maintenance processes • Simplify and enhance day-to-day tasks • Data content creation and accuracy verification	Expected GAINS: What are the tangible benefits for the customer? • Customers own the data • Optimizing facilities management (FM) operations -> saving resources • Data management clarified: data are high quality, current, and understandable • Predictability -> saving costs • Makes Facilities Management Data-Driven and transparent • Improved tenants' satisfaction • Data management tool that suits various needs and different users	OBSTACLES: How are the barriers to purchase removed, and what is specifically emphasized to the customer? • A transparent and simple pricing model • Solutions that last, not quick fixes • Case organization is a partner for comprehensive lifecycle management • Pre-planned detailed implementation plans -> easy to implement

Table 12. High Maturity Level Customer Need Category and its Value Drivers.

As can be seen from the tables above, the value drivers specified by the joint project team align with the CSA stage results. The following subsections provide detailed descriptions of the initial customer need categories and their value drivers.

5.2.1 Description of Low & Medium Maturity Level Customer Need Category and its Value Drivers

As described earlier, the joint project team developed two initial customer need categories, with components that are identified value drivers specified for each category spanning three areas focused: on the goals and challenges (functional jobs) of the customer; its expected gains; and obstacles that prevent those functional jobs.

Because the customers in this customer need category have very basic data management practices, tools, and no data strategy at all, the offerings in this customer need category are designed to address those issues. It assists customers in determining their data management state, as well as their needs, issues, and goals. The offerings also support the further creation of a data management strategy to meet those objectives or remedy the problems. According to the interviewees, their organizations value solutions that develop a data management plan for the customer company using the most up-to-date knowledge on modern data management methods, tools, industry insights, and trends.

The tangible benefits, that the joint project team has listed are as follows: less manual work, which leads to increased efficiency; data accessibility, which makes the entire facility management process transparent; data visualization, which helps the decision-making process and allows customer to focus on the core business; and improved tenant satisfaction as a result of all benefits combined. Every interviewee has brought up the topic of tenant satisfaction and the need of ensuring it.

The initial step toward becoming a data-driven organization and applying structured data management practices, as noted during the interviews, is the most difficult for customers in this customer need category, so purchasing that type of service must be as simple as possible. The joint project team has compiled a list of five bullet points that are recognized as value drivers in this area

and will help buyers make more informed decisions. (1) The promises must be supported by real cases and numbers of actual savings in order to remove the purchase barriers related to that customer need category. (2) Also, offering needs to include the argumentation and explain why the case organization's offering, services, processes are effective, and the customer's current approach is ineffective. (3) Moreover, the entire offer should be designed to be purchased in modules, so that the customer doesn't have to make a big commitment. The offering should also (4) describe a pre-planned implementation plan, and the (5) modules should include a description of the benefits the customer will receive.

5.2.2 Description of High Maturity Level Customer Need Category and its Value Drivers

The low + medium maturity level customer need category with its needs and value drivers is considered as a beginning point for transforming into a data-driven organization and persuading clients that data is the new oil in business. Customers in this category already understand the potential of data as well as the benefits and value it can provide; they have advanced data management tools, well-defined data architectures, and developed data strategies.

The following components that the joint project team has identified based on the findings of the interviews, personal experience, and extensive industry knowledge are considered value drivers, the components that this customer group highly values.

This customer need category's offerings are aimed at assisting customers in identifying important data and using it, as well as establishing a link between data and its influence on other processes or operating models. It assists in the development of data management processes that involve actions such as data quality improvement, data content production, data correctness check, data standardization, and data accessibility, as well as reporting tools that make data understandable. Other solutions that this customer need category offers are

maintenance process management and development, day-to-day work simplification.

Customers in this group value the following tangible benefits: facility management is data-driven and transparent, which helps save resources by optimizing facility maintenance actions and save costs due to better predictability; customers own the data, which is up to date and understandable; better data management tools that suit various uses; and improved tenant satisfaction as a result of all benefits combined.

All of the products and services described above must be given, together with a clear and simple pricing model and pre-planned implementation plans. Customers also respect partners who provide comprehensive lifecycle management and solutions that are long-term rather than one-time repairs.

5.3 Summary of Initial Recommendations

As an outcome of this stage, the joint project team developed two initial customer need categories. The customer need categories include components that are identified as value drivers. Value drivers are divided in three sections and consider following areas: goals and challenges (functional jobs) of the customer; customers expected gains; and obstacles that prevent those functional jobs.

This completes the co-creation of the initial recommendations stage of this study. Next section describes the validation of the initial recommendations and creation of the final ones.

6 Validation of Initial Category & Value Driver Recommendations

This section describes the validation of the co-created initial recommendations. First it provides an overview to how this stage of the thesis was carried out. Second, it presents the adjustments made to the initial recommendations and third, it presents the outcome of the thesis, the final recommendations.

6.1 Overview of the Recommendations Validation

The initial recommendations were validated by presenting them to the service design project's advisers and getting their input and evaluation. The validation was carried out in a single workshop as part of the service design project, which covered and validated all of the project's other areas as well. The workshop was arranged online, using the Teams application. The service design project's advisers are listed in the table below.

Number of participants	Position
1	Account manager
1	Group manager
1	Director of development
2	Business Unit Director
1	Department director
1	Technology Director
1	Project Manager
1	Leading Expert
1	Specialist

Table 13. The Advisors of the Service Design Project.

The members of the adviser team, as shown in table 13, represent various levels of the organization's hierarchy, beginning with the Specialist role and ending with the Department and Business Unit Directors. The diversity of roles ensured high-

quality feedback from various units and levels of the organization, resulting in the best possible outcome.

Due to the limited time allocated for the workshop, it was decided that the advisors review the interview summaries and key findings independently before the workshop. All the needed information was shared in the Teams application in the group chat with the advisors and all the other members of the project team.

The scope of validation was limited to the value drivers only; the joint project team had decided and agreed during the previous stage with the relevant stakeholders that there was no need for more than two customer need categories due to the minor differences between low and medium level customers.

The advisors' input is based on the same elements as in the previous section: each advisor's personnel experience and industry knowledge, interview summaries and key findings, and the information obtained during the review of the initial recommendations. Based on the above-mentioned elements, all the comments and improvements are considered as a factors that low + medium and high maturity level customers value and thus need to be considered when developing the practical service concepts.

The workshop began with an overview of the service design project's current status, followed by a presentation and discussion of the co-created customer need categories and their value drivers. During the discussion, the advisors had chance to give the initial feedback in a conversational format. Following the discussion, the advisors expressed their comments and gave their input using the Miro dashboard application which formed Data 3 for this study. The advisers were divided into groups and requested to discuss and provide their perspectives on the content of the practical service concepts including the feedback and improvements to the identified value drivers. Based on Data 3, the initial recommendations were adjusted and formed to the final recommendations.

6.2 Adjustments to the Initial Recommendations

While reviewing the status of the service design project and having discussion on co-created categories of customer needs and their value drivers, no critical comments were received from the advisors. As a result of the discussions during the group work, the advisors came up with ten additional improvements to the identified value drivers. Table 14 below presents the improvements that came for the functional jobs and expected gains value drivers' categories. The obstacles remained the same.

	Functional JOBS: **What are the goals, challenges, and aspirations for customer data management that your case organization is trying to address?**	**Expected GAINS:** **What are the tangible benefits for the customer?**	**OBSTACLES:** **How are the barriers to purchase removed, and what is specifically emphasized to the customer?**
Customer need category	**LOW + MEDIUM**		
	• **Identification of the current data's potential and application** • **Identification of the potential and applications of missing data** • **The unified practices simplify management and reporting**	• **Maximizing synergies and avoiding suboptimization** • **Process, data, and responsibility overlaps identified.** • **Data is standardized** • **An integrated set of tools and systems that work together for maximum efficiency**	
Customer need category	**HIGH**		
	• **Supports the strategy** • **Provides support for decision-making**	• **The massive amount of data is under control**	

Table 14. Additional Improvements to the Value Drivers of the Low + Medium and High Customer Need Categories.

The Low + Medium customer need category received the most improvements, having seven components total; three for functional jobs and four for expected gains.

The functional jobs section received three comments, two of them regarding challenges of the customer and one is about customer goals.

The advisors considered necessary to include the following customers' challenges that the case organization addresses: Identifying the potential and application of current data, as well as any missing data, its application, and potential. Furthermore, the functional jobs also received another comment that must be considered when developing practical service concepts. This comment is related to the customer's goal of unified data management practices that simplify governance and reporting processes.

For the tangible benefits section, the advisers added four comments about expected gains that low + medium customer need category's customers value and that are realizable as a result of the systematic and standardized data management and thus that should be highlighted in the practical service concepts. Those tangible benefits are: synergies of different processes are maximized and suboptimization is avoided, overlaps in different processes and responsibilities are identified, data is standardized and thus comparable, and a set of tools that are integrated to each other to maximize efficiency.

The high customer need category received three comments from the advisors, two of them regarding the functional jobs and one for the expected gains section. The functional jobs that the customers are dealing with and that the case organization addresses are following: the offering of the practical service concepts is tailored to support the achievement of the strategic goals as well as provides the support for the decision-making process. In the tangible benefit section, advisors have made the point that the huge amount of data is under control.

6.3 Final Recommendations

Based on the feedback received from the advisors during the workshop, some modifications were made to the initial recommendations. The final recommendations of customer need categories and their value drivers are presented in table 15. The changes are marked with red to illustrate the difference to the initial recommendations.

Customer need category	LOW + MEDIUM maturity	HIGH maturity
Value drivers: **Functional jobs**	○ To Identify current data management status, needs, challenges and goals ○ To build data management strategy ○ A look into industry trends and insights ○ Identification of the potential and application of the current data as well as the potential and applications of missing data. ○ The unified practices simplify management and reporting	○ To Identify relevant data and its application ○ To establish a link between data, processes, and operating models ○ To improve data accessibility ○ To provide a reporting tool that make data more understandable ○ Data standardization ○ Development of data management practices ○ Management and development of maintenance processes ○ Simplify and enhance day-to-day tasks ○ Data content creation and accuracy verification ○ Supports the strategy ○ Provides support for decision-making

Expected gains	○ Maximizing synergies and avoiding suboptimization -> Increased efficiency: time & costs ○ Makes Facilities Management transparent. Process, data, and responsibility overlaps identified. ○ An integrated set of tools and systems that work together for maximum efficiency ○ Data is standardized, visual and understandable ○ Improved tenants' satisfaction ○ Stay focused on core business ○ Data management's road map (low->medium->high)	○ Customers own the data ○ Optimizing facilities management (FM) operations -> saving resources ○ Data management clarified: data are high quality, current, and understandable ○ Predictability -> saving costs ○ Makes Facilities Management Data-Driven and transparent ○ Improved tenants' satisfaction ○ Data management tool that suits various needs and different users ○ The massive amount of data is under control
Obstacles	○ Reference stories with actual savings ○ Arguments supporting why our model/offering works and a customer's current approach doesn't ○ Offerings that are available in modules, the "starting package" is affordable and easy to implement ○ Pre-planned detailed implementation plans -> easy to implement ○ Clearly defined outcome/results	○ A transparent and simple pricing model ○ Solutions that last, not quick fixes ○ Case organization is a partner for comprehensive lifecycle management ○ Pre-planned detailed implementation plans -> easy to implement

Table 15. Final Recommendations

Table 15 presents the final recommendations for developing practical service concepts outside of the thesis. Based on the feedback and group work ten additional value drivers were added to the initial recommendations. Overall, the feedback was positive, and the advisors' feedback and adjustments were reflected in the consumers' responses throughout the interviews, thus all of the feedback and changes to the initial suggestions are relevant.

The following section is the final section of this thesis, it concludes this study by presenting the summary of the work, next steps, and self-evaluation.

7 Conclusions

This final section of the study presents an executive summary and next steps. Those are followed by a self-evaluation of the thesis and finally the thesis ends with the closing words.

7.1 Executive Summary

The objective of this study was to develop a recommendations of customer need categories and their value drivers to be utilized outside of the thesis in the service design project. The aim of the service design project was to develop practical service concept in cooperation with the experts from the consultancy agency and a various stakeholder sfrom the case organization. One of the most critical aspects of this project was to understand the customer, their needs, and value drivers. The need for development of the practical service concepts arose when the Lifecycle Management and Software unit has made a strategic decision to start developing and increasing the portfolio of continuous services. The service concepts are expected to simplify the structure of offer and make it more understandable from the customer perspective. More structured, more customer target-oriented service concepts are also expected to create a strong base for a long-lasting customer ship and thus will increase customer engagement.

This thesis included four stages. The first stage was to gain knowledge, summarize it and create conceptual framework based on the findings from relevant literature on identifying customer needs and customer segmentation practices.

After the gaining knowledge from relevant literature, current state analyses were done. Current state analyses included analyses of customer profiles, customers' current data management practices, needs and their value drivers by conducting eight customer interviews performed by video calls and one workshop held together with the joint project team and service design consultants. The outcome of this stage was the summaries of the interviews and list of key findings.

After performing current state analyses and summarizing all the findings, the next, third stage was to develop initial recommendations of customer need categories and their value drivers. In this stage joint project team was introduced to the key findings and involved into co-creation of the initial recommendations. The outcome of this stage were the initial recommendations of customer need categories and their value drivers.

The fourth and the final stage was a validation round of the initial recommendations and based on the feedback from the advisors of the project team the final recommendations were formed.

The next subsection provides the next step recommendations that are required in order to ensure the validity and complete the service design project.

7.2 Next Step Recommendations

As stated at the beginning of this thesis, the study was done as a part of service design project. The thesis focused on the creation of customer need categories and their value drivers, which were later used in the service design project to create practical service concepts. Following the creation of practical service concepts, the customer need categories and value drivers that form the foundation of the concepts need to be validated with the costumers. Validation will reveal how well the offering aligns with the needs of the customer and if the presentation and illustrations are clear.

The building of a customer value proposition, according to Simons (2014: p.52-53) and Osterwalder et al. (2014: p.20), is a continuous process in which the provider must systematically revise targeted customers, their actual needs, and values. In other words, it is a never-ending process that must be continually updated to remain relevant to customers. So, one of the next steps is to review the practical service concepts and their contents on a regular basis.

Furthermore, it was discovered during the development of practical service concepts that conducting a maturity test as the first step in tailoring the offering for the customer is necessary in order to understand the customer’s objectives, goals, and intended results. First, this maturity test must be constructed.

The next subsection presents the results compared with the objective of the thesis as well as the validity, reliability, relevance and logic of the thesis.

7.3 Self-evaluation of the Study

The objective of this study was to develop a recommendations of customer need categories and their value drivers to be utilized outside of the thesis in the service design project. The initial business challenge was that from the customer perspective services offered by the Lifecycle Management and Software unit were fragmented, the customer was not able to see the overall picture or benefits of synergy where different services are combined. The fragmentation and complexity of services also resulted in low customer engagement. This thesis produced recommendations for customer need categories and their value drivers, which were then used to develop practical service concepts that were expected to simplify the structure of services and make them more understandable to customers. More structured, customer-targeted service concepts were also intended to build a strong foundation for long-lasting customer ship and hence boost consumer engagement.

The recommendations were co-created with the service design project's joint project team and were confirmed by the service design project's advisers. Later they were used for creation of practical service concepts. Hence the outcome of this thesis meets the initial objective set for this thesis.

The study started from searching for best practices from the relevant literature on identification of customer needs and performing customer segmentation to build a structured foundation for the later stages. The thesis then moved on to the most crucial step, which focused on better understanding the customers' needs and

value drivers, as well as identifying their current data management practices. It may be questioned whether the right number of customers were interviewed or whether those that were interviewed were able to provide adequate information for constructing an overall picture. Interviews were conducted with customers from as many industries as possible and with those that the case organization knows the least about. The same similarities seen across needs, value drivers, and practices among diverse customers with varied industrial positions also indicate that the amount of data gathered to construct the big picture was sufficient. Hence, recommendations were created based on new data (Data 1) obtained from the interviews, as well as the knowledge and experience of members of the joint project team and service design project advisers. However, there is no guarantee that all potential needs, value drivers, or current data management processes have been discovered. The thesis' objective was nevertheless met; recommendations for potential customer need categories and their value drivers were developed and subsequently used in the development of practical service concepts.

The knowledge gained from the relevant literature helped in the forming the structure and later analysis of the interviews. The framework was also utilized to develop the initial recommendations.

The co-creation and validation of initial recommendations involved wide range of stakeholders with different roles and background beginning with the Specialist role and ending with the Department and Business Unit Directors. In Data 2 collection, the stakeholders who were part of the joint project team were involved in co-creation of the initial recommendations. The recommendations were created based on the findings of the interviews as well as each stakeholder’s expertise and experience. Other stakeholders who were not involved in Data 2 collection were involved in Data 3 collection. Those stakeholders were the service design project’s advisors. The Data 2 collection workshop for co-creation initial recommendations was held in a hybrid mode, with half of the team attending in person and the other half participating remotely. The Data 3 workshop was held entirely online. The workshops may have produced better results if they had been

held in person, according to the general observation. All parties, however, are pleased with the outcomes of the workshops.

The role of the author in case organizations is a account manager who has a solid understanding of the industry and actively engages with clients and thus has a good knowledge of their needs and value drivers. The experience of the author was useful in conducting the interviews together with the consultancy agency's consultant and in interpreting the responses. As a result, the outcome of the current state analyses stage laid a solid foundation for creation of initial recommendations.

The study's validity, reliability, logic, and relevance are evaluated in the following subsections, which examine how these terms have been defined in the research literature.

7.3.1 Validity

The appropriateness of any research value, tools and techniques, and procedures, such as data collection and validation, is referred to as validity. The most important feature of work validity, according to Quinton et al. (2006: p. 126), is that the author must demonstrate to whoever is assessing or reading the work that the rigor of the author's approach and thinking about it is transparent.

Validity in this thesis was assured by employing the appropriate research design and data collection methods described in Chapter 2. Appropriate data collection method with different sources and stakeholders were conducted during different stages and the data was logged and documented as shown in Table 1.

7.3.2 Reliability

According to Quinton et. al. (2006: p. 129) reliability is defined as possibility of getting the same results if the study was repeated or done by someone else.

Quinton et. al. (2008: p. 130) offers following practices that improve and strengthen the reliability of the research:

- Using different data sources
- Using different data collection tools
- Applying established theory from one are to another
- Collecting data at different time periods
- Using different researchers at different points of the research

Reliability in this thesis was assured by using different sources at different points of the research. First data regarding the customers' needs, their value drivers and current data management practices was gained by conducting eight customer interviews that represented different industry roles. Then the initial recommendations were created by one group of stakeholders and then validated by the other group of stakeholders.

7.3.3 Logic

According to Greenfield et. al. (2016: p.404 - 406), the first stage in the research process is to identify the problem and its relevance. It is critical to have a clear logic to the research process that allows readers to accept the work, and the researcher should offer evidence for that view as well as explain how the researcher arrived at the result.

The logic of the research is explained in Chapter 2. The chapter 2 describes the stages of this thesis, their desired outcomes, and the interconnections between them. The study design is also presented in visual format in Chapter 2.

7.3.4 Relevance

There are lots of types of relevance not just one, according to Steafano Mizzaro (1997). Relevance is a relationship between two items, such as a document containing information and an issue that must be handled or the information received by the user to the information needed. (Mizzaro, 1997: p. 811).

The study's relevance was assured from the beginning, the context of this thesis was given by the case organization and targeted to solve a specific challenge of the case organization within short time. In other words, this study is based on the true and acknowledged business challenge, not on a external idea or alleged, thus the thesis's premise is relevant.

7.4 Closing Words

One of the main factors that makes companies successful is truly understanding customers and their needs and fulfilling their requirements by giving products or services at the appropriate moment to the right group of customers with the right mix of products or services or both.

Within this thesis a customer's needs, value drivers, and current practices were investigated in order to enable the value creation. The recommendations were developed based on current customer needs and value drivers; however, expanding customer understanding is a never-ending process that must be done on a constant basis, so this is the first step toward establishing effective and long-term customer relationships.

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Interview questions during the current state analysis

Oma rooli ja tausta

- Kerrotko aluksi parilla lauseella omasta työnkuvastasi ja roolistasi, erityisesti tiedon hallintaan / tiedolla johtamiseen liittyen?

Organisaation lähtötilanne; data, tiedon hallinta, tiedolla johtaminen

- Kuinka paljon kiinteistökohteita teillä on ja kuinka erilaisia ne ovat?
- Millainen rooli datalla, tiedon hallinnalla ja tiedolla johtamisella on tällä hetkellä organisaatiossasi: kuinka kuvaisit lyhyesti keskeisiä tavoitteitanne ja tämänhetkistä tilannettanne? Kuinka tärkeänä asia koetaan ja koetaanko tuovan lisäarvoa?
    - Kuinka tärkeänä data itsessään koetaan vai onko se vaan osa prosesseja?
- Kuinka kauan näiden asioiden edistäminen on ollut agendallanne? Onko esim. digistrategiaa ja ovatko nämä osana sitä?
- Onko teillä esim. budjettia ja resursseja varattu?
- Ostetaanko tällaisia palveluita? Mitä?
- Entä oletteko tehneet yhteistyötä X kanssa asian tiimoilta? Millä tavoin ja kuinka kauan?
- Teettekö/oletteko tehneet yhteistyötä myös jonkun muun palvelutuottajan kanssa? Kenen?

Työkalut ja prosessit

- Miten teillä tällä hetkellä käsitellään dataa/tietoa? Miten sitä hallinnoidaan?
    - Jos tieto on hajanaista niin mitkä ovat keskeisimmät syyt siihen?

- Millaisia työkaluja teillä on tällä hetkellä käytössä tiedon hallinnointiin liittyen?

- Miten tieto kytkeytyy teidän prosesseihinne?

Miksi X vs. muut toimijat

- Miten koette X yhteistyökumppanina eritoten ottaen huomioon tiedon hallinnan ja tiedolla johtamisen teemat?
    - Miten X mielestäsi viestii näistä palveluista? Onko selkeää millaisia tiedon hallinta tai tiedolla johtamisen palveluita X saa?
    - Mistä haluaisit keskustella tai kuulla tarkemmin?

- Mikä on X tarjoamien tiedon hallintaan liittyvien palveluiden merkitys teidän liiketoiminnassanne?
    - Millaista lisäarvoa X pystyy jo nyt tuottamaan teille?

- Mitkä ovat mielestäsi X suurimmat kilpailijat tähän liittyen ja miten vertaisit X kilpailijoihin? Mikä on mielikuvasi X kyvykkyyksistä?

- Tuleeko mieleen jotain toimijoita, jotka ovat onnistuneet hyvin kommunikoimaan ja toteuttamaan kyseisen palvelukokonaisuuden?

Rakentamisesta ylläpitoon

- Jaatteko tiedon hallinnan jotenkin eri vaiheisiin, esim. rakentamisen aika, ylläpito jne.?

- Kuinka asioiden vastuutus on tehty siirtymisvaiheessa rakentamisesta ylläpitoon? Miten tieto siirtyy?

- Tuottaako rakentaminen ylläpito-organisaatiolle sen tiedon mitä tarvitsee? Miksi, miksi ei? Minkä koette tarpeelliseksi tiedoksi?

- Miten hyvää on hankevaiheen organisaation ja käyttövaiheen organisaation yhteispeli? Saako käyttövaiheen organisaatio "äänensä kuuluviin" hankevaiheen tietosisällön vaatimusten osalta?

- Jos pystytään osoittamaan kiinteistön digitaalisen ylläpitoprosessin toimivuus (esim. ennakoiva huolto) niin koetteko, että sillä on jotain hyötyjä esim. vakuutusmaksuissa, veroissa tms.?

- Millaisena haasteena näet esim. teknisen tiedon ylläpitämisen kohteen käyttövaiheen aikana, jossa muutoksia kuitenkin tulee jatkuvasti?

Reaaliaikainen data

- Miten koette reaaliaikaisen datan tärkeyden? Mitkä ovat suurimmat hyödyt ja millaista arvoa se teille tuo?

- Miten teillä hyödynnetään reaaliaikaista dataa? Tai miten sitä voisi vielä paremmin hyödyntää?