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Reviewing a framework for developing profitable solutions

An Essity case study on the applicability of a framework for solution development

Master's Thesis in the Master's Programme
Quality and Operations Management

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Abstract

Services today have become a more important part of firms offering as driver of customer satisfaction. The shift for traditional manufacturing companies towards more integrated bundles of products and services or solutions is known as servitization and is a trending subject within academia as well. Servitized firms though, have had a hard time achieving profitable solutions, known as the service paradox, which has brought forth a need for frameworks to develop efficient solutions. This study utilizes a recently published framework for solutions development that balances customization and exploitation of commonalities for a development project at Essity and the TENA brand. Essity is an established actor within the commodity market of absorbing products and has recently launched digital solutions assisting nursing homes in their care management by measuring urine amount in incontinence products, renewing the market. This study aims to utilize the mentioned framework and evaluate its practical implications in a case study at TENA, developing a future integrated solution for their digital product base. The aim is further to understand the applicability of the framework and evaluate its usefulness to create profitable solutions.

To apply the framework and develop a successful solution the study utilizes theory on gathering and understanding customer needs, service design, creation of business models and pricing methods. In order to evaluate the applicability of the framework and profitability of created solutions, theory directly connected to the applied framework and service management as well as the service paradox has been used.

The study follows the steps of the applied framework and translates its conceptual manner into concrete methods to develop a solution. The steps taken starts with gaining system knowledge and then follows the five steps from which result are generated. Information is gathered through interviews with Essity employees, customer employees and secondary sources such as previous conducted Essity studies. The result follows the layout of the framework, starting with the discovered key needs through multiple complementary method and mapped the customer stakeholders. Mapping and evaluating existing physical product concepts showed gaps in the current offering and how commonalities can be shared throughout a development project. Development of a future service offering started as ideation workshops and ended with a service blueprint of customer actions which was useful to visualize concepts for feedback loop. The blueprint made it possible to choose suitable interaction points and corresponding front-end processes by accessing people responsible for each discovered interaction point since only they know the optimal way. Finally, integrating the service blueprint by the own back-end and support processes which could be shared across other solutions in order to have economy of scale without interfering with the customized front-end. From this, the business model was derived to provide an additional perspective.

The framework was lacking certain aspects such as iteration throughout the entire development process, post-market support to achieve effective solutions over the long term and a focus on implementation of the developed solution. In order to combat the service paradox and provide profitable solutions the framework is partly effective but lacks certain things that literature deems to be important. The framework can provide an efficient cost structure which is highlighted in literature as key, but this study suggests that being able to charge for services provided can be more important. Value-based pricing can assist companies in gaining profitability and should be investigated further.

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1. Introduction

The importance of services as drivers of customer satisfaction has increased during the last few years. Within offerings consisting of products and services, which is also known as product-service bundles or packages (Mahut, Daaboul, Bricogne and Eynard, 2017), the service aspect has recently superseded product quality as a driver of satisfaction (Swedish Quality Index, 2017). The offerings of firms can, as presented by Mahut et al. (2017), be either more service-focused or product-focused with the product and service aspects more or less integrated. The goal though for the industry is to go from a package or bundle of loosely connected products and services, also known as “solutions” (Mahut et al., 2017), into a product-service system, which is also known as “integrated solutions" (Boehm & Thomas, 2013). The term “solution” is often used instead of product-service bundles (Mahut et al., 2017) and hence will be used to reference such bundles in this paper. When solutions have been seamlessly integrated into the customers’ organization, as well as the internal organization, it is referred to as an integrated solution (Brax & Jonsson, 2009). According to Beuren, Gomes Ferreira & Cauchick Miguel (2013), many traditional manufacturers have realized the shift towards offering services and are providing a combined service and product offering. This shift is often referred to as servitization or the implementation of solutions (Mahut et al., 2017). Toivonen (2016) described how servitized firms’ offerings have traditionally consisted of a product, acting as a facilitator, and an added goods-service package, which is the main source of profit.

The increased effect which services have on customer satisfaction has led to an increased interest for services and service management in both industries and within academia (Baines, Lightfoot & Smart, 2011). Figure 1 shows the number of papers published on the subject of servitization in the Scopus database, reinforcing and providing evidence for the trend noted by Baines et al. (2011). Many researchers have noted that industries are shifting focus towards services, both in regard to newly developed service companies which are filling identified gaps on the market and product centric companies adding services onto their core offerings (Baines et al., 2011; National Board of Trade, 2010).

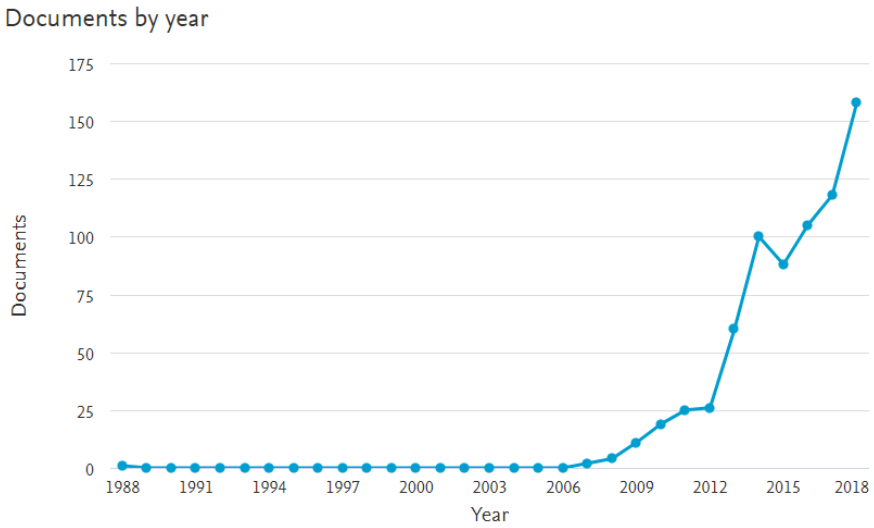


Figure 1: Documents published on the topic "servitization” from the Scopus database

The possible benefits of shifting towards servitization were identified already by Vandermerwe and Rada (1988). In their article, they presented benefits for both customers and manufacturers in terms of increased revenues, reduced risks and increased market stability. Later, Neely (2008) stated that the shift towards a more service focus in general results in new business

models, which is built on other concepts of ownership. These new business models could potentially result in a more efficient management of natural resources and increased environmental performance. The increased number of publications on the subject of servitization has made many benefits visible such as increased revenues and customer satisfaction (Parida, Rönnberg-Sjödin, Wincent & Kohtamäki, 2014).

However, servitization has shown to be problematic and hard for firms to adopt. The additional services drive higher costs, but manufacturing firms who have added services to their offering has not seen the same increase in revenues (Gebauer, Fleisch & Friedli, 2005; Neely, 2008). Gebauer et al. (2005) named this increase in revenue but lack of increase in profit for: "the service paradox", which haunts many firms trying to expand their product offering using additional services. According to de Blok, Luijkx, Meijboom and Schols (2010) as well as Reim, Parida and Örtqvist (2015) the development of advanced services requires that the offerings have a competitive cost structure. That is since fulfilling service needs, besides delivering a physical product, increases the costs associated with both delivery and development. Cenamor, Rönnberg Sjödin and Parida (2017) furthermore saw that delivering advanced services to a global market is difficult to succeed with, due to lack of scalability.

Baines, Lightfoot, Benedettini & Kay (2009) highlights the difficulties experienced by product-centric firms in their development of more service focused solutions. The development of services differs from physical product development due to their fuzzy nature. According to Johnston (1999; 2005), the recent increase in interest surrounding services has led to new paradigms within service management. Johnston identified how services previously had been developed within individual functions and optimized or improved as individual parts, running the risk of sub optimization. He concluded that services need to be developed with the entire organization in mind and companies began before the millennial shift seeing this transition. This paradigm shift calls for new research on how services can be developed efficiently to ensure that the right service solutions are offered to the customers whilst reducing the possibility for ending up in the service paradox.

1.1 A framework for solutions development

As previously mentioned, the move towards servitization means packaging advanced services together with physical products. Even though this increases revenues, companies have a hard time gaining profit due to the service paradox (Gebauer et al., 2005). Customers are expecting solutions that are integrated into their operations and which are customized to their needs, while maintaining good quality, quick delivery and low costs (Hallencreutz & Parmler, 2018). Manufacturers are however pressured to improve internal efficiency, leading to them utilizing standardization efforts to achieve internal productivity and increased profit margins, which reduces the customization efforts required from the customers (Jagstedt, Hedvall & Persson, 2018). In order to solve the trade-off between standardization and customization, which is present when providing integrated solutions to customers, appropriate frameworks and tools are required (Baines et al., 2009). Jagstedt et al. (2018) presented such a framework, derived for the purpose of customizing solutions at the same time as standardization is achieved through the utilization of commonalities between solutions. Commonalities that can be shared between solutions can be anything from processes and components to knowledge and relationships (Robertson & Ulrich, 1998). By sharing assets between solutions, providers can achieve standardization and economies of scale at the same time as they would be offering highly customized solutions for their customers (Jagstedt et al., 2018).

Jagstedt et al. (2018) stated the importance of integrating the solutions into both the customer's and provider's organizations and processes. By doing so, both external and internal drivers affecting the solution development becomes important to consider, which is handled in the presented framework. The proposed framework was developed to handle the trade-off issue, of developing highly customized solutions at the same time as standardizing and improving internal efficiency. It was however developed from results found in the automotive industry and is mostly theoretical and at a conceptual level. Jagstedt et al. (2018) explained how a solution can be divided into three elements; product, services and interaction, which reduces the complexity of identifying commonalities between solutions. The authors provided a five-step process for managers to follow during solution development (see figure 2) and highlighted the importance of deriving good organizational knowledge and understanding prior to developing the solution.

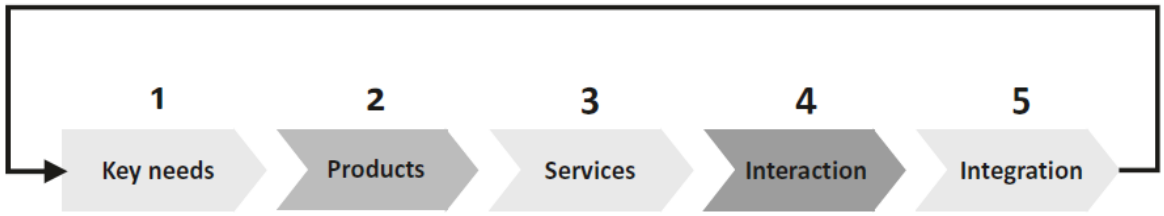


Figure 2: The five steps of solution development in the framework as presented by Jagstedt et al. (2018)

Key needs
The first step of the framework concerns discovering and understanding customer demands or needs and investigating the customers' operations and their usage of the product or service (Jagstedt et al., 2018). Previously gathered information regarding customer needs for other offered products or services should be re-used and added to newly gathered info, in order to exploit knowledge commonalities.

Products
The second step of the framework focuses on the product, investigating what product alternatives are suitable and how these will affect the intended integrated solution (Jagstedt et al., 2018). By comparing how well the existing product base meets customer needs, gaps can be identified and exploited.

Services
The third step consists of deriving suitable service elements for the integrated solution (Jagstedt et al., 2018). Services are likely to be shared across different integrated solutions, and hence understanding what services are currently being offered will be essential.

Interaction
The fourth step considers the interaction between the provider and the customer, which is a key enabler to offering a successfully integrated solution (Jagstedt et al., 2018). In this step, already built relationships with the customers are key elements of investigation.

Integration
The fifth and final step is to merge the findings from previous steps together into an integrated solution package, that is ready to be sold to meet customer demands and needs at the same time as standardization through utilizing commonalities are achieved (Jagstedt et al., 2018). The aim

of this step is to configure the different elements of the integrated solution, in order to find the best one to match customer needs.

1.2 Solution development at Essity

Essity provides a wide range of products whose main purpose is absorbing different mediums in different environments. The products are present within the hygiene sector, being delivered to both business and consumer markets in 150 countries (TENA, 2019b). Within the firm itself, TENA is the business unit working with products for incontinence care. TENA is mainly working with customers within the business market segment, but their products are also sold directly to consumers. TENA's products are available in 90 national markets with focus on the Nordic countries, Europe and North America (TENA, 2019b). Essity as a company have for a long time invested in their employees and won, this year, an award by Randstad (2019) for being the Swedish company best fulfilling what employees expect from their employers.

The market space for products dealing with incontinence care is growing but the market has reached a certain point where customers can not see the difference between products, and hence treat them as a commodity (SimaVita, 2018). This has led to a pricing competition between competitors even though the market is still growing. Due to this situation, the company Sensassure were bought by TENA to help with developing the market. Sensassure had a patented solution for measuring the urine amount in incontinence products. This data gives their solution the possibility to send alarms to the caregiver if there is a need to change the product. This results in time savings for the caregivers which do not have to physically check whether or not the incontinence protection needs changing. The Sensassure solution is an addition to TENA's new portfolio of digital products where a previous assessment product, measuring urine leakage of the wearer for 72 hours, is being sold to professional care homes in order to gain insights regarding the urine leakage trends of the wearer (Tena, 2019a). From this data, nursing homes can create individualized care plans that makes it easier to assist the residents in reaching the toilet before urine leakage occur and selecting an appropriate incontinence product absorption level. In the future, TENA is seeking to include new products in their digital portfolio that is built on their existing products.

1.2.1 TENA Identifi

TENA Identifi is an incontinence assessment solution which got developed to ease incontinence investigations. A person's urine leakage is registered during a period of 72 hours, after which an assessment report is provided with deepened knowledge regarding individual leakage-patterns and urine fluid amounts.

An incontinence investigation is crucial for all residents in order to understand their individual need. The generated report gives detailed information regarding the most optimal incontinence protection, when the resident will need toilet visits and when the product needs changing. This information provides more efficient care and improved well-being for the resident. It helps the caregiver to create individual care plans and enables a customized product choice, which will be beneficial for the incontinence at the same time as it improves dignity for the resident. Having the correct products also lowers product consumption, which is beneficial for the environment. A study conducted from October 2014 to April 2016 where 97 customer pre- and post-evaluations were analyzed, showed that by choosing the correct product for the resident and understanding what times he/she needs to use the toilet substantial savings could be made (TENA, 2019a).

The product has sewed-in sensors which register information regarding time and amount of urine fluids. The sensors together with the logger detect the conductivity in the product which increases when the amount of absorbed fluid increases. A reusable logger or transmitter is attached to the product which registers the information from the sensors and sends the information to a safe web portal. The gathered information is then converted into a report with easy-to-understand diagrams. The complete TENA Identifi package consists of a product, logger and web app.

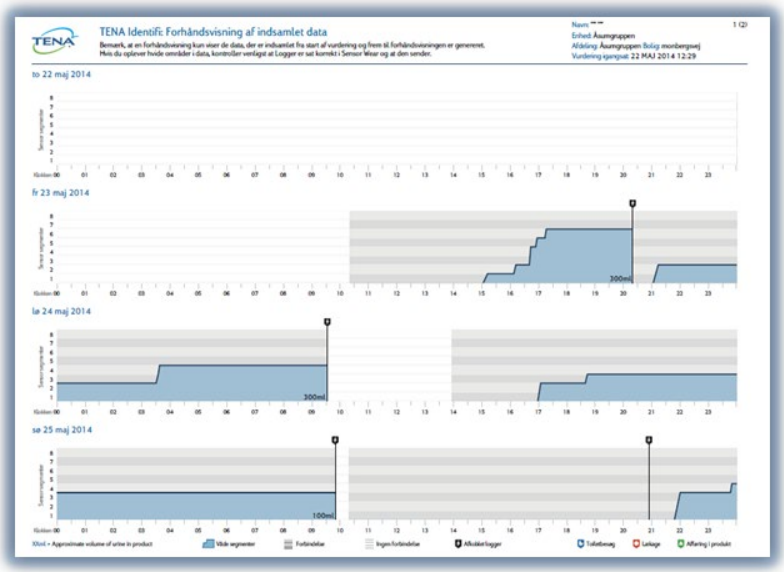


Figure 3: Example of an assessment report from the TENA Identifi system

1.2.2 TENA Change Indicator

TENA Change Indicator is Essity's latest addition to their digital portfolio which enables continuous measurements of urine leakage. It consists of two parts, namely a strip and a logger. The strip measures the conductivity much like TENA Identifi's sewed-in sensors but is re-usable and can be attached on the outside of the used incontinence product, which greatly reduces electronic waste and increases scalability compared to the sewed-in alternative. The logger is attached to the strip and works in the same way as for Identifi, namely as a transmitter of the values received to a gateway, which in turn sends the value to TENA's web portal were an algorithm processes the values received and returns urine leakage amounts. The results are provided visually to an app which illustrates whether the resident has an incontinence product that should be investigated due to reasons to suspect that it is wetted with urine. This increase in information makes it possible for caregivers to make informed decisions on whether it is necessary to change, reduces the amount of manual checks and reduces the amount of time the wearer stays in a wet product. The product is compatible with most incontinence products and a computer or tablet is required to fully view the collected data as smartphones only give the notification if a change is needed to be considered or not.

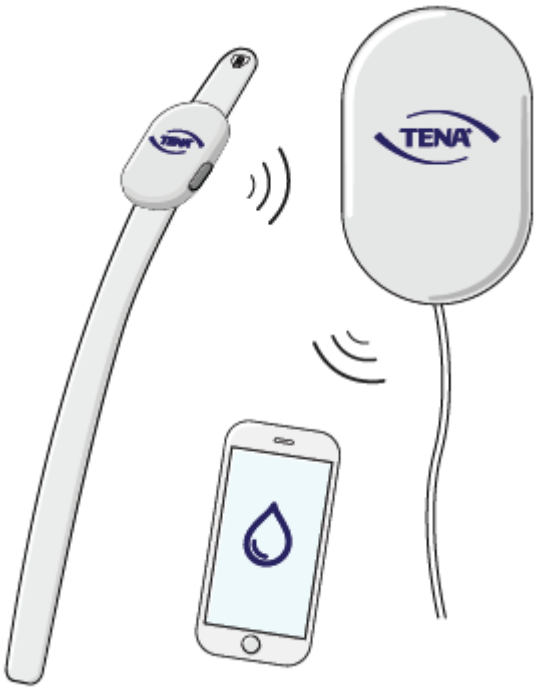


Figure 4: A graphical illustration of the physical TENA Change Indicator solution containing a strip with a logger which sends information to a gateway which presents the information on a smartphone.

1.3 Purpose

The increased interest in services and integrated solutions by both practitioners and academia seen by Baines et al. (2011) due to the potential benefits presented by (Parida, Rönnberg-Sjödin, Wincent & Kohtamäki, 2014) in combination with the service paradox presented by Gebauer et al. (2005) calls for new frameworks for solutions development. Johnston (1999) sees a new paradigm for service development taking the entire organization into account to reach effective services. The framework created by Jagstedt et al. (2018) seeks to provide a way to develop efficient solutions that are both customized and drawing benefits from shared assets. The framework has limitations such as being conceptual and derived from findings in the automotive industry which calls for its practical applicability to be tested.

The purpose of the master thesis is to utilize the framework presented by Jagstedt et al. (2018) and evaluate its practical implications in a case study at Essity. During the study, a suggested future integrated solution for the digital product base of TENA will be derived using this framework. The aim is further to understand the applicability of the framework and evaluate its usefulness in the creation of profitable solutions.

1.4 Research questions

In order to fulfil the purpose, the study must utilize the framework and create an empirical substance for which the framework can be evaluated in a practical setting. The empirical substance will be the output from each step in the framework, which leads to the first research question (RQ):

RQ1: What methods are suitable in the current setting for applying the framework presented by Jagstedt et al. (2018)?

Conducting different development methods and applying the framework, generates empirical data and insights which clarifies limitations and faults. From this a practical evaluation can be conducted which leads to the second research question:

RQ2: What issues or limitations with the framework can be seen when applied in practice?

Finally, to fully evaluate the usability of the framework the empirical result from utilizing it must be complemented by a theoretical test of the framework. The framework must theoretically be able to handle aspects such as the service paradox described by Gebauer et al. (2005) and thus the third research question leads:

RQ3: Is the framework theoretically solid to use for deriving a profitable solution?

1.5 Limitations of the study

The market for incontinence care products is worldwide, but this study gathers empirical data mainly from the Swedish market, making the finished business model adapted to this market. Each market has their regulations and both cultural and structural differences when it comes to nursing homes and incontinence care in general. Making it too complex and large to gather empirical data for each market and hence focus was on one of the biggest markets where most information was available, namely the Swedish market.

Furthermore, all steps of the framework were not conducted in as much details as could be done, since that would make the task of evaluating the entire framework impossible. The first step of the framework, which is understanding customer needs, can constitute a master thesis subject on its own. Different methods and tools were used to conduct all parts of the framework, but not to the full extent that would be needed to for example truly understand all customer's needs. The aim of this master thesis was to find strengths and weaknesses with using the framework when developing a solution, hence why it was deemed enough to conduct condensed variations of the methods, to be able to evaluate the framework and its effectiveness.

The framework was furthermore used to develop a future product, meaning that this study will not involve the actual release of the product and hence will not be able to assess to what degree a successful solution got developed by using the framework. In order to validate the generated results regarding how a future solution should be constructed, the results were presented for people from sales, marketing and product owners so that they could assess how well they believe that this future solution will do in the future market.

The specific elements of the future solution can't be disclosed due to confidentiality restrictions, but the solution is based on the identified insights regarding what features the customers want and need. All insights were discussed and developed further, but only the more reasonable ones were applied to the future solution due to either financial or other issues. The most valuable features for a future solution was identified, based on the findings generated when identifying customer needs. These features were expanded on and presented in the complete service blueprint and business model and presentation for Essity. In this report, focus was on evaluating the used framework for solutions development and presenting solution specifics were not deemed necessary to fulfill the purpose.

2. Theoretical Framework

The theoretical frameworks presented in this chapter will discuss the framework by Jagstedt et al. (2018) and related areas surrounding service management, service design, uncovering customer needs and pricing methods, which has to be understood in order to apply and analyze the framework. The related areas will be presented first, to give the reader enough knowledge before going into depth with theory regarding the framework and its steps but ends with a short summary of the entire chapter.

2.1 Service Management

When a product is brought to the market, it must be compelling to the customers and have a workforce in the company producing it, which is capable of producing it at a low enough price (Frei, 2008). The same applies for all products, no matter if it's a basic commodity or a high-tech product. When bringing a service to the market, managing customers is a crucial task since they can be integral to production, besides being consumers of the service provided. Having customers involved as co-producers can drastically affect the costs associated with the service, which is why service companies must find ways of funding their distinctive advantages. As mentioned previously, there are numerous authors describing what is known as the service paradox, which means that servitized firms have troubles making profits on their added services (Neely, 2008; Gebauer et al., 2005). Even though servitized firms generally generate higher revenues than traditional manufacturing firms they tend to generate less profit, since servitized firms have higher expenses associated with their services, such as higher labor costs and working capital. Neely (2008) presented the following three challenges of servitization that leads to the service paradox (figure 5).

Shifting mindsets	Of marketing—from transactional to relational marketing
	Of sales—from selling multi-million dollar products to selling service contracts and capability
	Of customers—from wanting to own the product to be happy with the service
Timescale	Managing and delivering multi-year partnerships
	Managing and controlling long-term risk and exposure
	Modelling and understanding the cost and profitability implications of long-term partnerships
Business model and customer offering	Understanding what value means to customers and consumers, not producers and suppliers
	Developing the capability to design and deliver services rather than products
	Developing a service culture
	Embedding all of the above into a service organisation

Figure 5: The three presented challenges of servitization which leads to the service paradox (Neely, 2008)

Frei (2008) presented four elements of service-business management, where each one of them can destroy a service business if managed incorrectly. There is no single way to combine the four elements, instead the best design of any one of the elements is dependent on the other three. Frei (2008) used these four elements to present an approach for how to construct a profitable service business, an approach which is taught at Harvard Business School. These four elements are recognized within literature as a framework for becoming a successful service company (Kannan & Healey, 2011) and are being used as a foundation for comparing different service firms regarding how successful they are (Violante, Pogor, Lam & Davari, 2010; Charan, Panda, Madaan, 2015)

2.1.1 The offering

The fundamental part, and the most challenging, of service-business management is the offering itself (Frei, 2008). It needs to fulfil needs and desires of a targeted group of customers. While designers for physical products generally focus on what product characteristics will bring value

to the customer, designers for services needs to focus on what experiences the targeted customers want to have. Services creates experiences which customers cannot help experiencing (Carbone, 1994). Meyer and Schwager (2007) defined service experiences as the subjective response customers have to any direct or indirect contact with a company.

Companies can provide service offerings such as extended hours or closer customer proximity to win their customers, which is why it is of great importance for the management team to fully understand what service offerings are most vital for the company (Frei, 2008). As strategies often decides on what a business shall not do, service companies need to decide on what not to do well. Companies perform badly at some things in order to excel at others, which can be seen in companies having longer opening hours as they charge more premium prices. Kannan and Healey (2011) further emphasized the need to choose what to excel at since very few companies are able to excel at everything due to the costs associated. Managers need to decide on what to excel at and what parts needs inferior performance, when designing services, and these decisions needs to be based on discovered information regarding the targeted customer needs (Frei, 2008).

2.1.2 The Funding Mechanism

When a company wants to provide excellence in certain areas, it always comes at a cost, which needs to be covered somehow (Frei, 2008). For companies selling tangible products, the funding mechanism is simply a higher price tag for customers that want to take part of the premium offering (Frei, 2008). For service companies however, it is not as simple as raising the price tag since the price is often based on a bundle of various elements or a time-based subscription. If service companies were to collect their revenue on a transactional basis, as traditional manufacturer do, for example sales personnel providing assistance in retailing stores would require compensation when providing their assistance as a service to the customers (Kannan & Healey, 2011). Management therefore needs to decide on a suitable funding mechanism which satisfies both the customer and the service company (Kannan & Healey, 2011) to allow the company to provide excellence in its chosen area (Frei, 2008).

Frei (2008) presented four basic forms of funding mechanisms for successful service businesses. Whichever of the four funding mechanisms chosen, it needs to be chosen prior to launching a new service rather than afterwards since the addition of fees to services previously free of charge tends to prompt irritation and customer dissatisfaction. Choosing the right funding mechanism allows companies to provide better services than its competitors while funding it optimally.

1. Charging the customer in a palatable way

Management needs to think of creative ways to make customers feel comfortable and content with paying a higher price in return for service excellence (Frei, 2008). For example, Starbucks allows their customers to sit for as long as they would want in their coffee-houses, enjoying the setting. The service is charged for by increasing the prices for their coffees and beverages, instead of placing meters charging their customers per time unit spent in their couches. Customers need to be charged extra in a way that they would be comfortable with, in order to enjoy the excellent service provided. An example of a case where the customers aren't content with the increased price tag is when Netflix raised the price for their loyal customers, thinking that they would be less price-sensitive, which they were not (Umashankar, Bhagwat & Kumar, 2016). There are different ways of choosing the correct pricing, which is further discussed in chapter 2.5.

2. Create win-win between operational savings and value-added services
Management can find intuitive ways of reducing operational costs whilst improving the customer experience. Frei (2008) suggested that managers should start by investigating which the big cost-buckets are and how reducing these by creating a new value-added service can be achieved. Time is often one of the big cost-buckets and time reduction can besides reducing costs also directly improve services.

3. Spending now to save later
Frei (2008) presented an example of a company in the software industry who made their customer support free, in contrast to the rest of the industry. They believed that calls made to customer support is the most valuable input for product development, which is their future source of revenues. Even though maintaining customer support is expensive, the future products that got developed from the feedback of the customers resulted in higher sales and less complaints, reducing the costs for the customer support service provided while increasing their total revenue.

4. Having the customer doing the work
It is possible to create self-service options for the customers, as long as the self-service option becomes more attractive than the full-service option (Frei, 2008). The self-service option needs to enhance or improve the customer experience, to make it preferable. If managed successfully customers will be glad to do the work themselves, they might even be willing to pay for the option of doing so since extra benefits are obtained. Flight check-in kiosks have managed this due to the fact that customers don't have to wait in long lines for manned desks anymore and they are provided seat maps at the kiosks. The funding mechanism for providing the added service hence is in the form of customer labor. Self-service options lead to reduced costs and an increase in operational performance (Scherer, Wünderlich & von Wangenheim, 2015). Neslin, Grewal, Leghorn, Shankar, Teerling, Thomas and Verhoef (2006) however wrote that using online channels or self-service options might decrease customer loyalty, which is why (Scherer et al., 2015) stated that it is not always a suitable option. When the interaction points with the customers are highly repetitive and simple, self-service options are more suitable, and when they are not, customer retention is harmed, and personal service options might be of higher importance (Campbell, Maglio & Davis, 2011; Scherer et al., 2015).

2.1.3 The Employee Management System
Service companies are even more reliant on their workforce than traditional manufacturing companies, since the service business is even more people intensive (Frei, 2008). Investing in, and improving a service companies employee management system, hence has an even greater impact than for traditional manufacturing companies. Service companies needs to be able to recruit and attract talented service personnel which will deliver the intended service excellence to the customers (Kannan & Healey, 2011). Top management decisions made in the employee management system, such as performance management, job design, training, recruiting etc. must reflect what service attributes the company is striving for (Frei, 2008). To accomplish this, management needs to ask two questions, namely what makes the employees able and motivated to achieve the strived for service excellence. The answers received will lead to policies and programs which the company would benefit implementing, to establish an employee management system that is aligned and built on the customers' service preferences. The system needs to be designed so that the average employee thrives.

2.1.4 The Customer Management System

The customers are also affecting the cost and quality of the services offered in a service environment, it is not only dependent on the employees (Frei, 2008). Customer are involved to a different extent in operational processes and they influence not only their own experience but also other customers', which can be seen in fast-food restaurants when a customer takes long time at the counter, delaying the time for everyone else.

Customer involvement in service businesses has major implications for management, compared for traditional manufacturers, since both customers and employees are part of the value-creating system, which brings forth new challenges (Frei, 2008). One of them is customer selection, since some services requires deep knowledge of the customers due to them having to do important tasks. Unfortunately, the specific end-customers are often completely unknown. To the extent that it is possible, service firms should look at customer segments to target where the customers are more prone to participating in the value-creation process (Kannan & Healey, 2011). Even though customer labor costs are often less expensive than employee labor costs, customers are much harder to train, and often greatly outnumbers the employees. Constructing and distributing training material for all customers and making sure they understand it is difficult, especially since providing formalized training programs isn't an option (Kannan & Healey, 2011), hence why the services offered must be adopted accordingly (Frei, 2008). If the services are dependent on customers doing most of the labor, then services offered needs to be intuitive and simple, so that the average customer has no issues understanding or performing the task. The most important aspect to consider is that customer management needs to be aligned with the service attributes the company has chosen to excel at.

2.2 Customer needs

The development of new products does according to Bergman and Klefsjö (2010) go through the following three stages; the requirement stage, the concept stage and the improvement stage. In the requirement stage, firms emphasize discovering the needs of their targeted customer segment and translating it into requirements for development. Bergman and Klefsjö deemed this stage to be more successful if thorough customer research is conducted and if the customer needs are driving the direction of product development. This causes providers to start looking into customers firms in order to understand their daily operations and their actual needs. Heinonen and Strandvik (2015) presented customer dominant logic as a mindset which providers can adopt to think in terms of how services and products create value in the customer's processes. There are numerous ways of conducting customer research and gathering customer needs, such as; focus groups, interviews, observations and experiments.

2.2.1 Gathering customer needs

When gathering customer needs, it is according to van Boeijen, Daalhuizen, Zijlstra and van deer Schoor (2013) as well as Ulwick and Bettencourt (2008) beneficial to use several methods since each of them goes into different layers of customer needs. Interviews simply scratch the surface, making explicit needs visible, which are such needs that customers can formulate on their own. Complementing interviews with observations or shadowing of the customers in their own environment reveals more tacit needs, which are needs that the customer cannot express on their own, and ensures that customers do or behave as stated in their interviews. Ulwick and Bettencourt (2008) suggested a method for uncovering customer needs that begins with conducting personal customer interviews to map and understand the job which the customers wants to get done. It is followed up with observational studies to gain insights about the contexts of the job. Afterwards, additional customer interviews are conducted to fill any gaps and to understand how the customer measures whether the job is done successful.

Bergman and Klefsjö (2010) presented several challenges which companies are faced with when revealing customer needs, leading them to make incorrect conclusions. One of them being that companies often takes a too narrow view on customer input and simply ask obvious questions. This causes them to reveal only the most explicit needs without really understanding the customer and their reality. Bergman and Klefsjö viewed this as something that can cause several additional negative effects since customers can often be poor reporters of their own needs and behaviors. Such interviews only discover how the customers think they behave or wished that they did. Furthermore, by not going deeper into tacit knowledge, it leaves room for the interviewer to apply their own thoughts and beliefs to the customer's answer, which further worsens the usefulness and truth in it.

2.2.2 Managing different stakeholders

When trying to understand the customers and their behaviors, it is important to gain insights regarding who the actual customers are, which is something that is even more important in a business to business relationship according to Griffin (2013). The view is shared by Anderson, Narus & Narayandas (2009) who described the "buying team" as something often consisting of several stakeholders both within and outside of the buying organization. The roles in a buying team are often; initiators who realize that a need exists, users who will utilize the final product, gatekeepers who control the information flow in the buying organization and influencers who have the power to affect specifics such as which suppliers to use or the quantity to purchase.

2.2.3 Connecting customer needs to product and service characteristics

There exist several methods which enables conclusions to be more easily made from collected customer data and customer research. In popular methods, needs are classified regarding how they are experienced by the customer, receiving different levels of importance (Bergman & Klefsjö, 2010). The importance levels effect how the customer needs are solved since expensive solutions to unimportant customer needs are undesirable.

Bergman and Klefsjö (2010) presented a method called quality function deployment (QFD) and is a widely used method to manage customer needs in a structured way and put them in relation to product characteristics. The effect of individual product characteristics on customer satisfaction is evaluated based on how well they correspond with different customer needs. Correlation between the individual product characteristics are identified in order understand how changes to one product characteristic may have indirect effects on other. From this, suitable design targets for each product characteristics can be set to ensure that customer satisfaction is reached. According to Bigorra and Isaksson (2017) the house of quality (HoQ) is often the central tool when using QFD. The HoQ is a matrix with identified customer needs presented in rows and design requirements or product characteristics presented in columns, see figure 6. QFD emphasizes giving value to the customers through investigating their known and unknown needs and translating these into product and service characteristics (Hassani, Shahin & Kheradmandnia, 2018). The tool is furthermore among the best methods known today for translating customer needs into what the company can offer to fit these needs (Sayadi, Erraach, & Parra-López, 2017; Suef, Suparno & Singgih, 2017).

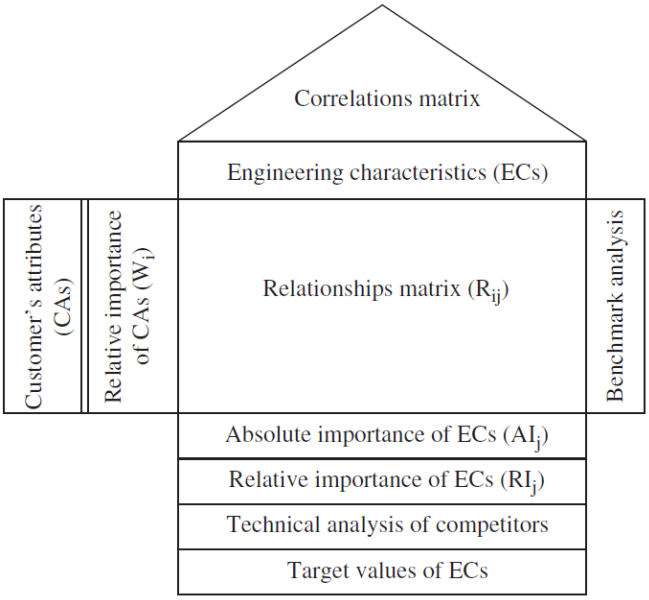


Figure 6: An illustration of the HoQ (Bigorra & Isaksson, 2017)

Even though the QFD method and the HoQ matrix is commonly used within product development, Dubé, Johnson and Renaghan (1999) viewed the method as being useful also for service development. Services are widely different from products but can be included in the QFD on a higher level where customer needs are translated into service quality aspects rather than engineering characteristics. Such fuzzier QFD approaches was presented also by Bottani and Rizzi (2006) for logistic services. Service quality aspects are harder to break down into certain design parameters as for products but instead can be broken down into processes and tasks that must be conducted to realize the service aspects.

2.3 Service Design

Corporations today are being challenged to meet complex demands with their production, leading to a shift from purely conducting production to providing knowledge intensive solutions, consisting of products and services (Morelli, 2002). This idea is supported by many authors, one being Vargo and Lusch (2004) who wrote that services are the fundamental part of a solution which brings economical value. Morelli (2002) further wrote that the design of solutions is an important and emerging field within service design. Instead of the classical idea of designing which is that the designers are the ones deciding on the physical product forms, when designing services, the designers must look from an outside-in perspective (Holmlid & Evenson, 2008). This process starts with looking at services from the customer's perspective.

There are numerous differences between services and products which needs to be taken into consideration when analyzing and designing the product service solution (Morelli, 2002). Service providers shape the offered service together with its customers who are participating in the production process, while traditional product manufacturers often don't have any contact with their customers when it comes to shaping the products. Services doesn't exist until they are provided and used simultaneously, while products can be produced and used at different times. While products are often maintained exactly the same from production until the end of their usage, services are developed and delivered over a certain time period and its configuration varies with the usage of it. Services can't change ownership or be stored, while products can be stored and ownership is transferred in the exact moment of the purchase. Services are furthermore intangible objects in contrast to the tangible products. Morelli's (2002) final

difference between products and services, that needs to be taken into consideration when designing services, is that products exist in time and space while services only exist in time, not space.

An important characteristic of service design is that the outcome in itself is a process, which creates value for both the customers and the service provider (Holmlid, 2007). Designers of services needs to understand that there are numerous actors involved that needs to be explored, understood and addressed and that there might exist frictions between these actors, which pose a challenging task for the designers (Morelli, 2002). There are numerous ways presented in the literature regarding how to design services, of which two different views will be presented in this chapter.

2.3.1 Participatory Design

Using customers as input to the service design and respecting their impact on the process and the outcome, brings forward new constraints which requires new methodologies and practices (Pinhanez, 2002). Traditionally, system developers only met managers or technical personnel, but the idea occurred that the end-users are the ones with most knowledge regarding what changes were necessary, not management. This idea resulted in what is known as participatory design were end-users were involved in the development process, contributing to the design together with the system developers. Methods and techniques used in the participatory design were users building mock-ups and prototypes, role-plays and system developers trying to understand the customers experience, empathizing with their work. In participatory design, where customers are co-creating the service, the customers willingness to co-create becomes an important factor that needs to be considered (Hanyeong, Yun Shin, Kun Soo, 2018).

When designing services, Holmlid (2009) shared the outside-in perspective presented by Morelli (2002), stating that it is important to start with the customers, viewing the service from their perspective. Practically, this means that the service itself needs to be viewed upon as a service journey, finding touchpoints where value is co-created (Holmlid, 2009). According to Vargo and Lusch (2008) value in services are always co-created with the customer. Knowledge of the users taking part of the service offered is a valuable asset due to them having numerous experiences regarding the service performance and aspects of it (Holmlid, 2009). Involving them in the service design process, by making them share their experiences, can be done iteratively with simple techniques such as design probes, design games and experience prototypes. Holmlid (2009) further writes that even though there exist assumptions that involving users will have a negative effect for the service provider since they learn how the service provider operates and details regarding their technology, the field of participatory design and service design explains the opposite. By including the users and providing them with tools and techniques, they can produce services that are highly innovative. This argument is strengthened by Von Hippel (2005), who stated that users are a major source of innovation, bearing at least the same innovative power as professional service developers.

2.3.2 People centered research

Evenson and Dubberly (2010) stated that conventional approaches to service design has strategy being defined before investigating the customer's needs, which sets an outline for the service to be adapted to, whereas they don’t believe that the right strategy can be known in advance. Their approach to designing services, called People Centered Research, in contrast starts from the bottom-up, beginning with exploratory and immersive research regarding the customers in order to find opportunities for innovation in the later formulated strategy. This goes in line with the proposed process for service development suggested by Bitner, Ostrom

and Morgan (2008) where customers and service personnel are involved in development. People centered research allows services to be created from knowledge discovered, and the strategy to be formulated accordingly (Evenson & Dubberly, 2010). The People Centered Research approach to designing services uses exploratory, generative and evaluative research methods during the process:

1. Exploratory Research: Means understanding and uncovering customer needs.
Methods typically used in exploratory research are ethnographic such as participating observations, shadowing and contextual inquiry. The goal of the method is to define the ”what is” in current situations, and immerse the researcher into the customers situation, to get a deeper understanding of not only who they are and what they do, but also what their underlying goals and needs are.

2. Generative Research: Means determining what is meaningful.
The aim is to verify the ”what is” and assumptions regarding how to meet the identified needs and goals of the customers. Methods used are exercises allowing people to express their ideas, emotions and desires regarding services, which allows them to express and explore what they otherwise might find hard to formulate, for example how services affect them on an emotional level. Activities used later are designed to validate reactions to for example a service concept.

3. Evaluative Research: Means proceeding from concepts to recommendations.
The aim for the evaluative research is to understand if the service designed is fulfilling the customer’s needs and expectations discovered. The different elements of the concept provided are investigated to check if they are useful, usable and desirable for the customers. The evaluation of how well the offering fulfill their customers’ needs are done while the service is still easily changed, and before major investments has been made to produce the service and its co-related activities and products.

These three research methods are summarized in an integrated service design and implementation process (figure 7) which is essential to achieve success with the provided service experience (Evenson & Dubberly, 2010). The steps and their main characteristics are “observe” by immersing into the customer’s setting, “reflect” upon the current system through mapping stakeholders and the customer journey, “make” and design the service system with its resources, processes and interaction points, “socialize” and present the service concept within the organization and to customers together with implementation plans, “implement” the system through beta testing and let feedback tune the system. Evenson and Dubberly (2010) viewed designing services as an iterative approach to planning and constructing a service system that will deliver an experience to the customers. Lewrick, Link and Leifer (2018) also emphasized the need for an iterative approach when delivering something with the purpose to raise emotions. In contrast to this Kurtz and Snowden (2003) viewed iterative development processes as most suitable for more radical innovation while enhancements can be handled in more structured and linear manner.

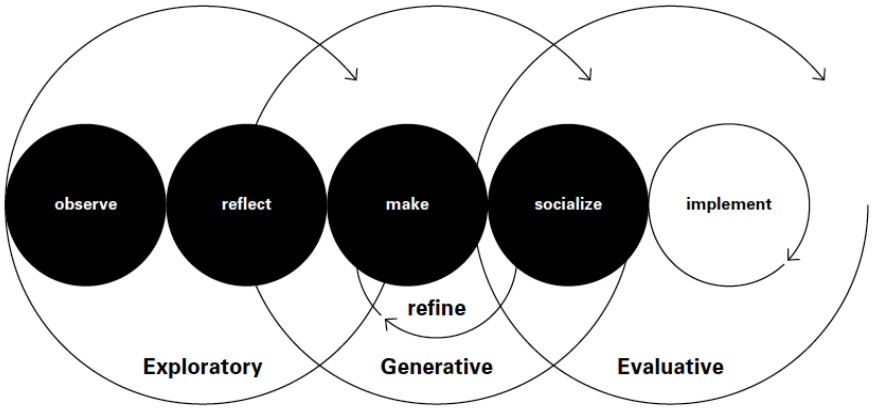


Figure 7: Integrated design process and people-centered research (Evenson & Dubberly, 2010)

Evenson and Dubberly (2010) stated that skills, methods and tools for creating service systems are brought together by the service design process which aims to intentionally discover value-creating systems for the customer by differentiating providers and creating long-term relationships between the service providers and the customers. This iterative process for service design was found to be the most effective way of designing services, that often starts from a blank page. The authors do state that although they have refined this process through practice, it is a fluid process that can change in the future to better opt for the conditions of future markets and service requirements. Phelps (2017) wrote that customers' expectations have increased drastically, which leads to organizations having to provide exceptional customer experiences if they want to stay competitive. Customers also want experiences that are aligned with their own values, regarding everything from their concern for the environment to their food choices, which is something companies need to address. Evenson and Dubberly (2010) stated that as expectations for services are increasing, so is the pressure for designers to design the right services, as these must be meaningful, compelling and fulfilling experiences for the customers and address their individual needs and wants.

2.4 Business models

A business model is according to Osterwalder (2004) a way to realize more fuzzy concepts and present the logic for making money on these concepts. The business model is the bridge between something fuzzy and the actual implementation, representing the architecture of the business as seen in figure 8.

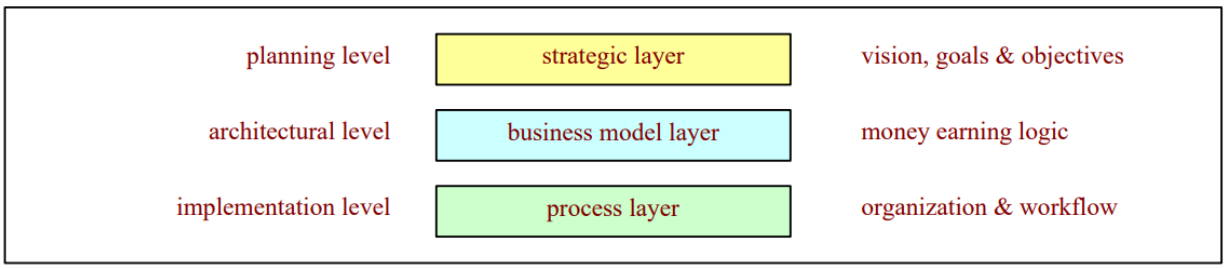


Figure 8: The layers of business creation presented by Osterwalder (2004)

In this chapter the most commonly used business model, namely the business model canvas developed by Osterwalder and Pigneur (2010) will be presented. In addition to this, two more

recent business models will also be presented, namely the service logic business model canvas by Ojasalo and Ojasalo (2018) and the lean business model canvas by Lewrick et al. (2018).

2.4.1 Business Model Canvas

Osterwalder and Pigneur (2010) defined a business model as: ”A business model describes the rationale of how an organization creates, delivers, and captures value”. The authors describe the need for a simple and intuitively understandable business model concept which everyone will be able to understand and form discussions around. They present a concept, that has become one of the top business model frameworks used by practitioners (Ojasalo & Ojasalo, 2018), which is built upon nine building blocks that illustrate the rationale for how companies generate an income.

- **Customer Segments**: The customer is the most important part of a company since without them, the company would not exist. It is important to define which customers to serve, and which not to, and segment them to better understand and satisfy their needs. The business model can then be built on specific knowledge regarding what customer needs are to be met and exceeded.
- **Value Propositions**: The value proposition consists of products and services packaged together, with a specific targeted customer segment to where it adds value. The value provided can be both quantitative and qualitative and can be derived from many aspects, ranging from newness and performance to risk reduction and usability. Defining the value proposition means understanding to whom it is meant to create value, what that customer segment’s specific needs are and how to meet them through delivering products/services.
- **Channels:** The channels are the different ways in which a customer interacts with the company. It can be everything from store personnel to the company’s internet page and the sales force. Channels consists of 5 phases were each individual sales channel span over one or more of these phases. These phases are: raising awareness, helping the customer evaluate the value proposition, purchase, delivery and aftersales. The channels can be owned channels or partner channels and can furthermore be direct or indirect towards the customer.
- **Customer Relationships**: Companies needs to understand what type of relationships to establish with each customer segment, and what type of relationships the customers expect. Current relationship needs to be evaluated and understood so that their current cost is clear and how well it integrates to the rest of the business model is understood. Relationships can take many forms where some are more automated (self-service) than others (personal assistance).
- **Revenue Streams**: Companies needs to understand what customers value and how much they are willing to pay for that value, alongside with how they want to pay for it. By understanding what brings value to specific customer segments and how much they are willing to pay for it, one or several revenue streams can be established for each customer segment. Revenue streams can have different pricing mechanisms, ranging from asset sales to licensing and renting.
- **Key Resources**: These are the main assets required in order for the business model to function. These assets are what’s creating the value proposition, managing the markets and reaching them, holding together customer relationships and generating the revenue for the company. They can be owned by the company itself or acquired, and can be categorized in four categories, namely: Physical, Intellectual, Human and Financial.

- **Key Activities**: These are the activities needed in order for the key resources to perform in delivering a successful business model. Activities can be related to production, problem solving or platform/network.
- **Key Partnerships**: The partnerships required to make the business model function. There are numerous reasons as to why to partner with other companies where Osterwalder and Pigneur (2010) presented three, namely to optimize and reach economy of scale, to reduce risks and uncertainties and to acquire specific resources or activities. It is furthermore of importance to understand what key resources the company is acquiring from its partnerships and what key activities they perform.
- **Cost Structure**: Describes all costs incurred with the eight other building blocks constituting the business model canvas. There are mainly two types of cost structures, which is cost-driven and value driven. The cost-driven structure focuses on minimizing costs and providing low-cost value propositions whereas the value-driven structure puts costs aside and focuses on value creation.

2.4.2 Service Logic Business Model Canvas

Ojasalo and Ojasalo (2018) stated that the business model canvas as presented by Osterwalder and Pigneur (2010) is focused on goods dominant logic, and is not service-oriented (Viljakainen et al., 2013). In service-dominant logic the company is no longer seen as a producer of value, but instead as a supporter of value (Grönroos, 2011). The core of this logic is that value doesn't exist until the offering is being used by the customer (Ojasalo & Ojasalo, 2018). Therefore, Ojasalo and Ojasalo created an adaption of the business model canvas by Osterwalder and Pigneur (2010) to better suit service logic, named the Service Logic Business Model Canvas. The difference to Osterwalder's and Pigneur's (2010) business model canvas is that it is service-oriented and includes both the aspect of the provider as well as the customer for each of the nine building blocks presented below:

- **Customer's world and desire for ideal value:** Seeks to answer how the provider can get a deeper understanding of the customer's world and why the customer choses to purchase the provider's offering. It will reveal what kind of benefits the customer aspire to achieve when making purchases.
- **Value proposition:** Describes the elements of the offering. It also aims to find out, from the customer's perspective, what value the customer is buying and what challenges they have that needs to be solved.
- **Value creation:** Presents how the offering is embedded into the customer's processes and how the provider facilitates that the customer reaches their goals. It further answers in what way value emerges from the customer's actions and how that value can be ensured long-term.
- **Interaction and co-production:** Describe how co-production and interaction should be supported by the provider and what customer activities take place during the usage.
- **Revenue streams and metrics:** Illustrates in what way the provider can apply value-based pricing and how the financial value is generated. Seeks to find if there are other valuable benefits gained for the provider apart from monetary benefits, and how the metrics for business success should be defined. From the customer's point of view, it is important to reveal what benefits the customer is willing to pay for and what value the customer gets. Metrics are equally important to define for how to measure customer success, to ensure that the value offered is being realized for the customers.
- **Key resources:** Describes the skills, knowledge and both material and immaterial resources or tools required. In order to receive the service, the customer might need certain skills, resources and knowledge which then is described in this part.

- **Key partners:** Describes who the key partners are and what their roles are in providing value as well as what resources is needed from them and in what way the partners benefit from the partnership. It furthermore describes how the customer interacts with the company's key partners, and what potential partners the customer has, which needs to be taken into consideration.
- **Mobilizing resources and partners:** Presents how the company is coordinating value-creation with often many involved partners. Partners are utilized in different way and must in the long term be developed.
- **Cost structure:** Describes the cost generated by the business and if there are any other sacrifices associated with it. The customer's costs and sacrifices are also defined.

2.4.3 Lean business model

The lean business model canvas is a business model suggested by Lewrick, Link and Leifer (2018) for companies moving into new markets. When entering new markets, it is essential to manage certain growth levels, hence why key obstacles is part of the lean business model canvas and is something missing in Osterwalder and Pigneur's (2010) business model canvas. The lean business model canvas puts extra focus on the problem that is sought to solve and has a clear connection to customer needs. A lean business model canvas is made up of the following eleven parts.

- **Problem:** Describes the three biggest problems to customers that the business is trying to solve.
- **Customer segments:** Lists the target groups as well as user groups to map for whom value is created.
- **Unique value proposition:** Defines what value is created for customers and why the solution is different.
- **Solution:** Describes the solution offered for every described problem.
- **Existing alternatives:** Explains other ways to solve the problem and how the problem has been handled before.
- **Channels:** Presents the preferred channels through which the customers want to be reached.
- **Unfair advantage:** Describes the key advantages associated with the solution which makes it hard for competitors to copy it.
- **Key metrics:** Defines what measurements to use to evaluate the solution.
- **Revenue streams:** Lists the sources of income.
- **Cost structure:** Lists the fixed and variable costs.
- **Short concept:** Presents a simple explanation of the solution.

2.5 Pricing

Frei (2008) presented different ways of funding the addition of services, since providing excellent services brings forth additional costs which needs to be payed for somehow. This chapter will look at different alternatives for how to price the solution offered. There are mainly three different ways of basing pricing, with different sub methods under each one (Macdivitt & Wilkinson, 2011; Hinterhuber, 2008; Calabrese, 2013), which will be presented below. The most appropriate pricing method will be dependent on a company's strategic goals and what type of products and services they are providing (Calabrese, 2013). How pricing is done will affect customer satisfaction and loyalty, as well as the company image.

2.5.1 Cost-Based Pricing

The cost-based pricing method is one of the most used methods when it comes to pricing and is based on the amount of costs related to producing the delivered service or product (Macdivitt & Wilkinson, 2011). The assumption is that this method will always lead to profitable products/services since all costs associated with it has been taken into consideration. A percentage of these costs are then added to the total price which will represent the profit margin. To summarize, the price is constituted of adding up all fixed and variable costs and then adding a percentage on top to make profit. The method is based on the target price being accepted on the market, but as the Macdivitt and Wilkinson (2011) stated, the market doesn't always cooperate, which undermines the effectiveness of this method. Even so, it is the default pricing method used amongst companies today according to (Macdivitt & Wilkinson, 2011). Calabrese (2013) stated that this pricing approach isn't suitable for companies offering multiple services, since the pricing itself is inaccurate and becomes hard to employ for multiple services.

2.5.2 Competition-Based Pricing

Competition-based pricing is built upon comparing its own services and products to competitors regarding features and specifications, and from that analysis make a judgement on the most suitable pricing (Macdivitt & Wilkinson, 2011). The primary input for this approach is anticipated or observed prices set by competitors (Hinterhuber, 2008). This approach to pricing is together with cost-based pricing the two most used approaches by far, even though they have several drawbacks (Macdivitt & Wilkinson, 2011; Kienzler, 2018). One of them being that the pricing method is unsuitable for comparing non-monetary costs between the company and its competitors, such as the case often is for service companies (Calabrese, 2013).

2.5.3 Value-Based Pricing

Value can be defined in many ways, which is why Macdivitt and Wilkinson (2011) developed a tool to capture as much of the value as possible (see figure 9). The tool consists of three parts where revenue gains and cost reductions are measurable parts and the emotional contribution is more difficult to apply an economic value to, and even more so to defend objectively. The revenue gain is as simple as the gain in revenue for the customer through the purchase and usage of the product/service and the cost reduction is, as expected, the reduction in costs for the customer, which can be related to product/service costs but also to a reduction of labor hours etc. The emotional contribution is related to a "feel good factor", which can be anything from greater safety, higher trust, less risk etc. These are three of the building blocks that constitutes the foundation of the value-based pricing.

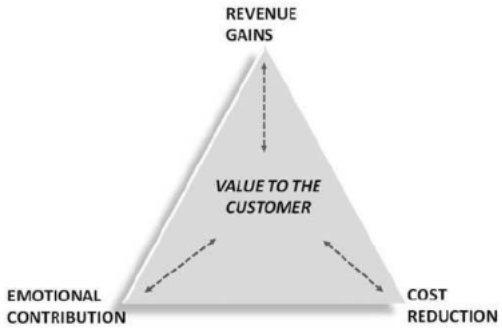


Figure 9: An illustration of the three fundamental parts of Value for the customers (Macdivitt & Wilkinson, 2011)

Compared to the other approaches to pricing, value-based pricing puts the customer in the center and is aligned with the fundamental elements of services, making this approach most preferable to service companies (Calabrese, 2013). When constructing the value-based price,

the value provided by the company's services/products are put in relation to a reference, which is often a product or service currently under usage by the customers. The four building blocks can be seen in figure 10 and are as follows (Macdivitt & Wilkinson, 2011):

- **Reference Price**: the price of the reference product/service which is what the customer is expected to pay since they have done so before.
- **Revenue Gain:** the calculated revenue gains from the offered product/service relative to the reference's revenue gains.
- **Cost Reduction:** the calculated cost from the offered product/service relative to the reference's costs.
- **Emotional Contribution**: the value of different aspects such as increased safety, less risk etc.

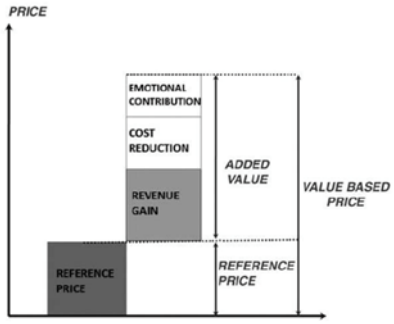


Figure 10: The four building blocks constituting the Value-Based Pricing (Macdivitt & Wilkinson, 2011)

In order to quantify these building blocks, the company needs to understand the customer's business in great detail so that net revenue gain and net cost reduction can be accurately calculated (Macdivitt & Wilkinson, 2011). In order to persuade the customer of the pricing, the customers own data must be used as much as possible to convince them of the value-based price estimation. Hinterhuber (2008) wrote that one of the main problems with value-based pricing is being able to effectively communicate the value to the customers.

The value-based pricing approach leads to a win-win situation where both the customer and the supplier gains benefits from the purchase, meanwhile the conventional methods described above, which is most often used, doesn't take the value of the offered solution into consideration, leading to oftentimes bad pricing which doesn't benefit both sides of the transaction (Macdivitt & Wilkinson, 2011). The value-based pricing approach is far superior to the presented conventional ones (Ingenbleek et al., 2003). It leads to higher margin earnings than the other methods and is proven to lead to profitable newly introduced services (Calabrese, 2013). It furthermore seems to lead to an improved new product performance as well as an improvement of overall firm performance (Kienzler, 2018). Even though the literature states clearly that the value-based approach is more beneficial, it is not a commonly used pricing strategy (Macdivitt & Wilkinson, 2011; Hinterhuber, 2008).

2.6 Integrated Solutions

As mentioned previously, services are the fundamental part of a solution which brings economical value (Vargo & Lusch, 2004). Services are however not the only part in a solution, it constitutes a solution together with the product and in order to optimize the offered solution there are numerous aspects to consider. According to Tuli, Kohli and Bharadwaj (2007) it is hard for companies to provide solutions that are profitable at the same time as they are effective.

The authors presented a study consisting of 200 of the Fortune 1000 firms that showed that 100 of these companies only make small profits on their offered solutions, and 50 companies lose money on theirs. Day (2004) shared the same view on solutions, stating that they are highly difficult to master and to copy. This goes hand in hand with the service paradox presented in multiple literatures which suggests that servitized companies have a hard time generating profit from their solutions (Gebauer et al., 2005; Neely, 2008).

This chapter will go through the details of the framework presented by Jagstedt et al. (2018) and relevant literature that provide its strength. There are however other authors that have different opinions regarding the construction of solutions and its elements which will be presented in this chapter as well. Jagstedt et al. (2018) presented a subdivision of a solution as figure 11 illustrates, where a solution is divided into the core product(s), the offered services and the interaction between the customer and the manufacturer. A company that wants to offer solutions needs to be able to address internal and external drivers as well as drivers for the interaction between the manufacturer and customer simultaneously, in order to achieve customization and integration.

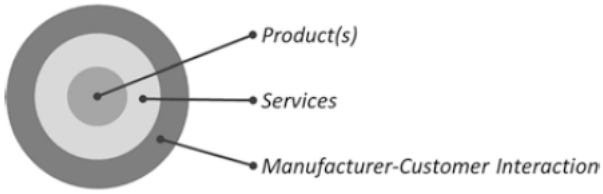


Figure 11: Subdivision of an integrated solution into three elements (Jagstedt et al., 2018)

The framework presented by Jagstedt et al. (2018) consists of a five-step approach (shown in figure 12) for creating integrated solutions at the same time as standardization is achieved through exploiting commonalities.

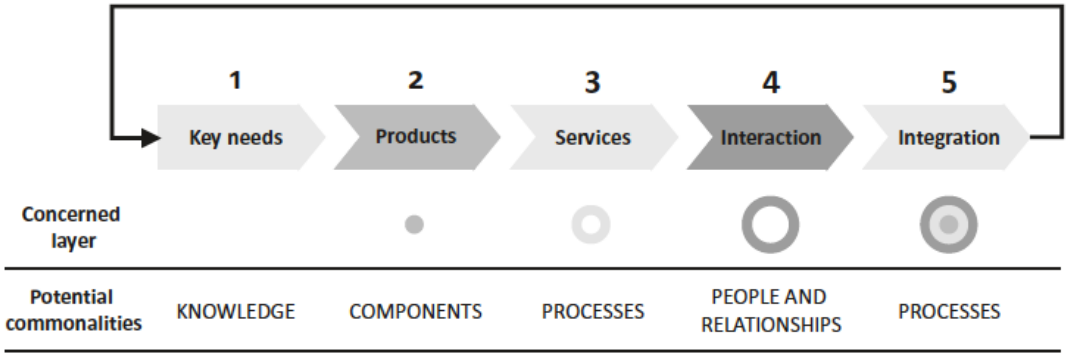


Figure 12: The framework for developing solutions, consisting of a five-step approach (Jagstedt et al., 2018)

2.6.1 Key Needs

The first step of the framework concerns understanding the customers' demands or needs and investigating the customers' operations and their usage of the product or service (Jagstedt et al., 2018). In order to be able to create value for the customers, what adds value to them needs to be understood and defined, which starts with understanding them and their situation (Campbell et al., 2011; Macdivitt & Wilkinson, 2011). This is furthermore one of the three presented challenges with servitization presented by Neely (2008) that needs to be addressed in order to achieve profit from the offered solution, namely the understanding of what brings value for the customers. Collected information and knowledge learnt from previously provided solutions or

products should be used to exploit knowledge commonalities, re-using knowledge previously gained and adding it to the newly gathered information (Jagstedt et al., 2018). The key needs should be defined for each of the three drivers, namely internal, external and customer-manufacturer interaction. This first vital step is something that is sometimes overseen, which can result in poor customer experience. A Baines & Company survey showed that only 8% of customers of 362 different companies found their experience to be superior meanwhile 80% of the companies stated that they offered superior experiences (Schwager & Meyer, 2007). There are companies that do not comprehend the importance of understanding customer needs, and companies that collect information but don't act upon them, which Baines & Company showed results in an inferior offered customer experience. Schwager & Meyer further wrote that many companies have tried to measure customer satisfaction, but the results generated doesn't give indications on how to achieve satisfaction. How to achieve it can only be found by thoroughly understanding the customers' needs and their experiences in detail. The customers' experience regards every part of the solution offered, ranging from customer care to advertising, packaging, ease of use etc. (Tuli et al., 2007). Data regarding customers' experiences are collected at touch points, where some are of more value than others (Schwager & Meyer, 2007). When offering a solution there are numerous touch points that needs to be identified and investigated to find customers' needs and experiences at each touch point.

When identifying the key needs it is important that the stakeholders affected by the solution are identified since the solutions are constructed differently if it affects multiple stakeholders compared to one (Jagstedt et al., 2018). Tuli et al's (2007) study supports the importance of investigating the different stakeholders as customers stated that the supplier needs to understand all stakeholders in their firms, so they can identify known and unknown needs. The customers further stated the importance of identifying their needs as they themselves aren't aware of all or can't articulate them easily to the suppliers. Tuli et al. further found that the customers want the suppliers to not only ask for functional aspects or specifications of their products, but to understand their overall needs and their situation, meaning for example understanding their labor situation and their business model. This is supported by an investigation made by Töllner et al. (2011) who found that the customers expect the supplier to solve their individual business needs as well as propose different technical options to do so. Tuli et al.'s (2007) study further found that the customers articulated that they wanted their future needs identified along with their current needs, so that the offered solution would bring more value to them.

2.6.2 Products

The second step of the framework focuses on the product, where investigation is needed to find which products to deliver in the offered solution, to match the identified needs (Jagstedt et al., 2018). The outcome of this step should lead to a clear picture of what products are missing in order to fulfill the customers' needs and how they will affect the solution once they have been developed. When customizing a solution to customers' needs, products needs to be selected, designed and modified to fit into the customers' environment (Tuli et al., 2007). Jagstedt et al. (2018) suggests that the product should have both distinctive features that set it apart and share commonalities with other products offered. According to Robertson and Ulrich (1998) such shared assets can be of four categories: components, processes, knowledge and people, and is the foundation for a product or service platform. Utilizing platforms can according to the authors be a driver for both commonality and distinctiveness in incremental innovation projects. According to Magnusson and Pache (2014) such an approach can give lead time reductions for developing solutions if there are shared assets among other solutions, as well as enabling economies of scale.

2.6.3 Services

The third step is similar to the second one, with the goal of understanding what services should be offered in the solution to meet the customers' needs (Jagstedt et al., 2018). It is important that the service and the service related processes are optimized for both the product and the customers since the service itself is often what connects the product to the customers in a solution. According to Jagstedt et al., services can be seen as processes delivering a valuable outcome. This view is strengthened by Grönroos (2000) as well as Johne and Storey (1998), who stated that services can be seen as processes for both delivery and consumption. These processes are made up of a constellation of activities, and according to Bötcher and Klingner (2011) such activities or sub processes is key when developing new service offerings. Service processes can according to Jagstedt et al. (2018) be shared among different products or customer segments, and therefore such processes should be opted for. Such shared processes together with shared people and knowledge constitutes a service platform according to Meyer and DeTore (2001). The authors viewed these shared assets as being fundamental to creating scalable services when developing solutions. Bötcher and Klingner (2011) added more benefits of utilizing shared assets between different solutions such as reduced complexity, possibility to continuously improve and increased configuration and customer tailored package.

2.6.4 Interaction

The fourth step of the framework regards the interaction between the supplier and the customers, where the aim is to find elements that enable and support the solution (Jagstedt et al., 2018). Relational aspects are of great importance as human relations and interactions is the foundation that combines the service and product aspects of a solution. In a study conducted by Tuli et al. (2007) it was found that the relational element, is what distinguishes a solution from a product-service bundle. The process of creating effective relational aspects is divided into defining customer requirements, customization according to customer requirements, deploying the products in a suitable way for the customers' and providing post deployment support. Jagstedt et al. (2018) promotes deep customer relationships as something that simplifies finding suitable interaction points due to deeper customer knowledge. This view is supported by Tuli et al. (2007) which stated that strong relationships between customers and providers strongly helps with overcoming unanticipated problems during the delivery of the solution, as well as facilitate better customized solutions for the customers.

2.6.5 Integration

In the final step of the framework, the solution will be constructed by combining elements from products, services and interactions and configuring them so that they are optimally suited for the overall solution, which will be customized and adapted to the individual customer (Jagstedt et al., 2018). This step concerns both the integration of the different parts that constitutes the solution, and the integration into the customer's operations, to achieve a customized solution. In order to achieve an efficient solution, the providing organization needs to be aligned towards the same objective (Westphal & Zajac, 1998). If the sales force is paid specifically for closing deals, they will not spend time doing tasks that will not lead to that specific objective, i.e. they will not spend time investigating current and future needs if it delays closing the deal (Tuli et al., 2007).

It is of great importance that the supplier makes sure that the solution fulfils the customers' needs identified in step 1 of the framework, otherwise the different elements of the solution must be configured differently so that it accomplishes this goal (Jagstedt et al., 2018). Delivering products to customers and installing them into their business will surface new requirements which will lead to needed modifications to the solution, making it an iterative

process when finalizing the solution (Tuli et al., 2007). Tuli et al. further emphasizes the importance of the integration phase to modify goods and services to work well with one another, and together fulfilling customers' needs. Today, customers have more product choices and more channels to purchase these through than ever before, meaning solutions that are simple and integrated will win customers that are oftentimes time-pressed (Schwager & Meyer, 2007).

Across different industries, a solution is deemed effective based on how well it fulfils customers' business needs (Tuli et al., 2007). Effectiveness is achieved when the following four things are completed, which constitutes the different parts of a solution:

1. Well defined customer needs
2. Services and Products are customized and integrated to suit the customer needs
3. Services and Products are delivered and are fulfilling customers' needs
4. Customer Support Post-Purchase is provided

These four areas were tested and evaluated on a different industry by Töllner et al. (2011) and they found that they were accurate but lacked two final steps which were "Signaling" and "Inter-process management". Signaling means that the supplier should demonstrate competence and experience to reduce customer purchase risk, and Inter-process management means integrating the remaining processes through incorporation, pro-active support and improvement. The first three steps are already addressed in Jagstedt et al's (2018) framework. Tuli et al. (2007) however highlights the importance of post-purchase support, for a solution to be effective. Post-purchase support for solutions contains more than just providing spare parts, it includes developing and providing new products to meet newly found or developed needs. Customers stated that when it comes to delivering solutions, suppliers need to be relational and not view it as a purely transactional relation. This correlates with two of the three challenges of servitization presented by Neely (2008), the first being the challenge of shifting mindsets from being transactional to relational, and the second being the timescale issue, for suppliers to be able to manage multi-year relationships. These are important challenges that needs to be overcome in order to facilitate profit from the offered solution.

2.7 Theory summary

The presented theory is derived from different areas within services and solutions. It is needed to understand the content of the framework derived by Jagstedt et al. (2018) and the content of this study. A short summary of key parts in the theory is presented followingly.

Neely (2008) presents three challenges of servitization, to avoid the service paradox described by Gebauer et al. (2005); *shifting mindsets from being transactional to relational*, *changing timescale from short term to long term partnerships and understanding the true value for the customers.* Providing excellent services drives cost (Frei, 2008), but if service companies were to collect their revenue as traditional manufacturer do, they risk charging customers in unpalatable ways (Kannan & Healey, 2011). Pricing based on cost and competition are common approaches (Macdivitt & Wilkinson, 2011) but are according to Calabrese (2013), ill-suited for services compared to value-based pricing which puts the customers at the center.

Gathering customers' needs should be conducted using several methods, going into different layers of customer needs (van Boeijen et al., 2013; Ulwick & Bettencourt 2008). When trying to understand the customers and addressing their needs, it is important to gain insights regarding who the actual customers are both within and outside of the buying organization (Griffin, 2013; Anderson et al., 2009; Morelli, 2002). According to Hassani et al. (2018), the investigated needs

are to be translated into product and service characteristics. Johnson and Renaghan (1999) however stated that it is difficult translating needs into service characteristics and proposed that they should be translated into processes instead. An important characteristic of service design is that the outcome itself is a process creating value for both the customers and provider (Holmlid, 2007). To involve end-users in development, Holmlid (2009) proposed participatory design. Evenson and Dubberly's (2010) framework for designing services begins with exploratory and immersive research with the aim of understanding the customers' needs and their situation. It is an iterative framework where findings are tested with users and service personnel before implementation, in accordance with Bitner et al. (2008).

Jagstedt et al. (2018) defined solutions as consisting of three parts; products, services and interactions. Understanding customers' needs is the fundamental first step in building value for the customers (Macdivitt & Wilkinson, 2011) and Jagstedt et al. (2018) suggested that previously collected customer insights and knowledge is re-used for this step. The second and third steps of the framework are similar and addresses which products to deliver and what services to offer in the solution, to match the identified needs (Jagstedt et al., 2018). The outcome of these steps should according to Tuli et al. (2007) lead to a clear picture of how to fulfill the customers' needs, where distinctive features and shared components or sub processes needs to be balanced (Jagstedt et al., 2018). It is important that the service is optimized for both the product and the customers, since the service itself is often what connects the product to the customers in a solution. The fourth step of the framework regards the interaction between the manufacturer and the customers to enable and support the solution (Jagstedt et al., 2018). In a study conducted by Tuli et al. (2007), the relational element which occurs in this step is what distinguishes a solution from a product-service-bundle. In the final step of the framework, the solution will be finalized by combining elements from products, services and interactions which will be customized and adapted to the individual customer (Jagstedt et al., 2018). Delivering products to customers and installing them into their business will surface new requirements for the solution, making it an iterative process in finalizing the solution. This further increases the importance of post-purchase support for a solution to be deemed effective (Tuli et al., 2007).

3 Method

The following chapter will go through the steps presented in the framework by Jagstedt et al. (2018) and elaborate on how these steps were conducted in the case study. All methods used in this study will be thoroughly explained, both in theory and its practical application for this case. The end of this chapter contains a critical discussion of the method in terms of reliability, transferability, replicability etc.

3.1 Research Strategy

As the master thesis aims to evaluate a newly derived theoretical framework, a case study was conducted to receive practical results from using the framework. As explained by Bryman and Bell (2015) a case study is an intensive and detailed analysis of a single case and is a good complement to a more conceptual framework. This approach made it possible to test the theoretical framework in practice to evaluate if it accomplishes what it theoretically sets out to do, since as Huang (2010) said: ”Theory without practice is not theory but speculation”.

The research was conducted as “Action Research”, where the research is conducted *with* practitioners and does not aim to simply understand the current situation but instead use the information gathered to affect the choices made by the company moving forward (Huang, 2010). Action Research is often misconceived by companies as being solely consultation, but a distinctive difference is that consulting is done *for* a company, where Action Research is done *with* a company, aiming to create knowledge useful to both parties. The results generated from utilizing the framework was deemed valuable by Essity in their future development of digital solutions. The practical setting made it possible to test the practicability of the framework, providing insights useful for further research.

The study mainly dealt with qualitatively collected information through less structured interviews and discussions. Therefore, the study benefited from utilizing an iterative approach according to Bryman (2011). Having room for iterations or going back to an earlier step in the framework was essential for this case study. From this iterative approach, the focus of the study shifted from being more evaluative, looking at an ongoing development project, to creating plans for future development projects at Essity. The framework was applied in the development of a new future solution instead of comparing and evaluating an existing development project with the framework, which was the initial scope of the thesis. This was after initial meetings and discussions with Essity supervisors deemed to be most beneficial for both parties.

3.2 Research Design

This study was conducted as a case study at Essity, who were aiming to develop a new digital solution within the TENA brand. The framework presented by Jagstedt et al. (2018) was utilized, where each of the five steps for developing an integrated solution were conducted. The goal was to evaluate each individual step as well as the overall framework and its practical efficiency.. The steps taken in the study are visualized in figure 13 and how they each were conducted will be explained followingly.

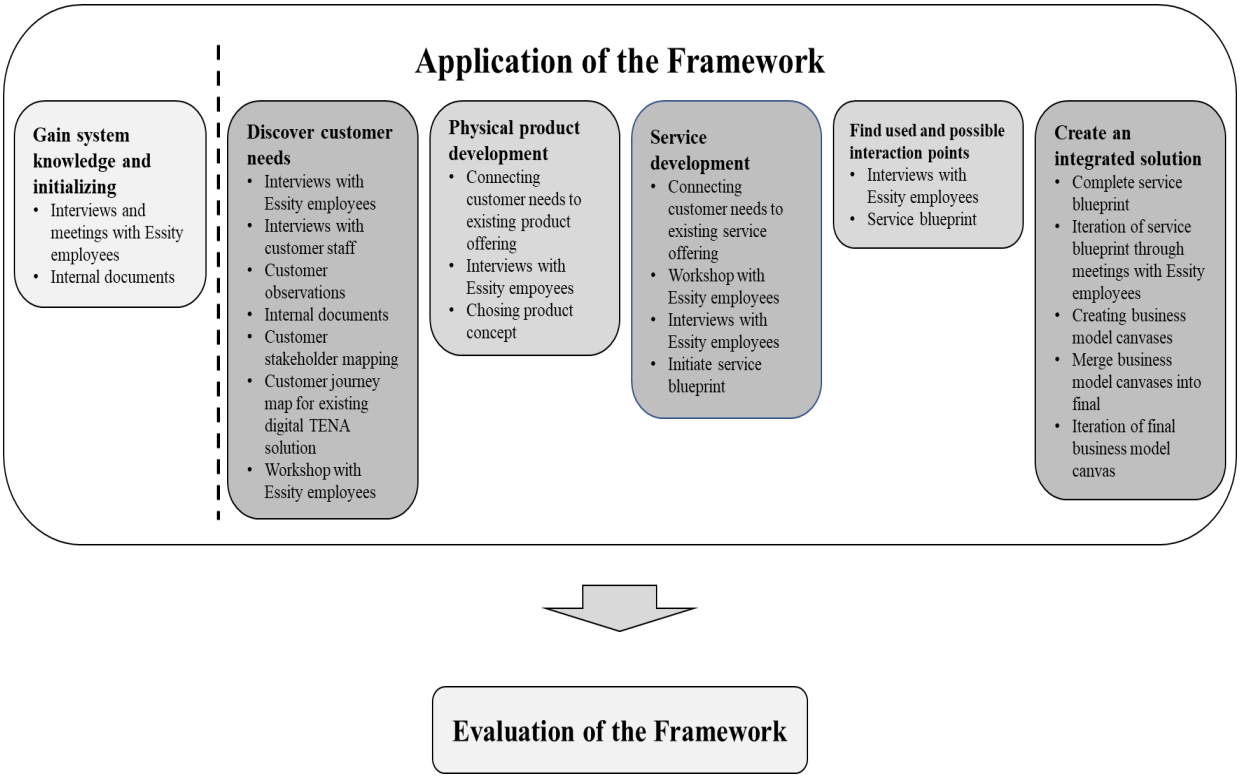


Figure 13: The practical application of the framework, as conducted in this case study

Gaining system knowledge and initializing

Participation in daily routines with the people working at Essity with developing digital solutions for the TENA brand was utilized to adopt the language of the organization, identify key people and get access to relevant internal document and employee knowledge. Participation is important according to Huang (2010) to later partner up and creating a result which people in the organization feel they have ownership of. This was mainly done through unstructured interviews and participation in project specific meetings. The authors furthermore spent a few days each week at the company site throughout the entire study participating in informal conversations.

Discovering customer needs

In order to gather existing knowledge regarding the customers' working routines, insights regarding customers' needs and their issues, interviews were conducted with Essity employees. The interviews were mostly unstructured with a specific topic in mind which allowed the interviewee to speak freely to provide the authors with information he or she deemed important. Often employees referred to previous customer studies performed by Essity or their partners which the authors received access to. To find new customer needs and double check the insights received from Essity employees and previous research, customer interviews and observations were conducted. The observation allowed for a deeper understanding of the customer's operations and their environment in which the future solution will operate.

To understand how the customers use Essity's solutions, a customer journey map for the existing digital solution TENA Identifi was constructed based on collected information. Finally, a workshop was held with personnel from different functions in Essity with the goal of identifying stakeholders and their needs, which allowed the authors to validate their own findings and capture previously undiscovered needs.

Physical product development
In this case, the physical product were built upon TENA Identifi and TENA Change Indicator. Interviews with the project manager for TENA Identifi and TENA Change Indicator projects was conducted in order to understand how the products had been developed at Essity. The results were later compared to how the framework suggests that products are developed when creating integrated solutions.

To understand the existing products better a workshop was held to map how well the existing products and services offered fulfill different customer needs. From the result identified gap was highlighted and stored for future interviews and workshops in order to see how a future solution could satisfy them as well. Interviews and internal document on future physical product concepts on digital products in the TENA portfolio were used to see what alternatives are available from which a product concept was selected.

Service development
In order to identify service offerings that would be valuable to the customers, a workshop was conducted with Essity personnel from different functions with the aim of finding possible service offerings that would fulfill the earlier identifier customer needs. The workshop was based on gaps identified previously in customers' needs and current offering. From material collected through interviews and workshops with Essity employees and customer studies, an initial service blueprint for the future solution was created to illustrate and understand how services can be offered in the future which would provide value for the customers.

Finding used and possible interactions
The initial service blueprint was expanded to link together the service offered with a suitable front-end functionality through interaction points. The interactions points were initially found by using the constructed customer journey maps for TENA Identifi and interviews with Essity employees. Discussions with different Essity employees from the sales department and product management to create a front-end functionality recognizable to both customers and Essity's employees.

Create an integrated solution
To tie together all information collected throughout the study on how to deliver the intended future concept the complete service blueprint was created to illustrate both back end and support processes needed. In order to find suitable channels and back-end processes, discussions with a solution manager for an existing digital TENA solution was held to find synergy effects and to ensure the solution could be integrated into Essity's operations. The entire blueprint was evaluated by sales staff, brand managers as well as product and solution managers for the digital TENA solutions.

A business model was created for the new digital solution where all previous knowledge and information were tied together. The business model was represented in three different business model canvases to give the full picture as they complement each other before consolidated. A meeting was held with product and solution managers, to validate and expand the business model created.

3.3 Literature review
The literature used were gathered mainly in the beginning of the master thesis to get theoretical practices to base the practical applications on, as well as to find suitable methods for solutions development. The literature was although complemented all throughout the master thesis as

new theory became necessary for certain steps of the framework. The literature search followed the same approach as Zhang and Banerji (2017), where certain search words were selected by the authors. The search words were although complemented after contemplation with the originators of the evaluated framework. Appropriate search engines were identified and hence literature was searched for on Google scholar, Chalmers Library and Scopus. The used search words included, but were not limited to:

- Gathering customer needs
- Understanding customer needs
- Voice of the customer
- Quality function deployment
- Product development methods
- Service Management
- Servitization
- Integrated solutions
- Solutions Development
- Service Design
- Customer Journey Map
- Service Blueprint
- Business model creation

Chaining or chain search as described by Bryman & Bell (2015) guided the authors to relevant sources of information. The method means that suitable literature is found by letting one academic text serve as a map and guide to other relevant sources of information, by looking at what references that specific text is using. This method was used to give further insights into certain areas, increasing the amount of literature on certain subjects to strengthen the knowledge in those areas, and to find original statements.

To strengthen certain areas in the theoretical framework or to find other views on certain subjects the "cited by" function in google scholar was used. This function allowed the authors to find other sources discussing certain areas or views on a theoretical area. For example, one source discussed different funding mechanisms for services, but these terms were relatively new and unused. This resulting in, when searched for normally on Google Scholar or Chalmers Library, no additional sources were found. In order to validate the claims made by that specific source, the "cited by" function on google scholar allowed the authors to find numerous other articles discussing and using the original source's claims regarding funding mechanisms. This allowed the authors to validate and strengthen the theoretical framework.

3.4 Data collection

As previously mentioned, data will be collected in all stages of the framework, but data collection is more heavily characterized by the earlier stages. Different methods will be used to understand the customers, Essity's organizational capabilities and the interaction between both.

3.4.1 Interviews

Interviews can be divided into unstructured, semi-structured and structured categories (Bryman & Bell, 2015). In this study, unstructured and semi-structured interviews were deemed to be the most appropriate due to the benefits of having a general guideline or theme but at the same time creating space for further discussions and follow-up questions to enhance the quality and depth of the interviews. The interview methodology was chosen due to it being relatively easy to set up and thus, provided the ability to capture personal experiences and perceptions of the

employees. This at the same time as follow-up questions were allowed, which enabled the authors to get a deeper understanding of the subject compared to e.g. online surveys and structured interviews. The interviews were mainly done two-to-one with both authors present rather than group interviews or focus groups. This type of interviews is according to Denscombe (2014) easier to organize and analyze afterwards due to it only being a single interviewee, which were deemed in this study to be a strong advantage. The listed interviews presented in appendix 1 and 2 are divided into two major categories: interviews with Essity employees with the aim of discovering what knowledge already exists and the existing ways of working, and interviews with customers with the aim of discovering their needs.

The interviews with Essity personnel were mostly unstructured with an overall theme set in advance corresponding to the desired outcome of the interview. This allowed the interviewee to speak freely and provide the authors with information he or she deemed necessary or important. Appendix 1 shows a list of Essity employees that were interviewed, what theme that was set for the interview and whether they were unstructured or semi structured. Furthermore, all essential personnel for this master thesis were geographically located close to the authors at the company site in Mölndal, which allowed for easier bookings of interviews but limits the study in terms of width since the most accessible interviewees were more likely to be selected.

Interviews with customers (see appendix 2 for a list of all conducted customer interviews) were done through one group interview with different customer stakeholders seen as future users and two individual interviews. In the group interview, one prescribing nurse, one professional care giver and two residents at a nursing home participated. These were important customer stakeholders that got identified through discussions with Essity employees and by performing a stakeholder mapping (see chapter 4.1.1). Two additional individual interviews were conducted with a prescribing nurse and a nursing home unit manager who were also deemed to be important stakeholders in the customer's organization. Finally, an interview with a digital responsible person from the customer's top management was interviewed as well. This person was seen to be far away from final product usage but has high buying power and insights regarding limitations of the customer.

Using interviews is according to van Boeijen et al. (2013) a good method to discover explicit knowledge. Interviews are useful for clearly defining customer needs, making them easy to gather, but the limitation of not discovering more tacit knowledge needs to be considered. Ulwick and Bettencourt (2008) suggests personal customer interviews as a good first step in understanding the job the customer is trying to get done. Griffin (2013) stated that uncovering the voice of the customer is done by keeping the interviews focused on facts and actual experiences, using indirect questions to avoid leading the customer, focusing on the functionality rather than the products and getting a variety of situations the customer has experienced. The interview guide for the semi structured interviews can be found in appendix 3-5.

For all interviews both authors participated and took notes. One was responsible for leading the interview and the other one was responsible for notetaking even though both could fill in with follow up questions when necessary. After each interview, the one responsible for notetaking uploaded their notes from the interview in a shared document and the other complemented with additional notes. In total 1395 minutes of official interviews were held and 14 217 words of notes were recorded.

3.4.2 Observations

Using observations as a method means that the observer is observing the personnel performing a task and the environment around that task (Yin, 1994). One set of observations was used in this study and collected during a customer visit, to better understand their operations and consequently receive an increased understanding of their needs (van Boeijen et al., 2013). The authors states this is vital when developing a new product to capture deeper unspoken needs.

The observations took place at Tre stiftelser Otium in Gothenburg, who is a customer of Essity's existing digital assessment solution, TENA Identifi. The authors made observations during a three-hour long shadowing of a professional care giver in their daily work, with both authors present to ensure reliability (Bryman, 2010). The observations were documented on notebooks by both authors as the shadowing proceeded and was reviewed together directly afterwards. The daily work was carried out by the observed staff, impressions and feelings of the authors received during the observation along with questions and answers was noted down and got summarized in an online word-document. In accordance with McDonald (2005) the notetaking covered everything that occurred and not only what was said or done. The notes of both authors were combined after the interview to end up with a single document containing all important documentation from the event and discussing important insights. The aim of the observation was to ask questions regarding specific areas of interest that became obvious during the observation, but most importantly to get a grasp of the environment and the daily operations of potential future customers. According to both Ulwick and Bettencourt (2008) and McDonald (2005) an observational study is good to set up after conducted customer interviews to fully understand the customer's operations, which is the approach applied in this study. Clancey (2006) stated observations to be a useful tool to map processes which were of relevance for the later creation of customer journey maps.

Using participation in the customer environment is according to van Boeijen et al. (2013) and Griffin (2013) necessary to go into the deepest levels of customer needs but also very time consuming and resource demanding. Therefore, this has been excluded in this study to manage trial of all different steps in the framework provided by Jagstedt et al. (2018). Van Boeijen et al. (2013) and McDonald (2005) pointed out that people often behave differently when being observed and there is a risk that we will find not real customer needs. It is important to make the observation feel as normal as possible for the user by stepping into their everyday life.

3.4.3 Internal documents and secondary data

Besides gathering data through interviews and observations, secondary data were used that had not been collected specifically for this study. Secondary data need to be used carefully since it has been collected for another purpose and can be misinterpret (Bryman, 2011). Data from internal documents were used since they contain a significant amount of information regarding the existing and previous products, customers, partners and competitors. The use of already collected information is mentioned by Jagstedt et al. (2018) to be important to avoid repeating the same work or missing already had insights.

Throughout the course of this study several sources of secondary data were used. The sources are presented below along with how the data was used.

- The CAS report which is a thorough customer study conducted by Essity personnel with 300 hours of observations of the work conducted in nursing homes. The insights from the CAS report were used to understand the customer needs.
- A third party conducted study of care giving relatives in Spain and their view on incontinence care. The study researched how care giving relatives decides whether a

change of product is needed but also revealed their pain points regarding incontinence care which were used in this master thesis to understand customer needs.

- A third party conducted study of professional care givers in Halland and their view on incontinence care. The study researched how professional care givers decides whether a change of product is needed but also revealed their pain points regarding incontinence care which were used in this master thesis to understand customer needs.
- Available Essity produced E-learning on the physical reasons behind issues with incontinence and how care givers are suggested to conduct incontinence care. This were used to better understand the customers' needs and how Essity communicates with their customers.
- A service blueprint for a similar TENA digital solution was reviewed to find possible synergy effects and understand possible interaction points.

3.5 Handling collected data and analysis

The data collected through interviews, observation and internal documents was handled in similar ways. Notes on what was said, done or discussed where stored in online documents accessed by both authors and physical material such as post its or illustrations were created in a digital version by the authors. From the notes, insights and important aspects were highlighted and used in the methods for solution creation presented later. Since data was collected from interviews throughout most of the study period all information were not existing for all solution creation methods in chapter 3.6. What data that was available when different method results were created is described in chapter 4 "Results".

As mentioned previously, when conducting interviews, one of the authors was responsible for taking notes, which afterwards were stored online where the other author reviewed it and added their own comments. The interview notes were reviewed directly after the conducted interview, and important points were highlighted. All interviews got stored in a table (see appendix 1 & 2) where the topic, interviewee, date and duration of the interview was stated so that the authors could easily navigate through them when looking for specific information. All interview notes were looked upon at least one more time after they had been written, as input for other interviews or methods, or for the authors to remember certain facts or statements. Things that was found unclear in the interviews or became unclear when reviewing the notes afterwards were always validated with the interviewee informally afterwards, due to the benefit of having all interviewees geographically located in the same building as the authors. To compensate for not recording the interviews and transcribing them later, which the authors deemed to be too much non-value-adding work, the interviews were always finished by the authors summarizing the most important findings to the interviewee to have those findings validated, as well as the authors sitting together discussing and summarizing the findings directly after the conducted interview.

Inputs from interviews, meetings, Essity documents etc. identified as customers' needs were stored in an excel file with all previously identified needs. The needs where categorized depending on which customer actor or stakeholder experienced that certain need. This categorization was useful since all stakeholders are not present for all parts in the life cycle of a solution and different needs then only needed to be incorporated in certain parts. The identified customer needs from interviews with Essity personnel or internal Essity documents were questioned by the authors of this study and tried to be strengthen during the customer interviews to ensure they were actual customer needs. The entire list of customer needs were finalized during workshop 1 presented in chapter 3.6.1.1 where several Essity employees got

together and decided upon which needs they believed to be real and their priority for the customer.

3.6 Solutions creation

After gathering information regarding the customers' operations and their needs they were broken down into the actual needs of the customers. The customer needs identified were translated into product and service specifications or concepts. From this, the selected product concept and service aspects needed incorporated in a possible solution. With a solution concept in place the interaction points with the customers was identified and broken down into necessary internal processes. The entire solution and how to integrate into both the customer and Essity operations were visualized and a business model was created.

3.6.1 Workshops and brainstorming

According to Cruickshank and Evans (2012) an important part of any brainstorming session is the preparatory work conducted by the facilitators. They further stated that it should be clear when and where the meeting takes place, the duration, what the aim and desired outcome is and how many and who should take part. The authors took this into consideration and prepared instructions which the participators were given so that they could more easily follow and be part of the brainstorming session, which also stated what the end goal is with the session. Prior to the sessions, all attendees received an invitational e-mail stating the agenda and the objectives of the meeting, along with a date and time.

In accordance of Andersen and Fagerhaug (2006) every workshop started with a warm up where the subject was casually discussed. This was important to get everyone set on the subject to be discussed and for people to collect their thoughts. Once started, it is important that everyone gets the opportunity to undisturbedly present their ideas and suggestions and the authors of this study used their role as facilitators to ensure people were not interrupted. This is an example of what Al-Sammarraie and Hurmuzan (2018) presented as traditional brainstorming where all participants gather at the same location which was always the case for this study. The benefits of conducting the brainstorming session in this way is that shared understanding is accomplished and high-quality ideas are obtained. Nominal brainstorming sessions, where each participant brainstorm on their own can create more ideas but the quality of ideas can be lower and getting acceptance of the result is harder.

3.6.1.1 Workshop 1 – Customer needs

A workshop was held with Essity personnel from different functions to receive a wide input on customer needs. All involved people had been previously interviewed but through this workshop their view on the existing customer needs that needs to be fulfilled with TENA's products could be collected in a structured way. The authors acted mainly as facilitators but participated to include customer needs previously seen during interviews and observations to test their acceptance among the participants. The workshop was inspired by the process for conducting an affinity interrelationship matrix (AIM) presented by Alänge (2009) which meant that the authors validated each statement presented by the participants with the entire group, and later grouped them together and made sub-headings to understand the subject at higher levels. The AIM process starts with a subject or issue to which the participants get to give all their examples and thought on. These are then grouped several times and condensate into headings which are then grouped on an aggregated level. By doing so a higher level of the issue can be identified and relationships between different factors are seen, which together can give good insight on the original stated issue. The workshop followed the structure presented below

and a schedule and instructions were given to the participants which can be found in appendix 6.

1. **Stakeholders (5 min)**
   Participants wrote down all relevant stakeholders in the customer organization on post-it notes.
2. **Clarify and Validate (5 min)**
   The authors acted as facilitators and read out all post-it notes to make sure the participants agreed on them being true and placed them on a whiteboard. Duplicates were eliminated as well as stakeholder that were deemed to not be relevant.
3. **Stakeholder needs (20 min)**
   The participants wrote down all customer needs for the identified stakeholders on post-it notes and posted them below the corresponding stakeholder.

Break (10 min)

4. **Clarify and validate (15 min)**
   The authors acted as facilitators and read out all post-it notes to make sure the participants agreed on them being true.
5. **Grouping (5 min)**
   The participants grouped the post-it notes below every stakeholder into clusters of post-it notes sharing a theme.
6. **Headers (5 min)**
   The participants agreed upon headers for each cluster that described the theme of that cluster.
7. **Prioritizing (5 min)**
   The participants agreed upon levels of importance for the identified stakeholders' needs ranging from 1 being lowest to 5 being highest.

3.6.1.2 Workshop 2 – Finding possible ways to fulfill identified customer needs

The second workshop was built on the identified gaps between customers' needs and products and services offered, (method presented in chapter 3.6.2) showing areas where TENA Identifi and TENA Change Indicator failed to fully satisfy customer needs. The areas which were deemed to be of high importance by the authors were picked out and created as an area to be discussed during the workshop. Areas of importance were areas which the authors thought were possible to improve in and that would bring much value for the customers if improved. Each area was handled individually in the brainstorming session to get as much information as possible regarding each subject. The areas that were touched upon during the session was the following:

- Less noticeable product
- Pairing strip with the correct incontinence product
- Make residents be a part of their own incontinence planning
- Make residents able to be more independent in their incontinence care
- Handling the everchanging incontinence need of residents
- Possibilities for professional care givers to affect the care plan
- Accessibility to individual care plan
- Offering customer support to nursing homes
- Integrating new digital into existing nursing home IT-systems
- Metrics used at nursing homes to evaluate performance

According to van Boeijen et al. (2013) the quality of ideas is increased by first provoking the participants to come up with many ideas of various quality which was the purpose for step number one and two. From these, the group discussions led to a formulated consensus regarding

what aspects are more important than others and converging from the wide set of ideas generated before. Below is the schedule that was followed for each area of interest.

1. **The area (1 min)**
2. Presentation of the area and clarifying why the area is seen as worth to discuss.
3. **Individual contemplation (2 min)**
   Everyone is thinking in silence about issues with the area, ideas, limitations etc. and writing notes they want to discuss on post-it notes.
4. **Clarify and validate (2 min)**
   Posting each post-it notes on the wall and clarifying its meaning to make sure everyone agrees on it being an important aspect.
5. **Group discussion regarding the area (5 min)**
   The points written on the post-it notes is brought up for discussion to conclude what aspects are important to the area.

3.6.2 Connecting customer needs to products and services to identify gaps

In order to connect the identified customers' needs to the exiting offering of TENA solutions both in terms of products and services. The customers' needs, agreed upon in workshop 1, were used as an input and a method inspired by the QFD presented in chapter 2.2.3 was used. The HoQ is a commonly used matrix in QFD and a matrix inspired by this was used for the workshop. The matrix followed the appearance shown in figure 14 where customers' needs together with their priority number were shown in the left column and the different alternatives; TENA Identifi, TENA Change Indicator, Other products and Other services, were shown in the top row. The session was done together with the solution owner for TENA Change Indicator, who had extensive knowledge in the digital solutions offered by TENA, which proved to be valuable for the authors when trying to understand how the identified customer needs are met today. Each customers' need in the list was touched upon and a discussion was held regarding how the customers' need is fulfilled in different ways. Then the corresponding cell in the matrix was market to show which customer needs are fulfilled and in what way that is ensured.

	TENA Identifi	**TENA Change Indicator**	**Other Products**	**Other Services**
Customer Stakeholder 1				
Customer need 1				
Customer need 2				
Customer need 3				
Customer need 4				
Customer need 5				
Customer Stakeholder 2				
Customer need 1				
Customer need 2				
Customer need 3				
Customer need 4				

Figure 14: The matrix used by the authors to illustrate how each customer need is being met by different existing alternatives

3.6.3 Customer journey mapping

The customer journey map is a graphical representation of the stages and activities which the customer goes through, from hearing about the product to buying it and using it. It allows for additional insights to be drawn regarding customer needs and different ways of serving the customer (van Boeijen et al., 2013). The customer journey map should according to Rosenbaum, Otalora and Ramirez (2017) include a timeline and touchpoints between the customer and the provider. They were in this study built from data collected through interviews with Essity personnel, customers and customer observations as suggested by Rosenbaum et al. (2017). Qaqish (2018) provides a three-step approach to collecting data for customer maps that starts with the internal as sales department, continues with other customer facing internal functions and ends with customer interviews, which are also in line with the steps taken in this study

Voorhees, Fombelle, Gregoire, Gustafsson, Sousa and Walkowiak (2017) stated that the customer's experiences of the service should be divided into pre-core, core and post-core service encounters. The reason for dividing services into three categories is that all services have core content, but they also always have activities or encounters both after and before that needs to be identified and understood. This approach was combined with the one presented by Lemon and Verhoef (2016), which is that instead of looking at what happens before, during and after the core service encounter, the purchase itself should be investigated. This meaning, looking at customer's experiences and activities before during and after a purchase. The pre-purchase phase is characterized by indirect contacts between the provider and the customer, often in terms of brand awareness efforts and market research. The purchase phase is mainly characterized by direct contact between the sales personnel and the customers, to find a deal that benefits both sides. The final phase, namely the post-purchase phase is characterized by usage and consumption and is where the provider delivers the agreed upon solution. For this case study, both approaches were used, since they together provided the authors of a broader understanding of the customer's experience when buying and using a digital TENA solution. It was deemed extra necessary to include both approaches for this study since there are great hierarchical leaps from the ones making purchasing decisions to the ones using the product, and all stakeholders need to be identified and understood.

Three customer journey maps for the already existing solution TENA Identifi were created, one for each mentioned approach and a final customer journey map incorporating both perspectives more visually (see chapter 4.1.2). A customer journey map for the future solution was also created but as an initial part of the service blueprint and is presented in the next chapter, 3.6.4. The customer journey maps for TENA Identifi were created by the authors and was based on findings from conducted interviews with Essity personnel and customers along with customer observations. All interview notes taken so far were reviewed and all relevant aspects to include in the customer journey maps were highlighted, mainly from interviews with customers, Essity sales manager and Essity brand owner and product owner. The two separate customer journey maps based on purchasing and service encounters were iterated and verified by the sales manager. After verification, a full version with a timeline describing the customer process through both purchase and service usage was created. This was created with both previously created customer journey maps serving as input but was also iterated and verified by the sales manager, product owner and solution owner.

3.6.4 Service blueprinting

Lemon and Verhoef (2016) as well as Lewrick et al. (2018) states that service blueprinting is an useful approach for analyzing the customer journey map, to understand how the touch points

are handled and what internal processes exist in front and back office. According to Bitner et al. (2008) service blueprinting can both be used to exploit commonalities between services or innovating new services. The service blueprint provides additional insights on how the service is delivered to the customer and what relationships are established with the different stakeholders (Radnor, Osborne, Kinder & Mutton, 2014). The authors suggest that co-production of services can be emphasized and strengthened by utilizing service blueprints.

The five components that constitutes a service blueprint is according to Bitner et al. (2008):

- physical evidence of service delivery
- customer actions
- own employee actions visible to customer
- own employee action invisible to customer
- support processes of the service

The creation of the blueprint for the future TENA solution followed the first stage in the process provided by Radnor et al. (2014) which is mapping the customer's experiences and the customer actions as defined by Bitner et. Al (2008). To do this, the customer journey map for TENA Identifi served as an input together with interviews with Essity personnel such as sales manager, brand manager, product owner, solution owner and development project manager. From this physical evidence of the service delivery, meaning output from the service delivery, was mapped from the customer actions as they were created in the blueprint. The first part of the blueprint shows the product and the service aspects of the solution as experienced by the customer and is shown in chapter 4.3.2.

After mapping the customer's experiences, all touchpoint where the customer interacts with the provider were identified. Then the remaining components of a service blueprint, presented by Bitner et al. (2008), were identified and illustrated in order of their visibility to customer. Firstly, the own employee actions visible to customer or the front-end which gives an overview of all interactions between the customer and the provider during the solution life time. This part of the service blueprint is shown in chapter 4.4.

Then the own employee actions invisible to customer or the back-end, and finally the processes that supports the delivery of the service were visualized. This gave the complete service blueprint for the future solution with all components presented by Bitner et al. (2008). All components show how the solution should be integrated in both the customer's and own processes and is presented in chapter 4.5.1. An additional step used by the authors when creating the service blueprint was to identify the gap between what are in place currently and what need to exist in order for the offered solution to become realized in terms of new processes, policies or tools for Essity personnel.

The service blueprint was iterated in several stages starting with an own iteration conducted by the authors by going through all collected material from previous interviews and workshops to find inputs that affects the blueprint. The second iteration was conducted with the future product owner and solution owner for the digital TENA solutions, with the aim of reviewing the customer actions part of the service blueprint. The third iteration was conducted with the sales manager working with current digital TENA products regarding the front-end processes that constitutes another layer of the service blueprint. The fourth and final iteration was conducted with the solution owner for a similar digital TENA product regarding the back-end and support processes which constitutes the "deeper" layers of the service blueprint, to find possible synergy effects.

3.6.5 Business model canvases

A business model is a tool to show how value for the customer in generated and what channels to use, important activities, revenue stream etc. (Osterwalder, 2004). From the collected and analyzed data the study will create three business model canvases of the types presented in chapter 2.4. This to show how the product-service-system created will be integrated in the operations of the customers and Essity and how the future solution should be sold to the customers. The multiple business model frameworks together give a good overview on how the created solution will be generating value to the customer and provided by Essity

The first canvas was created according to the layout presented by Osterwalder and Pigneur (2010). The layout, seen in figure 15, present the offering, customer interaction, internal aspects and a finance structure. The canvas was created by the authors by putting post its onto a whiteboard where the outlying structure seen in the figure had been drawn. Each box or section where filled in one at a time in the following order as suggested by Osterwalder and Pigneur from 1-9 (2010):

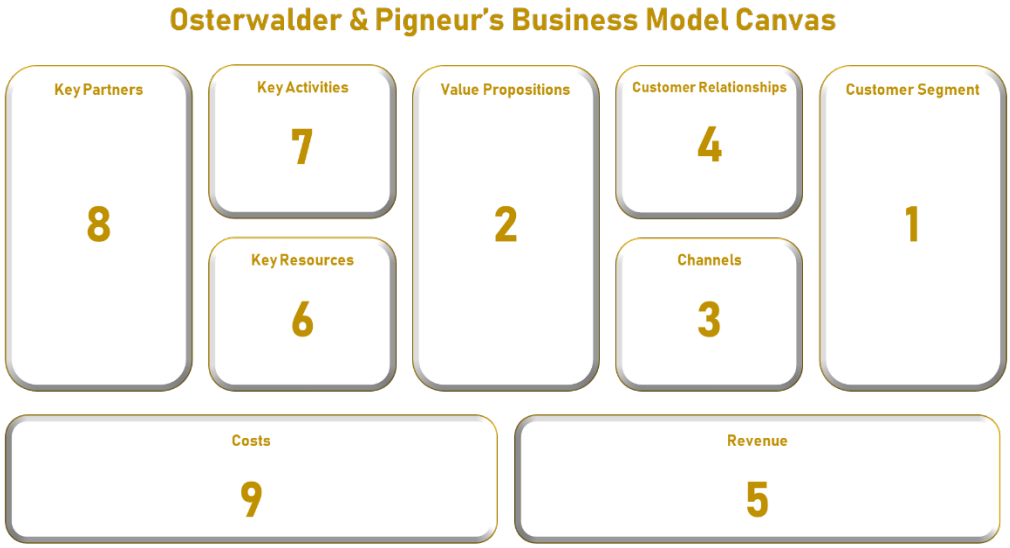


Figure 15: Osterwalder & Pigneur's (2010) Business Model Canvas with numbering to illustrate in what order the business model was conduced

There exists criticism towards the business model canvas presented by Osterwalder and Pigneur (2010). Viljakainen et al. (2013) argues for it having a more goods and product focus and can therefore be seen as not as relevant for pure services or solutions. Due to this Ojasalo and Ojasalo (2018) has developed what they call the service logic business model canvas, see figure 16. Each box of the canvas was filled in one at a time in the following order as suggested by Ojasalo and Ojasalo from 1-9:

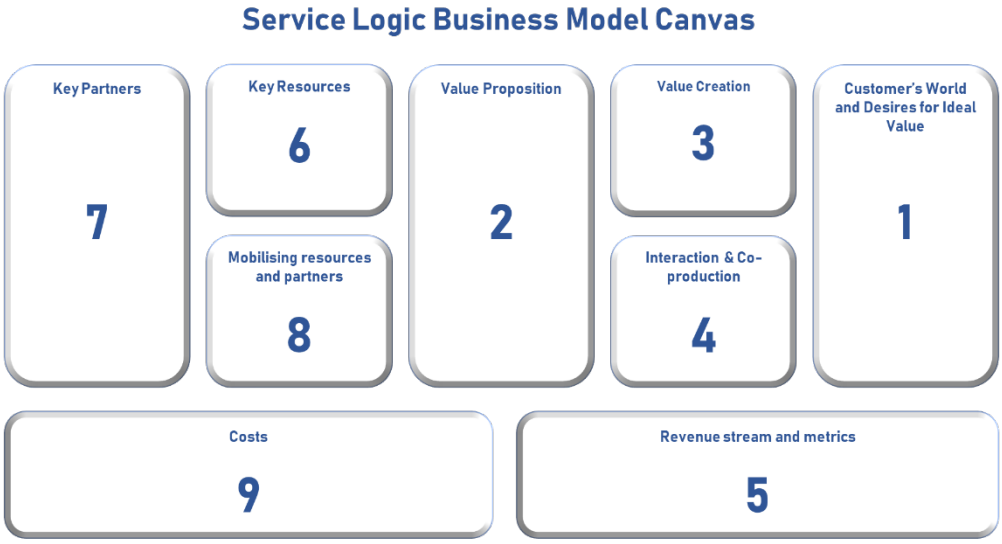


Figure 16: Service Logic Business Model Canvas by Ojasalo & Ojasalo (2018) with numbering to illustrate in what order the business model was conducted

In relation to the others, a lean business model canvas will also be created as presented by Lewrick et al. (2018), see figure 17. That is due to the model having a greater focus on the experienced problem by customers and provided solution and should be more adapted to reaching new markets which is the case for the future solution. Each box of the canvas was filled in one at a time in the following order as suggested by Lewrick et al. (2018) from 1-11:

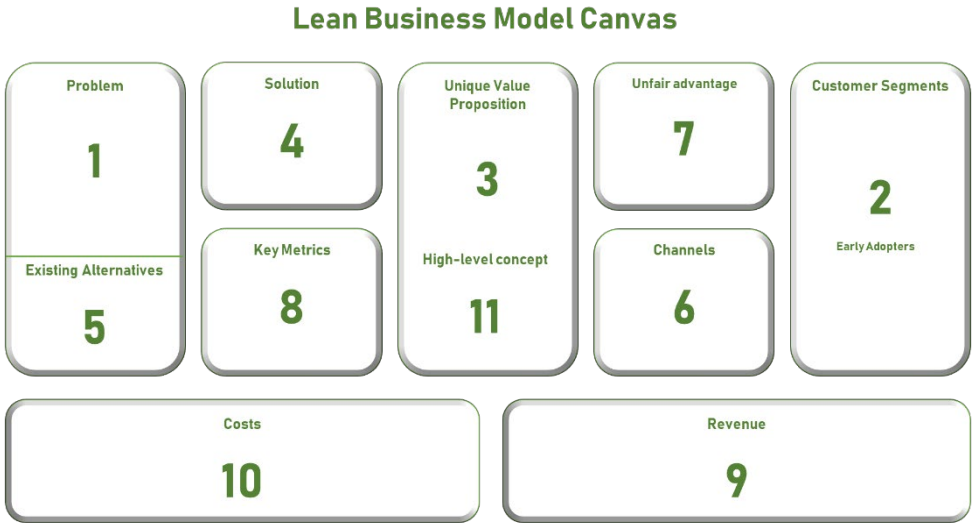


Figure 17: Lean Business Model Canvas as presented by Lewrick et al. (2018) with numbering to illustrate in what order the business model was conducted

3.7 Method Critique

A case study often suffers from lower transferability according to Bryman (2008) due the specifics of the single case. As explained in chapter 1.1 the framework is already conceptual and in theory easy to transfer to other industries while the need for more depths in terms of applicability is needed, wherefore the chosen design of this study is most appropriate. Wallén (1996) agrees on the view that case studies in general has a low transferability and the results

are often bound to the system from where they were derived. Instead, this study took a holistic approach and did not focus too much on the specific result in terms of contents of the solution and its configuration. Instead, the report presents the methods of choice during the development of this specific solution, in accordance to the framework, and lessons learned along the way. The discussion will therefore relate more to issues with the specific methods and what limitations were seen regarding the framework's applicability. This was done through both empirical findings and comparation of the framework to related theory.

The reliability of the study; whether the same result will be seen if the study is remade can be discussed on two different levels. "Will the same product and service characteristics of the solution be found if the study is remade?", and "will the same findings regarding the framework's applicability be found if the study is remade?". The product and service characteristics of the solution is derived from a set of unstructured or semi-structured interviews and workshops and affected by the specific market situation. Therefore, such findings are related to the date for the study due to market changes, new technologies and similar but also the information or knowledge carried by the specific individuals interviewed. Having the interviews being semi-structured and unstructured with room for follow up questions and clarification when necessary increases the validity according to Bryman (2008) due to less risk of misinterpretations. The findings regarding the applicability of the framework which are connected to the purpose of the study are though more reliable since the system itself are not changing in ways affecting the end result. The chosen methods are more dependent on the solution type and literature regarding product and service development which makes findings related to the aim of the study transferable into other settings.

The final conclusions from this study are then highly connected to lessons learned by the authors which creates a risk for lower confirmability. This is due to the subjectivity of the authors causes them to have certain learnings or insights instead of others and some issues regarding the framework or method choices can be missed. This risk can be lowered by letting related literature on methods for developing products and services have a strong impact and relating lessons learned to appropriate literature.

To increase the validity and replicability of the study, thorough explanation of the conducted steps and methods used are presented. Collected data from many interviews with different stakeholders is used as input into different methods which makes it harder to spot correlation. Therefore, in the empirical result it is well documented what interviews or workshops certain findings were based on. Such declaration makes it easier to follow how certain choices, findings or conclusions correlate with data collected and from what interviews specific learnings origin. The study's validity in terms of found product and service characteristics are lower and one can argue that each method used has not been used thoroughly enough. Therefore, the end decisions leading up to the end solution might not have been based on solid information but the aim for this study was not to ensure the finding of a scientific solution but evaluating all the steps of the framework. Being thorough in each step has been viewed as less important than being able to complete all steps. To identify issues and gain useful knowledge regarding the framework was deemed to be possible without being entirely thorough in each step. An example is the three hours of observational material which can be debated to be enough to learn every detail of the user's environment but can be enough to have a discussion on whether customer observation correspond with the framework's view on how to relate to the customer.

When gathering empirical results, the authors conducted many interviews with Essity employees, but the interviewees were all working closely with the products investigated in this

case study. Although this gave biased findings since they were assumed to be positively oriented towards their own developed and sold products, it gave the authors a deep understanding of the organization and the products themselves. In order to validate the findings from one interviewee, the same subject was discussed with different interviewees to grasp the subject at a higher level. When discovering customers' needs, the authors conducted their own customer interviews and observations to reduce the risk of biased findings from the interviews with Essity's personnel regarding which the customers' needs are.

To increase the chances that the right decisions were made, the authors gathered a thorough system knowledge of the Essity organization, company values, product strategies and development project. The authors received full access to the Essity facilities and IT systems as regular employees and spent, as previously mentioned, approximately two to three working days there every week.

3.8 Ethical Considerations

The four ethical principles identified by Bryman and Bell (2015) are; lack of informed consent, harm to participants, invasion to privacy and deception. These principles were considered at every step of the thesis work to ensure that the research work is ethical to avoid future complications.

Interviewees were well informed of our intentions and the nature of our work in this project to ensure that an informed consent to participate can be ensured. Before setting up the interview we had met most interviewees during informal conversations or Essity meetings and therefore interviewees often knew us before the interviews. All interviews were booked through the scheduling system used at Essity and the topic to be discussed was already sent out in advance. However, the interviewees were at the beginning of the interview, given complete authority to stop participating in our research work in case they feel discomfort with sharing the information with the authors. Anonymity were in the study provided for all interviewees since the name of the participants does not bring any further benefits to the study result. Instead the working description of the interviewees were included since their position and role at Essity affects their knowledge and response more.

Interviewees were also informed that the information obtained from them will be published as is needed for a master thesis report. However, if certain material is sensitive in some way, such as company secrets regarding strategy matter or personal intimacy an additional approval from the interviewee is needed before included in the report. This to ensure that the interviewee or Essity will not suffer any losses or risks due to the participation in the study. The secrecy regarding new product development and product strategy was handled by repeated meetings between the authors and the Essity supervisors. Then areas with risk of revealing sensitive information could be discussed and a way for presenting it without hurting Essity or the study was found. Before the publishing of the final report the Essity supervisors were able to read through the entire report and raise awareness of problematic areas which then could be changed.

4. Results

The results will be presented in the same order as they were conducted in accordance to the framework presented by Jagstedt et al. (2018). This chapter will go into detail regarding what methods were used and what results were then generated, for each of the five steps. References to appendix 1 and 2 is used throughout the chapter to clarify which interviews resulted in what findings.

4.1 Key needs

The two existing TENA incontinence solutions on the market, namely TENA Identifi and TENA Change Indicator, was used to understand the customers' needs. When investigating the customers' needs, the area of interest covered all of incontinence care in general and not only the needs connected to the existing products. This, due to the fact that there might exist customers' needs that no product is currently seeking to fulfill or is not able to, but which the future solution will be able to fulfill.

4.1.1 Different stakeholders in the customer organization

The scope of this study was to look at nursing homes in the Swedish market. The nursing home is not a single entity but is made up of many different people with different knowledge, needs, wants and possibilities to affect purchasing decisions. From mainly interviews 7 and 8 (see appendix 1) with Essity sales personnel, the limitations for the stakeholder mapping was identified and set to be people working within nursing homes and the municipality. This limitation was set since the actual purchasing of TENA Identifi and similar products is done at municipality level since the purchase is often with a price tag below 500 000 SEK. If the price exceeds this amount, the purchasing decision gets lifted to county level, with a completely new set of stakeholders and routines for purchasing. Since both TENA Identifi and TENA Change Indicator is most often sold below this amount, and the new solution is expected to as well, the limitations were chosen to look at the most common situation and stakeholders, namely those at municipality level. The municipality decides whether the nursing homes in the area should implement the solution or not and if they do, it is rolled out to the homes deemed appropriate. They are however not involved with the implementation and operations of the product, as that is the responsibilities of each individual nursing home.

Input for the stakeholder mapping was received from interviews 2-6 (see appendix 1) with Essity employees, customer interviews A-C (see appendix 2) and an observational study at a nursing home. This initial stakeholder map can be seen in figure 18 where the most important stakeholders for TENA Identifi and TENA Change Indicator, namely nurses, personal care givers and regulatory authority, is marked with red outlines. The initial stakeholder map identified nurses and professional care givers as being the main users of the products, and the municipalities, which consists of different roles, as the stakeholders making the buying decisions. The stakeholder mapping was an essential first step in understanding customers' needs since it provided an overview of which stakeholders' needs had to be identified.

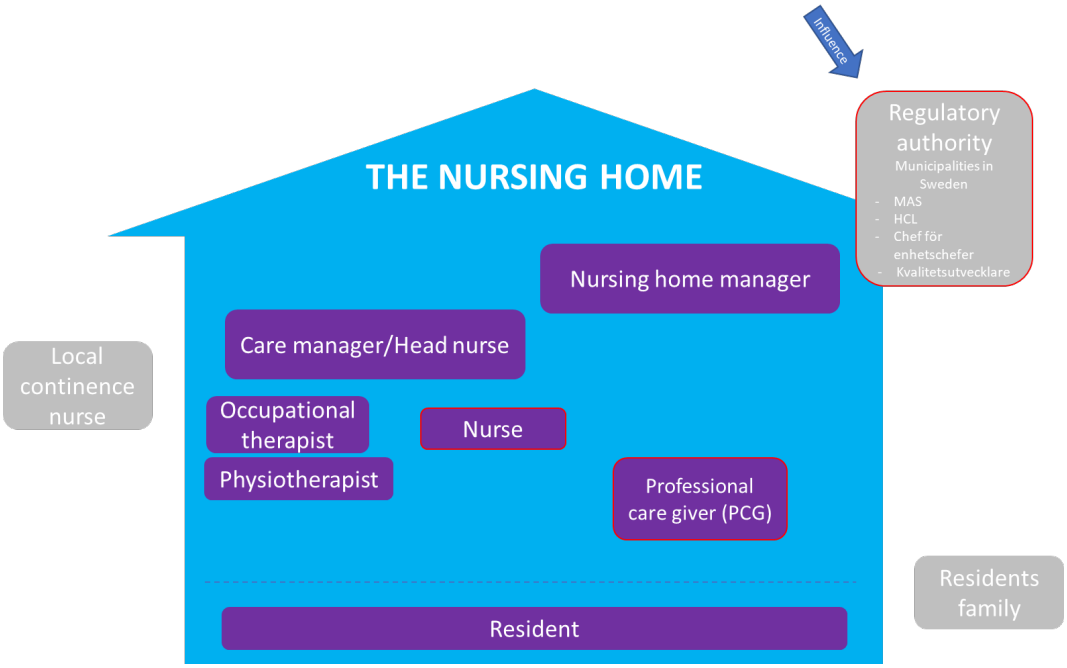


Figure 18: Initial stakeholder mapping based on interviews with customers and Essity personnel

In order to ensure a correct understanding of the stakeholders, a workshop (see chapter 3.6.1) was held with various people from Essity where everyone had to state the stakeholders they could identify. The results were evaluated and stakeholders that were deemed to be of less importance for TENA Identifi and TENA Change indicator were removed. The final result is presented in figure 19, and descriptions of the stakeholders' roles in relation to incontinence care is presented followingly.

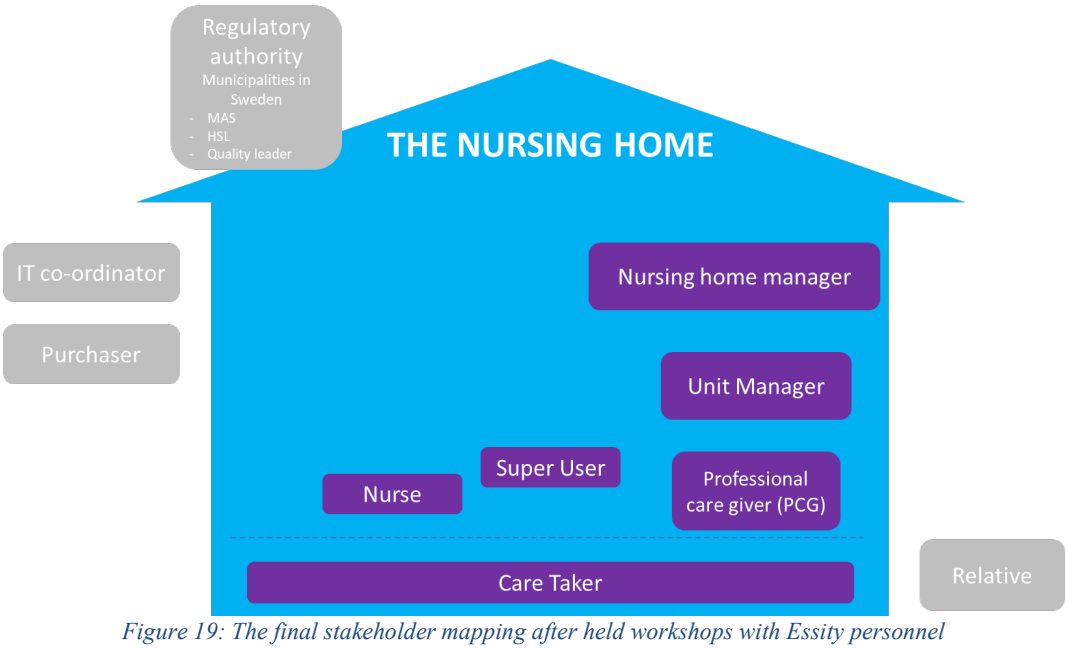


Figure 19: The final stakeholder mapping after held workshops with Essity personnel

- **Care taker / Resident:** The care taker or resident is an individual who is a residential at nursing homes, taking part in the care and assistance provided by the personnel. Nursing homes view the resident as their direct customer and view their needs as important.
- **Relatives:** Relatives to the residents living at Nursing Homes are not involved in the incontinence care at nursing homes but are interested in the quality of the incontinence

care. The relatives have a small influence on how nursing homes conduct incontinence care but are involved in the outline of their own daily routines.

- **Professional Care Giver:** The professional care giver is the one operating closest to the residents, working with daily operations and incontinence products. They help the residents with their daily incontinence-related issues and tasks. They are the people at the nursing homes with best knowledge regarding certain residents and have one or two residents where they are extra involved. For those they will set up schedules for the resident's day at the nursing home together with the resident and be in contact with the nurses regarding the resident's medical care.
- **Prescribing nurse:** The prescribing nurses are in charge of each resident's individual incontinence care. They start assessments and analyses them in order to create individual incontinence plans and being able to select the optimal incontinence products. The goal is for all residents to be assessed and receive personally adapted incontinence plans.
- **Super User:** The super-user is a new role which is needed in customers' organizations when implementing TENA Identifi or TENA Change Indicator and is most often a professional care giver or prescribing nurse given extra system knowledge. This role is supposed to work as a support function for nursing home staff, to whom they can turn to if they need assistance or have issues with TENA's web portal or usage. The super user is an enabler of the digital TENA products that ensures that the system is in use and can serve as a promoter.
- **Unit manager:** The unit manager is responsible for the daily operations and the operating personnel at the Nursing Home. Dependent on the size and amount of work, there can be one unit manager per department in a nursing home, or one unit manager managing several departments. The unit manager is responsible for the work carried out by the professional care givers and the quality of the care provided. The unit manager is economically responsible for the expenditure of the unit and overlooks operational costs.
- **Nursing Home Manager**: The Nursing Home manager is managing the unit managers and have responsibility over one or several nursing homes. They have little to none involvement in the incontinence care, except when it comes to welfare technology for basic nursing. The Nursing Home manager is involved when decisions which includes monetary aspects are made at the municipality, which affects the nursing homes.
- **Municipal stakeholders:** There are several different stakeholders at the municipality, and they differ between the different municipalities. Some of the stakeholders that are involved are the Medicinal Responsible Nurse (MAS), HSL-manager (responsible for the health and medical care act), Head of Nursing Home Managers, Quality Coordinators and Welfare Coordinators, and they each have different needs even though they all seek care quality and efficiency. Together they form the team that is responsible for buying TENA Identifi and TENA Change Indicator even though people within the nursing home organization can affect their decision.

4.1.2 Understanding the life of the customer through customer journey map

From interviews A-C with customer's employees, observations of their daily working routines and interviews 2-8 with Essity employees from mainly the sales department, three different illustrations of customer journey maps were created. These were all created for TENA Identifi since it had existed on the market the longest, compared to the newly released TENA Change Indicator. Understanding how the nursing homes experience this product gave a better understanding of how possible future solutions could be derived. The first representation in figure 20 shows the activities, touchpoints and stakeholders involved in the purchasing process

to better understand the process itself and related pain points and possibilities. Figure 21 illustrates the customer journey map created, consisting of pre-core, core and post-core activities affecting the customer as well as Essity. The customer journey maps were created to gain insights into how the solution is experienced by the customer, what activities are necessary beforehand and what aspects are important post-purchase. The third representation in figure 22 is a timeline of TENA Identifi, covering all steps from customers considering purchasing to the implementation and post-purchase support. It gives a visual representation of the product's life cycle and was built on the information presented in the previous customer journey maps. All three customer journey maps were approved by the sales manager for Sweden in order to validate that the reality had been understood correctly.

Purchasing

The purchasing customer journey map consists of three parts (see figure 20) were the input for these parts were interviews 7-8 with the sales manager and the brand manager of Sweden. During the first phase, namely "Pre-Purchase", the customers got in contact with Essity through mainly three ways. The first one is that one of the presented stakeholders in the customers organization working at the municipality taking purchasing decisions, contacts Essity to book a contractual meeting. The second one is Essity's sales personnel visiting nursing homes, and the third and final one is customers taking part of Essity's branding or visiting their websites. The purchase most often takes place on a municipal level, with a team of different stakeholders deciding on the contractual agreements with sales personnel and the key account manager from Essity. The action to begin contractual negotiations can come from the stakeholders in the municipality or from nursing home managers requesting these stakeholders to act on such negotiations. During the negotiations, the solution and all its related benefits and costs are presented, and the stakeholders' needs to decide if the product is desirable from different perspectives. The different stakeholders each have different needs, which are presented in chapter 4.1.4. After the decision to move forward with the product has been made, Essity describes what is required from the customers' side to make this a functioning product and provides a role description and definition of the new required roles, as well as informs what they will receive from Essity's side.

The next step, which is "During Purchase" is a short and simple process which consists of the agreed contract being created by the key account manager at Essity and sent to whomever at the municipality responsible for the budget, who signs and returns the contract.

During the last phase of this customer journey map, namely "Post-Purchase", the contract has been signed, the customers have received the products and access to the system and Essity starts their implementation phase. The implementation consists of four parts where the first one is a start-up meeting with sales personnel from Essity and the management team from the nursing home along with the intended super-user. The customer is given a walkthrough of the routines, systems and usage of TENA Identifi. The second part is a meeting with operational personnel called "Knowledge Boosting in the Organization", where the super user, prescribing nurse, professional care giver and incontinence administrator is taught how to use the system, how to choose the right product and how to perform and analyze assessments. The super-users are given extra attention and individual learnings of the system so that they in the future can be system experts which prescribing nurses can turn to if they need system support. The third step of the implementation is an analysis session, where sales personnel returns to the customer two weeks after the second meeting, to help and educate the personnel regarding how to conduct the assessment, interpret the assessment report and how to turn this information into individual incontinence plans. The fourth and final step of the implementation is a follow-up meeting with

the customer, evaluating how the past months since the implementation has gone and deciding if further training is needed. The customers are furthermore always given a support function via mail or phone, as well as their usual regular contact with the sales personnel. The complete purchasing customer journey map, including all customer activities, touchpoints and stakeholders is presented in figure 20.

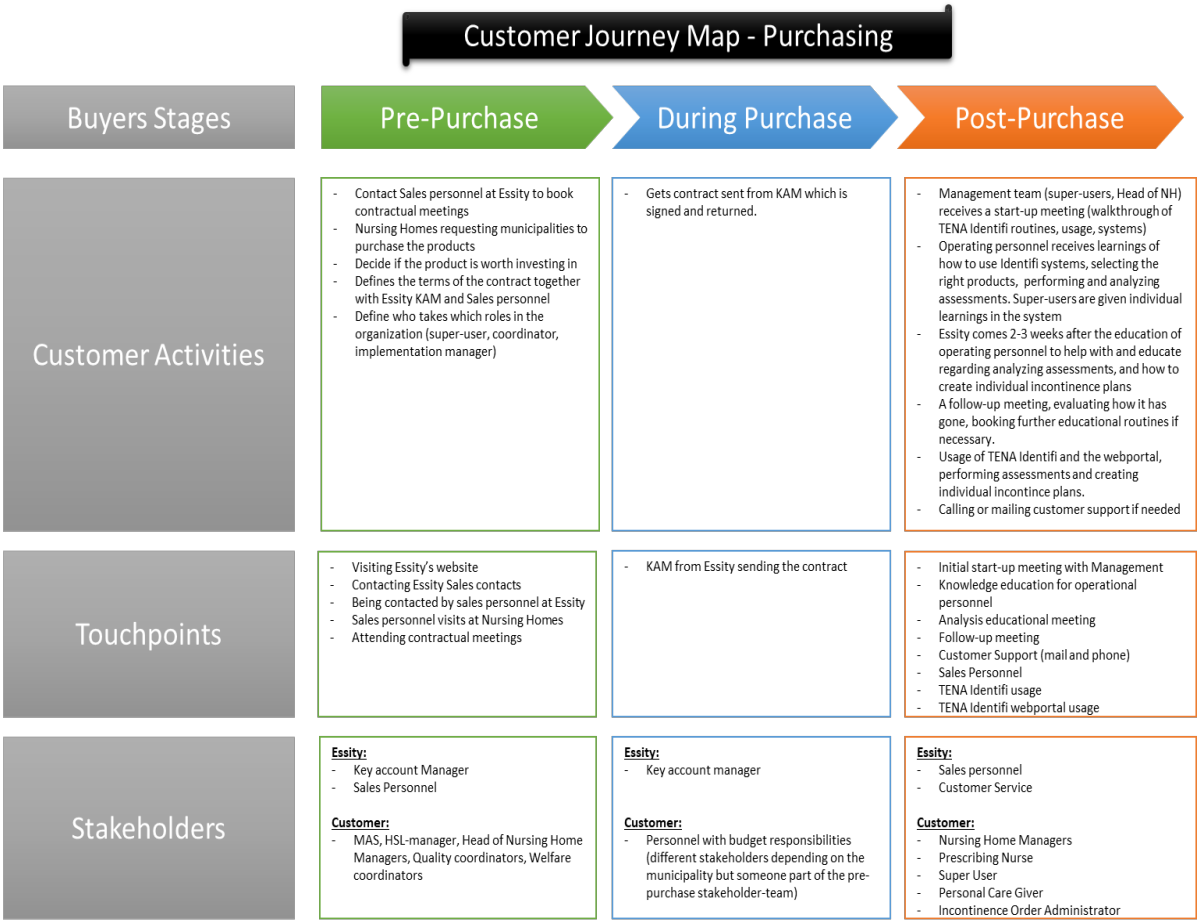


Figure 20: Illustration of the Customer Journey Map for purchasing, divided into pre-, during and post-purchase

Service Encounter

The customer journey map illustrating service encounters, see figure 21, focus on what services the customer is given by Essity, before, during and after the core offered service. The core service offered by Essity is access to the assessment tool, which is TENA Identifi, and a web portal in which assessments can be started and reports based on the assessment is created which can be used to create individually adapted incontinence plans. Besides the product and the system, part of Essity's core offering is also the implementation phase previously described where both management and operational personnel are being educated regarding the product and the system but also regarding incontinence care and product selection in general. The prescribing nurses of the nursing homes are helped with creating and analyzing assessments during the third phase of the implementation when Essity visits the customers and helps them with their own real-case scenarios, thus educating them. They are also given a follow-up meeting where the customers have the ability to book another implementation phase to renew their education. Finally, the customers are given access to customer support via mail or phone.

Prior to the core service encounter, Essity provides the customers with a role description and definition of the new roles required in the customers' organization so that they can more easily

fill these positions with appropriate personnel. Essity is however not part of the actual selection, they just provide material for the customers to be able to choose the most appropriate people. Customers are also given information regarding TENA's digital solutions, such as TENA Identifi, when the sales personnel are visiting nursing homes.

The post-core service encounters are the offered customer support, as well as constant access to the web portal in which assessments can be made and analyzed. Finally, the customer is always offered the option of receiving continuous implementation of the training phases if needed, perhaps due to high turnovers.

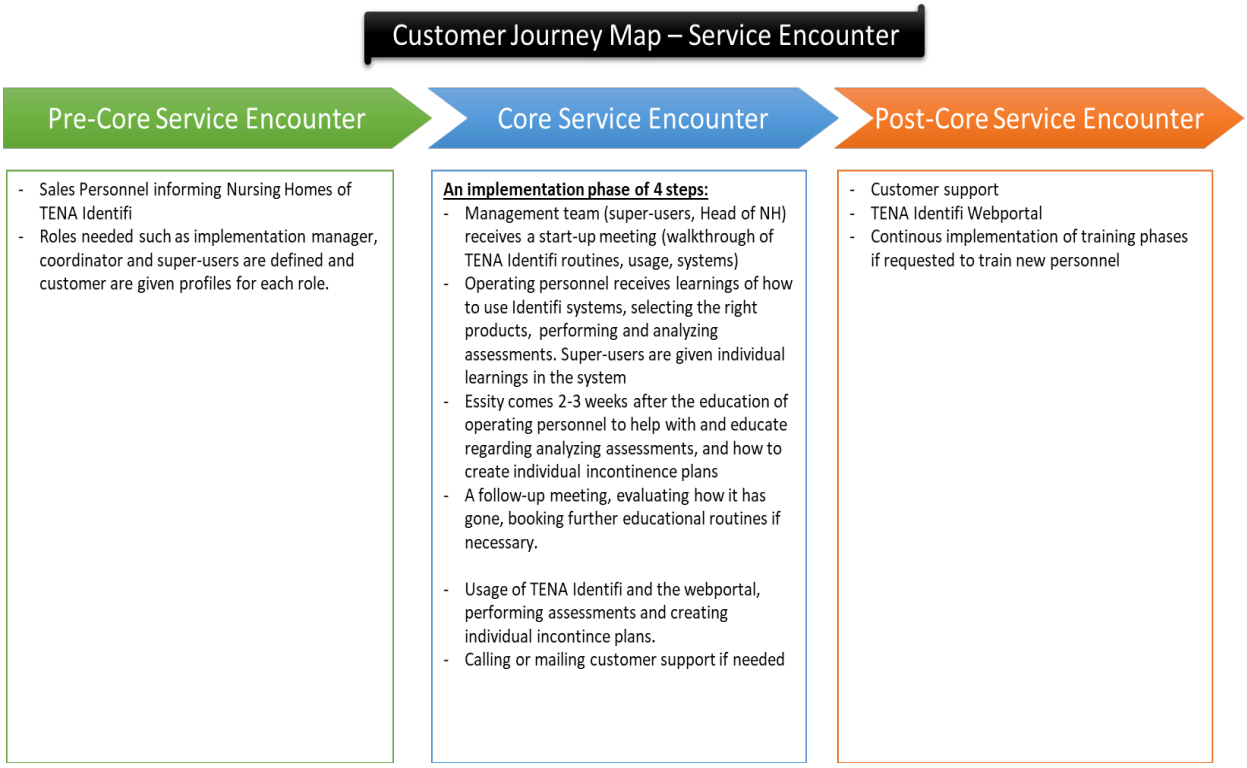


Figure 21: Illustration of the Customer Journey Map for purchasing, divided into Core, Pre-core and Post-core service encounters

TENA Identifi life cycle

Mapping the customer's journey from purchase to post-purchase support gives a visual overview of how the customers interact with Essity and TENA Identifi (see appendix 7). As explained previously, there are mainly three ways in which an interest to start negotiations begin, either by municipalities contacting Essity, Essity contacting them, or by Nursing Homes prompting the municipalities to begin negotiations. The municipalities then commence the negotiations and finally decides to sign the contract and begin using TENA Identifi, after which they receive the products and the implementation provided by Essity. The actual usage part of the solution is shown as a repeated loop, where the first step is to measure and weigh the resident to be able to choose the correct TENA Identifi model. The resident then wears the chosen model for 72 hours under which an assessment is begun at TENA's web portal. A report is created from the 72-hour assessment which is then used to select the optimal protection for the resident as well as to create an individual incontinence plan, consisting of product selection and scheduled toilet assistance. The prescribing nurse takes the input given from using TENA Identifi and creates a new incontinence plan which is communicated to and implemented by the professional care givers' daily routines. Finally, the customer has customer support through phone and mail and the opportunity to schedule further educational appointments.

4.1.3 Valuable activities to the customer

A document was received from the Global Brand Communication Manager, during interview 5 in appendix 1, describing what key activities are most valuable to the customers in term of incontinence care and more precisely related to conducting assessments. The document is used as training material for new sales personnel and describes how Essity currently views what customer activities TENA products handle and which activities are solved with other products or services. A representation of the document can be seen in table 1 where key activities are presented together with a mapping on how TENA Identifi and other tools addresses the different needs.

Key activities required to secure fully recognized customer value of the TENA offering	Key activities supported by		
	TENA Identifi	"Other tools"	F2F training & support
Decide resident to assess		x	x
Decide product type		x	x
Decide product size		x	x
Decide product abs. level	x	x	x
Decide pad changing routines	x	x	x
Decide toileting routines	x	x	x
Communicate and implement decisions		x	x
Deliver on decisions in practice			(x)
Follow-up results of decisions		x	x

Table 1: Document showing the key activities for TENA Identifi and how they are being fulfilled by Identifi, Other tools and F2F training & Support

A resident assessment always begins with a decision that a certain resident is in need of an assessment. The decision is often subjective and the process of selecting who are in need of an assessment is assisted by Essity through different tools and direct training of customer employees. Already when beginning an assessment (but most importantly after its completion) several decisions regarding product type, product size, absorption level, pad changing routines and toilet routines needs to be made. The product type choice is physically what type of TENA incontinence product that should be used, which is either products that are wrapped around the waist or smaller pants-like products that are worn together with a set of underpants to keep it in place. The choice is affected by several parameters such as mobility of the resident, whether he or she suffers from dementia etc. and Essity provides different tools and education for the customers' personnel to make the correct choices. The same applies for deciding product size where measuring devices are included in the sales package for customers of Essity's incontinence products.

When it comes to suitable absorption levels of worn incontinence products, pad changing routines and toileting routines, TENA Identifi is used to address those issues. This is done together with other tools provided by Essity to help with decisions and education for the customers' personnel in how assessment reports created by using TENA Identifi should be interpreted. After the optimal product has been chosen and routines has been decided, the following step is to communicate these changes to affected staff at the customers' location. For this step, Essity provides bedside cards to use at the resident's apartment in the nursing home. They visualize to staff whether the resident is part of an ongoing assessment, what incontinence product, absorption level and size should be used, when planned changes of incontinence

products should be conducted and when the resident should be taken to the toilet. However, even though decisions have been made regarding these different incontinence related aspects, and have been communicated together with new work procedures, it is not always followed in practice. The people working most closely to the residents do not always agree with the incontinence plans and can therefore deviate from them, making all invested time and money in conducting an assessment wasted. Today, this is an unsolved need but one which Essity hopes to address by supporting customers in how to implement decisions into daily routines. In order to keep the decisions relevant and correct in the long term, incontinence plans need to be followed up, which Essity helps with by providing tools and education regarding how to do this in an organized manner.

To conclude, an assessment and the creation of an incontinence care plan is made up of several activities. TENA Identifi is provided by Essity as an assessment tool which makes conducting assessment more easily. Today, TENA Identifi is not addressing all activities. It is mainly assisting in decisions regarding product choice, product changing routines and toileting routines. The other activities are assisted through other tools provided by Essity and education of customers' personnel, which results in many required consulting hours by Essity's sales staff. Consultation hours and additional tools to TENA Identifi isn't charged for separately but is instead included in the monthly fee when buying the solution.

4.1.4 Different customer needs for different stakeholders

A workshop (see chapter 3.6.1, workshop 1) was conducted with personnel from different functions with the aim of listing all known customer needs regarding incontinence care, related to the use of TENA Identifi and TENA Change Indicator for each identified stakeholder. The needs were grouped together and broader headlines for each group were created. In figure 22 and 23 all stakeholders together with their underlying headlines is shown, as well as a number which states the priority or urgency of that specific need. The scale of the priority numbers ranges from 1, which is the lowest priority, to 5 which indicates the most urgent needs. The stakeholders were grouped into two different segments based on how much involvement they had with the two products. The first group is made up of residents, relatives, care givers, super users, prescribing nurses and unit managers and are characterized by stakeholders in contact with the products in the daily operations. The other group is made up of nursing home managers, purchasers, it-coordinators and regulatory authorities (MAS, HSL-manager, Head of Nursing Home Managers and Quality coordinator) which are roles involved in the purchase and implementation of the products.

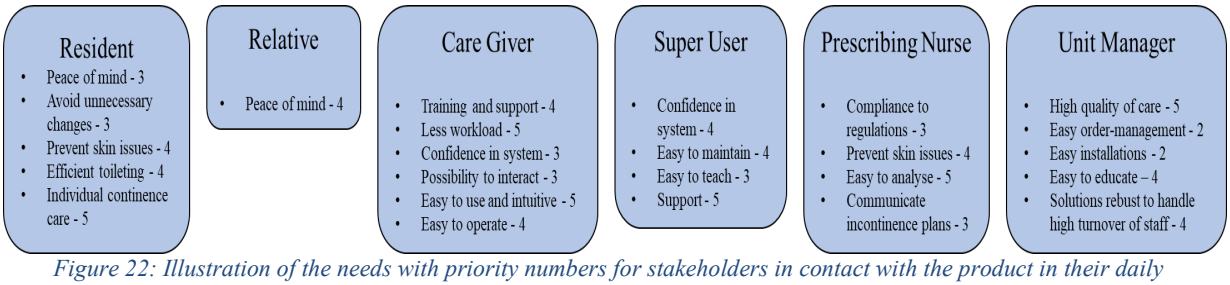


Figure 22: Illustration of the needs with priority numbers for stakeholders in contact with the product in their daily operations

Residents and Relatives

The residents are the main users of the offered incontinence and assessment products, and their overall needs is to be able to maintain an ordinary life situation while suffering from various severities of incontinence. The residents want peace of mind and not having to pay too much

attention to their incontinence, however they still want continence care adapted to their individual need. Even though they are using incontinence products they want their routines to be as normal as possible but then receive toileting and change assistance when needed. They do not want to be disturbed by the care givers and having them check their incontinence protection more than necessary, mainly during night time where checks disturb their sleep and affects their quality of life. Problems with incontinence care can lead to skin issues due to humidity in the products for a longer period of time which causes skin irritation, which is something they want reduced and preferably eliminated. Relatives to the residents are minor stakeholders in the incontinence care, but they share one important need with the resident which is peace of mind. In this case, peace of mind refers to being certain of the resident receiving good incontinence care and living in dignity.

Professional Care Giver
The professional care giver is the main user of TENA Change Indicator and TENA Identifi and has different needs connected to the usage of the products. In order to fully operate the products, education and training in both the software and hardware is needed for the professional care givers who use them in their daily work. When operating the system, they must be able to fully trust its functionality and that the data collected is valid, otherwise it will lose its purpose and when problems or questions arise they have greater need for support. They need a system which is easy to understand and operate since the professional care givers have no technical experience and their main focus is to provide care for the residents. The professional care giver has a crowded schedule of activities during the day and needs lower workload to free time to give more attention to the residents.

Prescribing Nurse
The nurse follows regulations for how appropriate care should be ensured for each individual resident, and assistance in following those set regulations is an identified need. To ensure that the resident receive appropriate care and maintains the best possible health, the prescribing nurses needs tools to ensure that skin issues related to the resident's incontinence is prevented. The prescribing nurses generally has no major technical skills and needs a system which requires no such thing. Any data related to the resident's incontinence needs to be easy to analyze to be able to utilize it in the assessment and creation of individual care plans. Such care plans and conclusions from the assessment must be easy to communicate to the professional care givers to make the care plans implemented.

Super User
The super user is a role assigned to either a professional care giver or a prescribing nurse in order for them to become the local expert in TENA's incontinence products and related systems, giving them slightly different needs. The super user needs a system that is easy to maintain in terms of updating resident data, cleaning of the physical data and changing batteries etc. The super user is the local expert and needs good training material and Essity support channels to educate other personnel in the nursing home and to be able to solve local issues.

Unit Manager
The unit manager is responsible for a group of professional care givers and the care they provide in their daily work. Therefore, the care manager has a need for an increase in quality of care provided by their group and a need for material to assist in educating staff or other ways to handle issues with high staff turnover. The unit manager needs products that are easy to order and an easy overview of stock levels to make daily operations easier to manage.

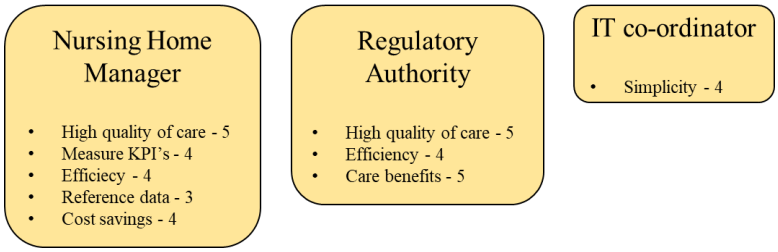


Figure 23: Illustration of the needs with priority numbers for stakeholders involved in the purchase and implementation of the products

Nursing Home Manager
The nursing home manager shares the unit manager's need for an increased quality of care but also receives benefits in reviewing the performance of the nursing home. From this, measurability of relevant KPI's and an increased efficiency have been identified as needs. To ensure that the nursing home is performing as it should, relevant reference data from other nursing homes to compare to their own performance is an additional identified need. The nursing home manager has the economical responsibility of the nursing home and values cost savings in any form, where staff-related costs are the highest cost burdens today.

Regulatory Authority and IT coordinator
The regulatory authority is made up of several different roles but with closely related needs. When it comes to incontinence care an increase in quality is always strived for in combination with an increased efficiency in care. The regulator authority makes the purchasing decision for these products and has the economical responsibility for the municipality, hence cost benefits from new investments is crucial. To ensure that the main needs can be fulfilled, new solutions must be robust to manage high staff turnover. The IT coordinator is involved in IT investments within the municipality and demands new IT solutions to be simple to install and implement and without it interfering with existing systems.

4.1.5 Business Goal
Even though the customer consists of different staff and roles within the customer organization, the organizational needs are important to take in account as well. From interviews C and D with customers in appendix 2, the following organizational needs were identified:

Lower staff turnover of care givers within the organization. High staff turnovers increase the workload for existing personnel and requires resources in training new staff. Nursing homes tries to reduce the staff turnover by improving the workplace by for example making sure that the personnel are given time to care for the residents, by reducing other unnecessary tasks. Nursing homes can show their innovativeness as an employer by adapting the LIKA-rate, which is a national measurement tool, indicating the digital maturity of the organization. LIKA is a Swedish acronym for top management, infrastructure, knowledge and responsibility

People centric care is considered to be the future in elderly care and is a move from the most used task-oriented care. The task-oriented care focused on staff efficiency and achieved an increased efficiency by viewing the residents as a homogenous group without their individual preferences. This is what the nursing homes wants to get rid of and many homes have already made the transition. People centric care is instead focusing on what needs each individual resident have, and how these can be fulfilled. Efficiency will always be an important aspect for managers, but it is overlooked if it disrupts the people centric care. It is difficult to assure quality

in the care provided, since many work tasks are not documented or is conducted in informal ways. Sveriges Kommuner och Landsting (SKL) is a Swedish governmental authority which sets demands on nursing homes, such as the aim to conduct assessments on 100 percent of all residents at nursing homes. Today, that number is only 50 percent, due to the time-consuming activity that conducting an assessment currently is. Prior to TENA Identifi, the only way of conducting assessments was to either guess, or to weigh the incontinence products during certain hours to assess the pattern and needed toileting times. This is an unwanted process which is time-consuming and unpleasant for both the workers and the residents.

4.2 Products

This chapter seeks to explore how the development of the previous solutions TENA Identifi and TENA Change Indicator was conducted. Connections between these solutions and the identified customer needs was mapped and future possible product concepts was identified and evaluated.

4.2.1 The development of TENA Identifi and TENA Change Indicator

The historical development of the solutions TENA Identifi and TENA Change Indicator is derived from interviews 10 and 11 in appendix 1 with project manager for both product technologies.

TENA Identifi started out as an internal research project, with the aim of understanding the scattering pattern in their incontinence products through a digital product. A competitor called SimaVita launched an assessment product in Australia, which prompted the urge to either buy or partner up with SimaVita or make a business out of the internal research project. It was decided that partnering up with or buying the competitor would cost too much, so the internal research project was given more resources, which became the beginning of the Identifi project. TENA knew that there was a need for an assessment product on the market since scientific studies showed that many countries have regulations which require nursing homes to conduct incontinence assessments on all new residents. There were only two ways of doing this assessment which was either to weigh the incontinence product manually after it had been used, or by simply guessing. There was a need for an automated system since the current way of doing the assessments was a tedious and unappreciated part of the job. The automated system is less precise than the manual way of doing it, but the difference in precision is too low to have an impact on the outcome of the assessment.

TENA Identifi was turned from a research project into a solution, and due to missing competences within the company regarding electronics and similar areas, consultancy firms were used to fill that competence gap. The first product was far from commercially adapted and was not scalable due to the product being basically built and assembled by hand. The electrodes measuring the amount of fluid was integrated into the incontinence product itself which was expensive and brought with large amounts of electronic waste, since the whole product had to be disposed of after usage. The sales were highly consultative to teach and help implement the new routines needed for using TENA Identifi at nursing homes.

The vision was always to create a continuous assessment product, but Identifi was too expensive to produce and sell, which is why it became limited to a 72 hours assessment product, instead of being used regularly. It is this gap between being used for only 72 hours to being used continuously which TENA Change Indicator was trying to fill. Each assessment with TENA Identifi costs a few thousand SEK, which is why it is economically unviable for nursing homes to use Identifi as a continuous product. The technology and know-how for creating a continuous

assessment product was however unknown, until they discovered a company in Canada called Sensassure, who developed a solution for a continuous assessment product. They sought partnerships and partnered up with Essity to together create and sell this solution. The partnership allowed Essity to reach the market with a continuous assessment product which is not built into the incontinence products themselves, and are easily manufactured, not requiring Essity to re-build their machine parks. The product technology bought of Sensassure were a prototype that could be used by Essity to capture insights and do testing with potential customers. In order to commercialize the product, Essity had to re-do the engineering and designing due to the prototype designed by Sensassure being too low in quality and too high in costs. This prompted major projects within Essity to be carried out with similar personnel that were part of the development of TENA Identifi, re-using internal knowledge regarding processes and lessons learnt from the TENA Identifi-project. The product itself, called TENA Change Indicator, was completely new, meaning that hardware and software had to be designed and engineered from scratch. However, they re-used people from the Identifi project who had knowledge regarding the market, processes for developing new products, and knowledge regarding how to construct algorithms based on the output of the sensors.

4.2.2 Current way of meeting customer needs

There exist a few different solutions for how to measure urine amounts in incontinence products but only physical product concepts existing within TENA will be evaluated thoroughly. The product concepts used are TENA Identifi and TENA Change Indicator which are presented in chapter 1.2.1 and 1.2.2. Besides these, inductive ink has been shown in studies by Ding et al. (2016) to measure the conductivity and can be printed by using many different nanomaterials. The field of printed electronics has advantages of mass production, low costs and it being environmentally friendly. The ink is printed directly on to the incontinence product and has a logger attached somewhere on the product, receiving the readings generated from the conductive ink. To manufacture such a solution, the entire machine park for incontinence products will have to be rebuilt which is a huge investment and is why only the existing alternatives in the TENA digital product portfolio was be investigated.

To evaluate the existing TENA product concepts on the market and understand how the identified customer needs were met by them, a mapping of this was conducted together with product owner for TENA Change Indicator (see chapter 3.6.2). The customer needs for each stakeholder found in workshop 1 (presented in chapter 4.1.4) was checked and evaluated regarding how well they were met by TENA Identifi, TENA Change Indicator, other products or other services. The results for each stakeholder were as follows:

Residents

The needs related to having peace of mind, avoiding unnecessary changes, preventing skin issues and efficient toileting were all met with either TENA Identifi or Change Indication. However, the identified need for less visible protection was partly met with both solutions since TENA Identifi in the long run makes it possible to get as smaller incontinence protection, even though the product itself is large. TENA change indicator is smaller than TENA Identifi but whether it is small enough to satisfy the resident has not yet been fully evaluated. The needs related to the residents taking part in their own incontinence plan and being independent in their incontinence care were currently not met, meaning there's a potential improvement area for the combined solution to realize.

Caregiver
When implementing both TENA Identifi and TENA Change Indicator, the caregiver receives education as an included service in a way that satisfies the customer need. TENA Change Indicator has an impact on daily routines, but is incorporated into them. TENA Change Indicator can add time to the routines for changing incontinence products for residents due to them becoming more complex, even though time is saved due to fewer unnecessary checks. Even though TENA Change Indicator satisfies needs related to daily incontinence care, such as toilet visits, preventing leakages etc., it increases the risk of the personnel feeling monitored by management due to the constant measuring of performance. There is still room for improvement when it comes to how easy the products are to use in practice, and the offered support functionality. Finally, the need of easily accessing, affecting and updating the care plans is currently not being met by any of the products offered.

Relatives
The relatives need to feel peace of mind and be ensured that the resident receives a high-quality care, is partly fulfilled with both products since they improve the quality of care, but there exist room for improvement when it comes to proving this to the relatives.

Prescribing Nurse
The needs of the prescribing nurse are very well met by TENA Identifi in terms of preventing skin issues, being easy to use, easy to choose correct product, and is mostly well met by TENA Change Indicator as well. Additional services provided gives educational satisfaction, but TENA Identifi is currently being used irregularly, which makes provided training harder to remember when it is not exercised regularly. What is lacking today is easier ways of communicating the care plans in a way that ensures that they are being followed by the caregivers. The system today is only partly integrated into other systems which is something that needs to be improved so that it is fully integrated to fully fulfil that customer need.

Super user
Some needs of the super user are essential to be satisfied before releasing a product, such as error codes if the gateway or the transmitter is not working properly or if batteries need changing. Other maintenance issues such as knowing when a TENA change indicator strip needs replacement is not developed today. Needs related to teaching new coworkers and Essity's support function is only partly met and needs future improvements. The user-friendliness of the system needs to be improved and the need for it to be integrated in other systems is as mentioned before not fulfilled.

Unit Manager
The unit manager wants the status of the incontinence care to be increased, as well as to increase the quality assurance of the nursing home in order to increase its reputation. Both TENA Identifi and TENA Change Indicator fulfill these needs but increasing the quality assurance and status of the incontinence care are goals to continuously strive for, were improvements will always have an impact. The unit manager further needs metrics on performance which isn't provided today with TENA Identifi, but which TENA Change Indicator aims to fulfill with the constant measurement of data. The holders and gateways that is included with both TENA Identifi and TENA Change Indicator needs to be easy to install and there needs to exist good training material, which is currently under development. Finally, there exists a need to more easily order and follow stock levels, which no product is currently fulfilling.

Nursing Home Manager
The nursing home manager wants a simple and intuitive time-saving solution, which is economically scalable, that doesn't impact existing routines or adds additional costs or new IT systems. Both TENA Identifi and TENA Change Indicator are scalable solutions that are simple and results in less care-related costs. TENA Change Indicator further has the benefit of it leading to time-savings. They do however require changes in daily routines since it is digitalized products implemented to a workplace which hasn't been digitalized yet, and new IT-systems that needs to be implemented. The nursing home manager finally wants to be able to measure KPI's, as the unit manager, and receive reference data of similar nursing homes.

It-coordinator
The IT-coordinator wants the systems to be cheap to install and integrateable to existing systems without affecting them negatively. Both TENA Identifi and Change Indicator have low installation costs, fulfilling that need. However, the existing systems for TENA Identifi and Change Indicator is barely able to integrate, apart from a system currently used by many nursing homes called "Appva" which TENA Identifi provides an integrated option to. Developed systems in the future needs to be able to integrate into existing ones, without affecting them negatively.

Purchaser
The only identified need for the purchaser is lower costs, which isn't a need that can be met, only reached for, since it is hard to define exactly what cost is classified as "low costs". It is however one of the biggest needs to meet in order to be able to sell the combined solution, since costs is a critical factor in contract negotiations.

MAS, HSL, Quality Coordinator
The regulatory authorities each have individual needs, but together their needs are a higher care quality, care efficiency and reaching care benefits. These needs are all being met by TENA Identifi and Change Indicator, although not to a full extent since these goals aren't reachable, they are something that it always strived for, meaning better quality and even more efficient care. Improvements affecting these needs will be highly impactful in contract negotiations. There is however still a need for a people-independent solution, to combat the effects of high employee turnovers and new employees not knowing how to operate the system. This is something the Change Indicator aims to fulfill with a simple and intuitive app and usage functionality which anyone will be able to understand, no matter previous experiences with the system.

4.3 Services
From the discussions held at workshop 3, good insights in product technologies, customer preferences and issues where lifted. These were considered by Essity employees to be of importance to have in mind when shaping a future solution based on TENA Identifi and TENA Change Indicator. This chapter presents the insights from workshop 2 (see chapter 3.6.1.2) and an initial service blueprint for a future solution with highlights on important areas.

4.3.1 Important insights
The insights are presented due to what area of interest, discussed in workshop 2, that they correspond to. The insights can range from service aspects to offer, implementation challenges, etc.

Less noticeable product
An identified risk for the existing products were that the sensors and transmitter were seen by the residents when worn. This could cause them to refuse to use the product, due to them not wanting to show that they are having incontinence issues, which lowers the value of the product to the buyer. This issue was seen for TENA Identifi, but the hardware used in TENA Change Indicator is much smaller and less noticeable for the wearer due to the smaller size of the transmitter, and hence might solve this issue. In the long run, this could be solved by changing technologies, removing the need for the strip by having conductive ink printed on the incontinence products directly or having the hardware installed in a pair of reusable pants which is worn over the product. Other ways of dealing with this is through small improvements of the technologies used already to make the hardware smaller in terms of strip and transmitter or by changing the placement of the transmitter which is seen to be the most noticeable part. By moving the transmitter communicating with the TENA gateway to a wristband, the transmitter connected with the sensors could be much smaller. Important aspects are that the shape or design by any technologies affect how noticeable the product is.

Pairing strip with the correct incontinence product
When TENA Change Indicator is used as intended, the strip and the logger will be re-used when a change of incontinence product takes place. What has been seen is that there could be an issue with a care giver using another product than intended for that specific resident. This could then cause the measurement from the sensor strip to be faulty, sending out notifications that change is needed at the wrong time. To handle this, the strip or logger could sense what product it is attached to through markings or a tag in the product or similar. If a mismatch is made, an alarm could be sent through either sound or light. Information about which product to use could be given to the caregiver in a similar way by letting them scan a QR code on the product with their phone and then receiving the information. Another way is to use a visual pairing system with different coloring on product and strip to make it more obvious to see if there is a mismatch. The best possible solutions would be to create a system which is robust to human errors, making the sensors accurate no matter the product attached to.

Make residents be a part of their own incontinence planning
Today, there is a movement seen at the nursing homes where the residents are getting more involved in the planning of their own care. The care givers do the planning of the entire stay at the nursing home together with the resident. This is an aspect that a future product must be able to handle since the residents might not be willing to use products without their own approval. One way to achieve this is to make the sensors available and compatible with any product to ensure that the resident can chose freely and not be forced to any specific products. Channels could be developed where the residents, relatives and nursing home staff can affect and comment the care plan with specific requests from the resident. Such channels could also have the functionality of sending out different surveys to the residents, making sure that their needs are collected, and inform the nurses of these. Giving the residents or relatives of the residents an increased sense of control could be beneficial and could be achieved by making performance data regarding the received incontinence care accessible to increase transparency.

Make residents able to be more independent in their own incontinence care
Not all changes of incontinence products are done by the assistance of care givers which makes it important for the residents to be able to make the change themselves to reach a larger market. The sensors must be easy to remove and attach by the wearer which is often easier the more intuitive the product is. This speaks for a more pants-like product with integrated sensors, which would require changes in the technology. The residents could be provided with material on

product usage and how to change the product themselves via accessible video material in their apartments. Another way to make residents more independent is by making it possible for them to directly make comments on aspects that are dissatisfying. For example, if there have been any issues in terms of rashes or uncomfortable fitting or long time in a wet product, they could be able to comment on these through a system so that the nursing staff is notified.

Handling the everchanging incontinence need of residents
The incontinence need of the resident can change quite rapidly, leaving a previously made assessment result outdated. Different medical issues or changes in medication can also affect the incontinence pattern which is information that can be useful in the care planning of the resident. This information can be collected by the sensors and deviations can be registered. Functions or algorithms can be developed which compares the collected data with the care plan and identifies deviations and notifies staff when these occur. Such functions would allow for the construction of a live incontinence plan, where the data gathered automatically updates the care plan to fit the current need of the residents. These approaches would change the way of working at the nursing home, but just by having continuous measurement of urine pattern makes it possible for nurses to make follow up assessments more easily.

Offering customer support to nursing homes
Introducing digital solutions such as TENA Identifi and similar have shown to be much more complicated for the users and therefore a higher degree of customer support is needed. With TENA Identifi, a problem has been seen with the rare usage of the product, causing the user in between times, to forget how to operate the system. A product which is used on daily basis is easier for the user since the procedure is constantly repeated. Thorough education of nursing home staff is important to make sure they have the ability to handle daily operations.

The customer support for a future solution should follow the same basic principles and processes shared for all similar solutions to draw synergy effects. The super-users should be the people in the customers' organizations which can resolve most problems. The super user is then the single point of contact who reaches out directly to Essity support if issues can't be solved. An open webpage with information on the product and product usage during changes or assessment should be accessible by all users to lower the workload for the super-user, and informational videos should be easily accessed. The super-user shall, when contacted, have access to troubleshooting material, Q&A, and an accessible community of super-users to help each other. Such a network should be moderated by Essity support staff. Having super-users able to openly publish their experienced issues makes it possible for other super users who have resolved similar issues to assist by offering support. For urgent matters, direct contact with Essity support staff can take place through both phone and chat. For TENA Change Indicator, a new role at Essity is created which serves as a guide for the customer in their implementation, the Product Specialist (PS). The PS have the responsibility to make sure the customer reaches the goals set during the implementation.

Integrating new digital product into existing nursing home IT-systems
Introducing new IT systems in the nursing homes needs to work together with the existing systems in a good way. Today, some nursing homes work with digital scheduling systems where the daily schedule of residents in terms of activities or medicines can be seen on dashboards in their rooms. Then there are great benefits if the toileting schedule, created by the digital products of TENA or notifications that change is required, can be seen in the overall working schedules. Also, such things as entering information that changes has been done and comments on issues should take place the same way. This can be seen as a demand from Essity

on the nursing homes that they have some sort of dashboards available that can run the Essity software and also that the care givers carry around smart phones that can run the app sending out notifications when changes are needed.

In addition to this, implementing such a system put demand on the nursing home investing resources in creating new routines for their daily work. This is both resources in terms of time for staff to get used to the new changing routines, and resources from the staff in terms of engagement. Changing ways of working requires engagement from staff or else the new routines will not be used. To facilitate this, it is important that the daily staff understands and experiences the benefits from using the new solution.

Metrics used at nursing homes to evaluate performance
When Essity collects data regarding the resident's incontinence and the care performance of the nursing homes, new ways of offering value emerges. From the data, Essity can assist the nursing homes in improving their quality of care. From this opportunity a list of information that could be of interest for nursing homes and that give insights regarding the overall quality of care was created:

- Workload on staff
- Skin status of residents
- Total quantity of incontinence product usage
- Costs
- Staff efficiency
- Number of leakages
- Deviation from care plan
- Nr of unprompted changes that were not deemed necessary by the TENA system
- Response time from notification sent to change registered
- Nr of assessed residents
- Nr of assessment reports per resident
- Time between assessment report revising
- Time spent in wet brief

4.3.2 Initial service blueprint
A service blueprint describing the future solution was created, based on the knowledge collected from interviews 1-14, interviews A-C, workshop 1 and 2 presented in chapter 3.6.1 and the session with a product owner presented in chapter 3.6.2. Customer actions and the physical evidence of service delivery are two of the components presented by Bitner et al. (2008) and the parts of the service blueprint with the closest connection to the offered service. The shortened service blueprint, only containing customer actions and physical evidence of service delivery, was enough to visualize what stakeholders that are involved from the customer's side and what Essity stakeholders were interacting with the customer (this will be presented further in chapter 4.4). The blueprint was into the following phases, which follows its life-cycle: awareness, consideration, delivery/set up, usage, changes/additional purchase and unsubscribe.

The blueprint was refined through many iterations with Essity staff (interviews 15-20 in appendix 1). The iterations led to substantial revising of the first version of the blueprint since new details were revealed which can be seen in figure 24 and 25. This caused the service blueprint to grow in size since each step or customer action was elaborated. To make the blueprint easier to understand and since many different roles within the customers' organization

are interacting with the solution, each stakeholder received different coloring scheme in the blueprint.

An example on how the iterations made the service blueprint more extended are the implementation process seen in figure 24. Interview 20 with the product specialist working with the trials for TENA Change Indicator as well as assisting customers in their implementation, gave valuable information since the product specialist had been identified as an important and re-occurring stakeholder. The flow, describing customer actions during the delivery of the solution, became much more extensive and ensured that necessary new processes for either the customers or Essity were created.

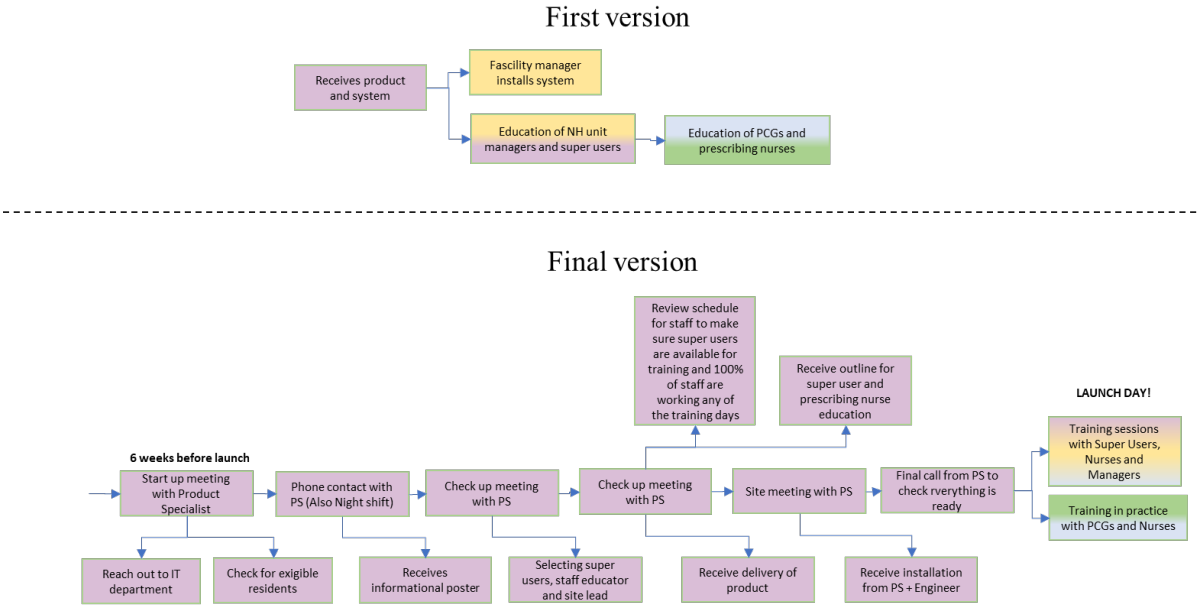
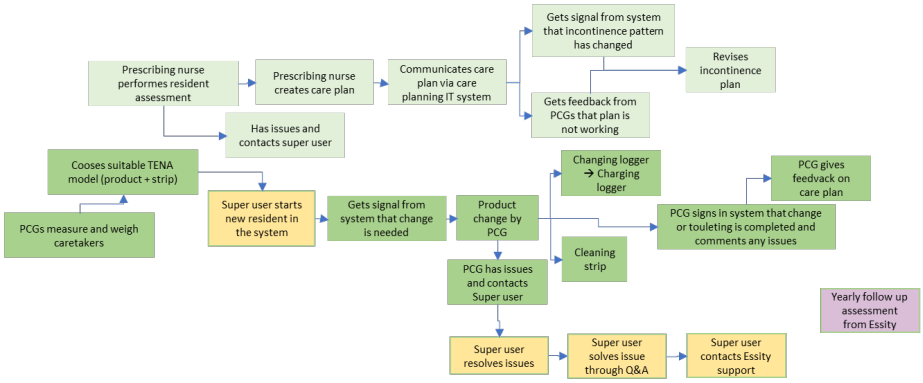


Figure 24: First and final version of the customer activities during delivery/set up

Another example on how follow up interviews and iterations on the service blueprint made it more extensive, is the actions taken by the customer during the usage of the product seen in figure 25. Interviews 15 and 17 with the product owner and the solution owners and interview C with a nursing home unit manager, gave better understandings regarding customer actions which were added to the service blueprint. In interview 15 and 17 the first version of the service blueprint was shown to the participants to collect comments and errors and acted as input for the final version of the service blueprint, which through iterations became more extensive and complex.

First version



Final version

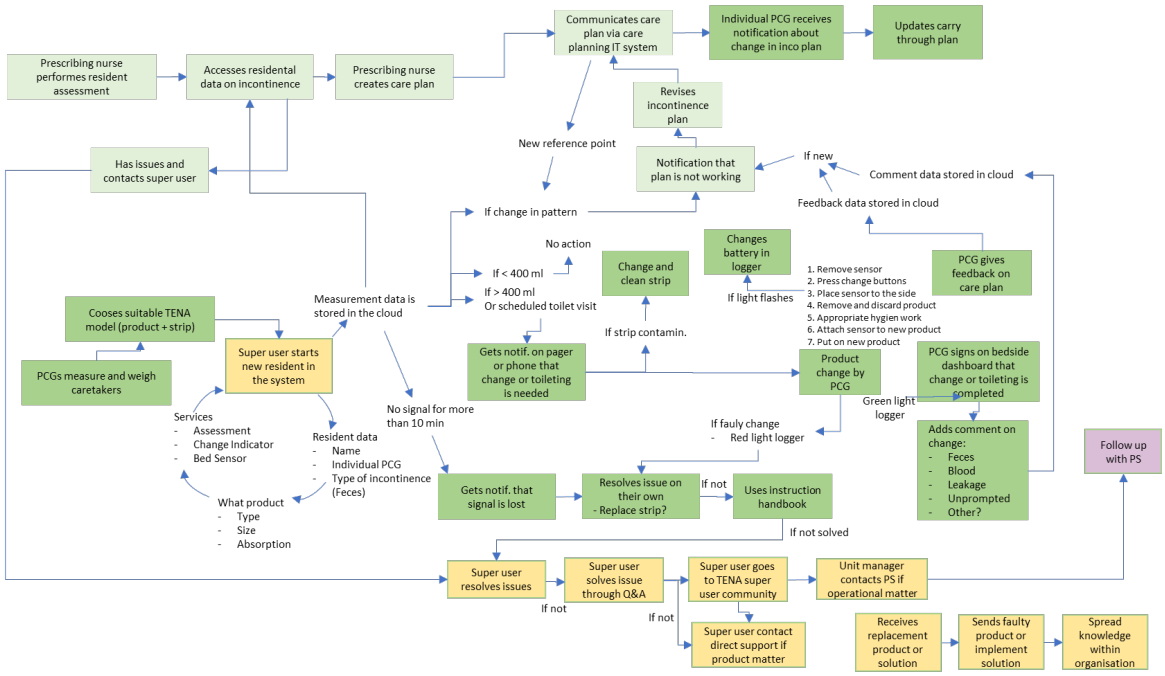


Figure 25: First and final version of the customer activities during usage

4.4 Interaction

The interactions taking place between the customers and various front-end processes visible to the customers is one of the five components of a service blueprint presented by Bitner et al. (2008). Front-end activities relate to customer actions identified in chapter 4.3.2 hence why they are identified and defined after all customer actions has been identified. Interactions take place throughout the entire life cycle of the solution and each Essity stakeholder involved in such front-end processes were interviewed with the purpose to find the best ways of interacting with the customer, as well as understanding what current processes exist and why.

Interview 16 with the Brand Manager of Sweden gave a more comprehensive view on how information reaches the customers through different channels. The initial view was that customers are mainly informed through direct customer visits and product demonstrations, but it turned out that this initial view was too narrow. Instead, general product information is

communicated through the TENA webpage, industry events and the TENA Facebook page for care staff, in complement to the sales visits to customer sites.

Interview 20 resulted in iterations regarding how the set up and implementation of the solution takes place. It was first deemed to be appropriate to carry out the implementation in a similar manner as TENA Identifi but after interview 15 with the product owner and solution owner, it became clear that a future solution would benefit from adapting a similar implementation process as TENA Change Indicator. This means that the product specialist rather than sales representatives handles the customer contact after signing the contract. The front-end interactions after signing the contract are then face-to-face meetings or phone consultation with the Product Specialist.

It became clear that only having a product specialist as the front-end interaction post-purchase would not be enough to create a scalable process for dealing with customer issues, hence why a traditional customer support function was deemed to be needed. Interview 19 with the post market surveillance manager was scheduled to understand the existing process for dealing with customer issues. The interview made it clear that all Essity products shares the same process and function for dealing with customer complaints, hence why it was deemed to stay the same for the future solution. A distinction between the roles of the product specialist, customer support, post market surveillance and Hardware / Software center of excellence (who are responsible for continuous improvements of the TENA digital solutions) needs to be elaborated. From interview 19 and 20 with the post market surveillance manager and the product specialist it became clear that they have different competence areas, whereas the post market surveillance managers competence area are physical product issues and the product specialist's competence area are operational process issues at the customer. Therefore, customer issues for the future solution will follow the existing process for customer complaints in figure 26 if the issue is deemed to be product related and the product specialist is contacted if the issue is related to the usage or operational processes. The distinction between the two categories of issues is conducted by the super-user and the unit manager when the issue arises, prior to reporting it. However, if the customer were to contact the wrong channel for their issue, that channel would direct the customer towards the correct channel.

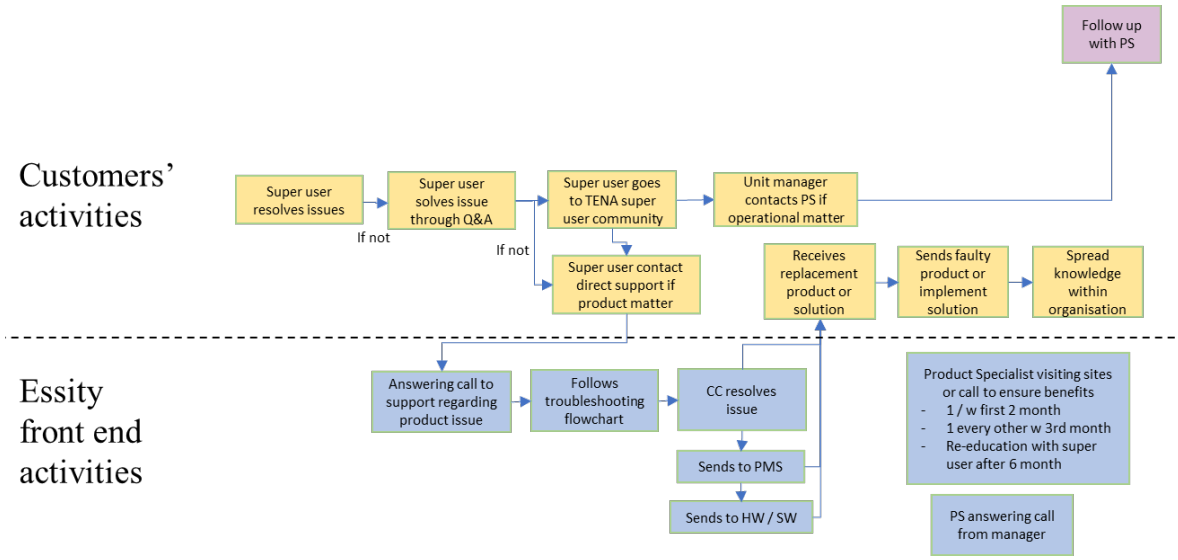


Figure 26: An illustration of the customer support functionality in the final service blueprint

4.5 Integration

In this chapter the final parts of the service blueprint are presented along with the process of creating them. In order to expand on the information regarding the complete integrated solution, three different business model canvases are presented together with the origin of their contained information.

4.5.1 Service blueprint

The previous steps in the creation of the service blueprint showed how the solution were used by the customers in their operations, what value they receive and how they interact with front-end operations. In order to integrate it into Essity's own operations, back-end and support processes needed to be identified and mapped out. These were identified through interviews with personnel knowledgeable in front-end processes, since it allowed for discussions on how back-end processes and support processes for these were conducted in the present setting and how these could be improved for the future solution. For example, the back-end processes conducted by Essity sales personnel regarding sending contracts to customers were identified by meeting with sales staff (see interview 16) and meeting with product specialists (see interview 22). In the same fashion as the earlier parts of the service blueprint, iterations were made after each interview and resulted in a more extensive blueprint.

When finalizing the entire service blueprint, interview 14 with the global solutions owner for another digital TENA solution was conducted where the topic was how they developed and worked with their service blueprinting and how a service blueprint for TENA Change Indicator could be developed. From the interview, the standards for layouts and for internal service blueprints were understood and used to finalize the service blueprint in a recognizable way for TENA employees. This interview also concerned sharing back-end and support processes between the TENA digital solutions, where examples of this are logistic and customer support. The existing digital products are sold to and developed separately for home-usage and professional usage. Even though the physical product is the same, the software and services differ. Interviewing the global solution owner (interview 14) and the global product owner (interview 15) led to the identification of possible support and back-end processes which the future solution could share with the existing processes and operations established for TENA Identifi, TENA Change Indicator and the other TENA solution.

4.5.2 Business model canvases

Three separate business models were built, each with it own individual characteristics; the classical business model canvas, the service logic business model canvas and the lean business model canvas. Creating the business model canvases followed the process explained in chapter 3.6.5 and the origin of the information used will be explained in this chapter.

4.5.2.1 Osterwalder and Pigneur's business model canvas

Osterwalder and Pigneur's classical business model canvas was the first one to be conducted. The included parts are summarized as follows:

Customer Segments

The first step of the framework consisted of mapping the different customer segments that are part of the future solution. Segmentation can be done in many different ways, whereas Frei (2008) states that it is important for service-oriented companies to differentiate their customers in accordance to what level of services they are expecting. The stakeholders in the customers' organization are presented in chapter 4.1.4 as they were discovered during workshop 1 (see chapter 3.6.1.1). The stakeholders were then prioritized and grouped in accordance to their relevance for the future solution. Four customer segments got created where they are

differentiated between themselves regarding both how close they interact with the solution and how their service-needs differ. An example is a customer segment consisting of relatives and residents, where both aren't using the offered services but are directly impacted by the solution in terms of a change in well-being and peace of mind.

Value Proposition
The value proposition looks different for each of the customer segments, hence why it was deemed necessary to express different value propositions for each of the stakeholders. The value proposition consists of known values provided today with the existing digital TENA products and values that are new for the future solution. The existing values were understood by conducting customer interviews A-D and observing them in their daily operations, along with interviews 1-6, 13 and 15 conducted with Essity personnel that provided deeper insights into how the existing solutions work. The future values were discovered through brainstorming sessions and corresponded to the physical evidence of service delivery in the service blueprint. The value proposition was finalized by validating it with Essity personnel working with TENA digital solutions in interview 21. An example of an already known value provided today as well as for the future solution is the ability to easier create individual incontinence care plans.

Channels
The channels were identified through interviews with different Essity personnel depending on the function owning the specific channel. The interaction points identified in the service blueprint in chapter 4.4 acted as input for identifying the channels, along with brainstorming sessions. The feedback interviews on the service blueprint revealed on-line channels such as TENA's website and Facebook page. Interviews 15, 16 and 20, with the product and solution owner, brand manager and product specialist revealed the offline channels such as sales visits directly to the nursing homes.

Customer Relationship
Essity already has, and will for the future solution have, different relationships with the different identified customer segments. Interviews with Essity personnel, mainly sales personnel, and customers gave a better understanding of the established relationships for the different segments. These were later adapted slightly for the future solution in order to provide the intended value. For example, Essity has no relationships or direct interactions with the customer segment consisting of residents and relatives, meanwhile they have established personal assistance relationships with other customer segments which is needed to provide the value and solution.

Revenue Streams
The revenue can be generated through many different ways, depending on what pricing method is established. Interviews 7-9 with Essity sales personnel revealed that the current pricing method at TENA is the most commonly used one according to literature, namely cost-based pricing. Macdivitt & Wilkinson (2011) states that this is an insufficient way of realizing the potential revenue in companies that are offering services. Ingenbleek et al. (2003) mentions that the value-based pricing approach is far superior to the cost-based and leads to higher margin earnings (Calabrese, 2013). Interviews were conducted with personnel from a different Essity brand (see interview 12 and 18) where value-based pricing is adapted to understand how they transitioned from cost-based pricing to value-based. The interviews and the literature were taken into consideration for the future solution whose revenues will be generated through value-based pricing and have other revenue streams that does not exist today.

Key Resources
Key resources necessary for delivering the future solution were categorized into physical, intellectual, human and financial. Interviews with Essity personnel provided an understanding of how these categories are fulfilled in today's product portfolio of digital products. Even though adjustments had to me made to the future solution, many of these categories remain the same, such as customer support and sales representatives for the "Human" category.

Key Activities
Much like key resources, the key activities were found mainly through interviews with personnel at Essity responsible for the interaction points and front-end processes identified in chapter 4.4. An example is sales personnel interviews which provided insights regarding what key activities are needed to initiate and sell the existing digital products, as well as the potential future solution. The review of previously made customer studies, such as the CAS project (see chapter 3.4.3), interviews A-D and observations, gave a better understanding of what future activities will be needed for the future solution to deliver the expected value. An example of existing key activities is the implementation process which is necessary to ensure that the customer is able to proceed with the product in its daily operations and operate it efficiently, so that the offered value gets generated.

Key Partners
The key partners were identified through interviews with the product owner for TENA Change Indicator and are something that stays the same for the future solution, for example a partnership with logistic companies who is responsible of delivering the goods to the customers. A possible partnership for the future solution, identified in interviews 18 and 22, would be with customer success specialist consultants, since the product specialist is a new and vital role within the future solution, and hence might benefit from having experts shaping the work and role of this job position.

Cost Structure
In order to understand all various costs related to the existing digital solutions, interviews were held with the product and solution owners, process and quality manager and sales personnel at Essity (see interviews 4, 7, 8, 10 & 11 in appendix 1). There exists both variable and fixed costs and the identified cost structure was validated with the product owner to ensure that it had been understood. The cost structure was kept mostly the same for the future solution, since many of the existing costs can't be neglected in the future, but a few were unnecessary for the future solution and some new ones were added. An example of an existing fixed cost is the cost of production, which can't be removed for a future solution since it is always existing when selling products.

4.5.2.2 Service Logic Business Model Canvas
This business model canvas was conducted after Osterwalder and Pigneur's business model canvas and complemented that business model with adding the viewpoint of the customer into every category of the business model. The results are similar, but the service logic business model canvas is much more extensive and asks other questions which will be presented followingly:

Customers World and Desires for Ideal Value
Instead of investigating which the customer segments are, the service logic business model canvas focuses on how Essity can get a deeper understanding of their customer's operations and what benefits the customers receive from buying the solution. The first question, which is regarding how Essity can get a deeper understanding of their customers world, was answered through a brainstorming session and by using the literature review conducted on understanding customer needs (see chapter 2.2). The literature review made it possible to formulate methods for how to truly understand the customers. When looking from the customers point of view regarding what benefits they receive from utilizing the solution, data generated from the value proposition in Osterwalder and Pigneur's business model was re-used and added on to. The final question to answer in this first step of the framework was what the customers ideal situation and world would look like, which got answered through customer interviews (see interviews A-D in appendix 2) and discussions. This ideal world was highly valuable to identify since it provided an image of where the development of the solution should be headed and is based on the previously gathered information regarding customer needs.

Value Proposition
The value proposition is similar to the one conducted in Osterwalder and Pigneur's business model with the addition of going in to further detail on the elements and uniqueness of the offer. Identifying the uniqueness in the solution offered was done by investigating the competitors and their solutions, both through own research, previously made competitors landscape studies locally at Essity and through interview 13 with the brand and product manager. Possible product concepts were studied to understand how Essity's solution will be unique to its competitors in the future marketplace. Answering this question provides an identification of elements in the offering that should be leveraged in marketing due to its uniqueness on the market. Another distinctive feature of this business model is that it aims to answer what challenges the customer is facing, which was gathered through interviews with Essity personnel (see interviews 1-9), customers (see interviews A-D) and observations during the gathering of key needs (see chapter 4.1). An example of an existing challenge which the customers are facing today, is the challenge of too many unnecessary checks during especially the night, which causes disturbances for the residents.

Value Creation
The service logic business model focuses on how the value emerges in the customers' organization and how the company can facilitate that the long-term benefits are achieved. The emerged value is connected to the value proposition and the customers' benefits identified in the first part of the business model canvas. However, this part highlights how Essity will make sure that the customers receive the intended value, which is done through the interaction points in chapter 4.4 during implementation and usage. For example; training, education, regular contact with product specialist and customer support all act to facilitate that the customers receive the intended value.

Interaction and co-production
Brainstorming was used to identify ways of co-production, which were later validated with the product owner (see interview 21). An example of supporting co-creation is the provided implementation assistance, which provides both education and support during the beginning phases of using the product, which allows the customers to quickly become up-and-running in an efficient way. This step also requires identification of the activities done by the customers and their mental models during the usage of the solution. The activities were identified when creating the service blueprint (see chapter 4.5.1), hence why this knowledge could be re-used

for this business model. The mental models were identified through observations and interpretations of the interviews conducted with the customers (see interviews A-D). It was for example known that the customers' staff were often stressed when having to change the incontinence products used by the residents due to the time required for the change and their already stressful environment. They are therefore not able to take in much information or go through different complicated IT-system choices at that point, meaning that the solution must be as easy as possible. However, when interacting with the solution in other stages, the customer staff are more open to taking in information and accessing data captured by the sensors.

Revenue Streams and Cost Structure
This part of the business model is same as Osterwalder and Pigneur's, except for the addition of certain aspects. These are KPIs for measuring that value is actually provided as planned, identification of what other values Essity receives than money, other costs for the customer besides payment and finally what sacrifices Essity has to make in order to provide the intended solution. For example, if the future solution is providing the same value as TENA Identifi, this product would cannibalize TENA Identifi, replacing it on the market, which makes TENA Identifi a sacrifice. KPIs were highly valuable to identify since they are key metrics needed in order to make sure that both the business is running as it should and that the customer is receiving the intended value. The KPIs were created through a brainstorming session which were later validated by the product owner (see interview 21) but originate from workshop 2 where potential metrics were identified.

Key Resources, Key Partners and Mobilizing Resources and Partners
Identifying key resources and key partners are the same as for Osterwalder and Pigneur´s business model and hence was re-used. The new questions that this business model brings forth is what resources the customer requires in order to utilize the solution and how the customer interacts with Essity's partners and Essity with the customer's partners. The resources required by the customers to utilize the offered solution was identified through interviews with the process and quality manager (see interviews 10-11). For example, it was found that the customers are expected to have smart phones or tablets before purchasing TENA Change Indicator. Similar required customer-resources were discussed in the interviews, which led to an understanding of what requirements a future solution would bring forth. The interviews with customers (see interviews A-C) and interviews with Essity employees responsible for identified front-end activities in the service blueprint (see chapter 4.4), were used to get an understanding of how the customers are interacting with Essity's partners and vice versa. Finally, this business model canvas goes into further detail, answering questions regarding how value can be coordinated between the partners and how these partnerships can be utilized and developed. The answers to these questions were created through brainstorming sessions and were later validated with the product owner (see interview 21).

4.5.2.3 Lean Business Model Canvas
The lean business model canvas is very similar to Osterwalder and Pigneur's but is directed towards start-ups or products that are launched into new markets, which gives other perspectives. The parts of this business model that are the same or similar as the other two business models are not presented, as only distinctive features of this particular business model will be.

Early adopters
The first distinctive feature of the lean business model is that it aims to identify who the early adopters would be and not only what potential different customer segments exist. An interview

was conducted with a product specialist for TENA Change Indicator in North America (see interview 20) with the aim of understanding how they are managing the implementation for TENA Change Indicator. The interview highlighted a criteria template for who the most suitable nursing homes are for TENA Change Indicator, and hence were used as the early adopters for the future digital solution. Even though the template was derived for North America, the same types of nursing homes have been identified to be the first target group in Sweden as well, after an interview with the product owner (see interview 21). An example of a characteristic of the early adopters is that they need to have engaged staff and be interested in innovation.

High-Level concept

The high-level concept was derived through discussions, with the goal of finding resemblance between the future solution and other existing ones, to be able to make statements regarding the solution which will be easily understood. An example for the future solution could be; "Like a combination of TENA Identifi and TENA Change Indicator but more integrated in the customers' system" or "Assisting nursing homes in making informed decisions regarding incontinence care".

Existing Alternatives

The existing alternatives was found through interviews with the customers (interviews A-C), observations of professional care givers in their daily work, interviews with Essity personnel and finally through an analysis of nursing homes and incontinence care studies given by Essity (see chapter 3.4.3). As the future digital solution will be able to conduct assessments, due to the fact that it is an assessment tool, existing alternatives will be TENA Identifi but also manual ways of conducting assessments.

5. Analysis

The analysis is structured in the same way as the rest of the report, namely in order of how the framework by Jagstedt et al. (2018) is constructed. This chapter aims to investigate connections between the findings of conducting the practical application of the framework and literature on the relevant subjects.

5.1 Key needs

The customers' key needs have to be discovered, understood, prioritized and translated into useful knowledge to bring into the development of solutions. This chapter will present important findings on those areas, which were discovered during the case study.

5.1.1 Stakeholder mapping being fundamental in understanding all customers' needs

The first step, after initializing the development project for a future digital TENA, were to understand the customers' organization. If the offering would have been a single product or a service addressed to, for example, the resident, only the residents' needs would have been important. In the case of an integrated solution that is sold to an organization, many different people are affected in terms of purchasers, users, managers etc. Even though the customers for TENA solutions are nursing homes caring for elderly residents, there exists various roles with different needs within that organization. Furthermore, nursing homes within the Swedish market is not a homogenous group but the mapping of stakeholders within the customers' organization focused on those believed to be early adopters. The framework published by Jagstedt et al. (2018) highlights the importance of understanding the different stakeholders that exist since it affects the outcome of the solution. The view is strengthened by the findings by Tuli et al. (2007) where customers claimed that all stakeholders in their firm must be taken into account. Furthermore, the individual experience that their need is taken into account is partly what makes a solution into an integrated solution. The complexity of customer stakeholders increases in a business to business relationship according to both Griffin (2013) and Anderson et al. (2009), which was the case also for this study. For a public organization, as can be seen in the stakeholder map in section 4.1.1, the buyer, being an individual who is responsible for purchasing decisions, is often very much dislocated from the users and other parts of the buying team. The purchasing decision is made on a municipal level or possibly even county level if the price exceeds 500 000 SEK. As presented in chapter 4.1.1, even though several interviews were conducted with the aim of revealing what stakeholders' needs were important to consider, a workshop together with a cross-functional group of Essity employees was needed to grasp the full picture. Understanding all stakeholders involved in the solution, both within and outside of the nursing home, and their needs is vital before moving on to the later steps of the framework, since the product and services are designed and developed after what needs were identified in this first step of the framework. If one were to fail in mapping all stakeholders and understanding their needs, the final solution might end up being designed specifically for the nursing staff, disregarding the needs of the municipality, which would result in the solution never being purchased.

When formulating the business goals for the customers, it needs to be described on an organizational level, with the entire organization in mind (Jagstedt et al., 2018), which was presented in chapter 4.1.5. Frei (2008) presented the customer management system as being one of the four important elements in service business management, where it is crucial to select the right customer. Since customers need to be able to and willing to co-produce the value, as is the case for both services and solutions (Kannan & Healey, 2011), it is important to find the most appropriate organizations to approach with the offered solution. The case study hence focused on specific nursing homes, namely the early adopters presented in chapter 4.5.2.3, since

it was found that these were both more willing and able to both purchase the solution and assist in co-producing it. After the solution has been developed with and sold to these nursing homes, new customer segments can and will be targeted.

5.1.2 Uncovering customer needs

Literature on uncovering customers' needs clearly states the importance of utilizing several methods when conducting customer studies in order to capture different layered needs (van Boeijen et al., 2013; Ulwick & Bettencourt, 2008; Bergman & Klefsjö, 2010). The framework by Evenson and Dubberly (2010) focuses more on immersive studies that goes into the deeper layers of unspoken customer needs but according to Ulwick and Bettencourt (2008) the methods should complement each other. Ulwick and Bettencourt suggests interviews, focus groups and shadowing or observations are part of their three-step method. This case study utilized interviews and observations of customer staff to find customer needs. The study did not utilize focus groups since they are harder to organize, apart from interview A in appendix 2 that was a group interview. From that, and workshop 1, it was noticeable that group discussions gave higher quality material than interviews. The interviews were used to acquire more knowledge on subjects together with customer observations and brainstorming sessions. Workshop 1, conducted with Essity employees who had substantial knowledge in customers' operations, provided valuable discussions and conclusions on customer needs. It made it possible to narrow down a very long list of customer needs into what actually were important to focus on when developing a future solution. In retrospective it would have been useful to have a similar workshop together with customer staff, but it was too hard to organize such an event due to high workloads at customer sites.

5.1.3 Re-using existing customer knowledge

Jagstedt et al. (2018) emphasize that knowledge from previously conduced customer studies should be re-used, which impacted this study in several ways. In chapter 3.4.3 there is a declaration of already existing internal Essity studies that have been used in this study. The information in these studies were analyzed, and knowledge regarding customers' needs were extracted and condensed. Also, re-using customer studies and existing internal knowledge was done in the different workshops held with Essity employees to conclude our findings. The employees present had been part in previous customer studies and could ensure that the knowledge collected from the previously conducted studies would be beneficial for this study. Involving employees with deep customer knowledge in workshops and when developing the solution, makes the existing knowledge more dynamic and easier to apply in the current setting. Bryman (2011) discourages the usage of secondary data sources that have been collected for another purpose, since the data can easily be misinterpreted. This study therefore included the people involved in the studies when discussing how that information can be used in this case, which were deemed to be an effective way of re-using existing knowledge whilst making sure it is not misinterpreted.

5.2 Product development to share assets with other products

The product part of the solution is at the center of the framework but had a limited space in the solutions development for this study. The study did not focus on developing the physical product part of the solution but rather find what physical aspects that could facilitate the utility needed by the customers. The focus was at finding reusable aspects and understanding how to conduct development to share assets between products.

Chapter 4.2.1 describes the development of TENA Identifi and TENA Change Indicator, based on an interview with the process and quality manager in charge of both development projects.

This interview highlighted that components, as Jagstedt et al. (2018) proposed as a possible commonality, were not fully shared but had to be developed since TENA Change Indicator aimed for creating a new physical product platform. Instead, knowledge in technology, processes for delivering and developing radical products and people with internal relationships to facilitate communication are all commonalities that were re-used throughout TENA Change Indicator's development project. The framework has an external focus on these commonalities when presented in the publication, linking the customers and provider together. For example, knowledge should be re-used to understand the customers, sub-processes should be re-used for delivering the services and people with valuable relationships with the customers should be involved. But with a more internally perspective, all those assets can be valuable to share throughout the entire development process.

The framework presented by Jagstedt et al. (2018) have a close connection to platform development and modularization as described by Robertson and Ulrich (1998). According to Robertson and Ulrich (1998), that approach is most beneficial when developing derivative products with minor changes from the reference product. For more radical changes the need for an entirely new platform is necessary which is the case when moving from TENA Identifi to TENA Change Indicator. The future solution is physically built upon the hardware used in TENA Change Indicator but have added functionality in terms of software, functionality and services etc. This goes in line with how Robertson an Ulrich (1998) proposes usage of a physical product platform, adding functionality and minor enhancements but avoiding radical changes in the underlying physical structure.

5.3 Service development

Companies who have traditionally been product-oriented might have issues with developing services to their offerings due to it being a new aspect to consider. They must manage both customers and internal functions in order to ensure that value is co-produced, and make sure that the developed services are fulfilling customers' needs.

5.3.1 Translating customer needs into solution characteristic

Literature suggests QFD and HoQ to be powerful tools when translating customer needs into product characteristics (Bergman & Klefsjö, 2010; Bigorra & Isaksson, 2017; Sayadi et al., 2017). The tools are however time-consuming, making them hard to implement in all organizations (Bergman & Klefsjö, 2010). The time-consuming aspect was the main reason for this case study not utilizing the tool to its full extent, which instead utilized the main characteristics of a HoQ and creating connections between identified customer needs and product and service characteristics. This adaption of the tool was used in the session presented in chapter 3.6.2 where it was identified how well the existing TENA products and services were fulfilling the identified customer needs.

Literature suggests that QFD can be utilized not only for deriving product characteristics from identified customer needs, which it was developed to do, but also for translating customer needs into service characteristics, making it useful for developing services as well (Bottani & Rizzi, 2006; Dubé, Johnson and Renaghan, 1999). Following the QFD approach on services means breaking down service aspects into processes and tasks which is similar to what is achieved in a service blueprint that was used in this study. More on service blueprinting as a tool will be discussed in 5.3.3 but service blueprinting is according to Bitner et al. (2008) easy for people to grasp where QFD is seen by Bergman and Klefsjö (2010) as a quite complicated tool. This is the reason for why the simplified version of the HoQ, presented in chapter 3.6.2, was only

used to map overall product and service characteristics, and not breaking them down into its components and sub processes.

5.3.2 Managing the customer and co-production of value

Co-production is very common for services and means that the customers are involved in the value creation themselves, and that all value creating activities are not only done by the provider since services are produced and consumed simultaneously (Morelli, 2002). For integrated solution, as in this case, co-production becomes necessary when implementing a solution into customer's operations. The future solution is operated by the customers in their everyday operations, making them creators of their own value. Frei (2008) and Kannan and Healey (2011) mentioned how difficult it is to train and educate customers to perform the service themselves. The implementation of the suggested future solution will be vital to ensure that the customers understand how to operate the system and the products, so that they can realize the intended and sold value. As proposed from both workshop 1 and 2, the solution must be intuitive and easy to operate by customers in order to lower the strain on the own organization and costs generated from assisting customers. Therefore, it is essential that solutions operated by the customers are intuitive and simple to use to reduce the costs associated with customer support and re-training. In order to successfully establish a process for developing solutions where co-production is prominent, Bitner et al. (2008) suggested service blueprinting as a useful tool. As more thoroughly described in chapter 5.3.3, service blueprinting was used in this study to elaborate on how customers' actions should be designed, for the solution to be intuitive and easy to use.

It became apparent during the initial stages of conducting the case study, how heavily TENA relies on face to face customer support (see chapter 4.1.3). Besides the implementation phase, which is only face to face, the customer support for all value creating activities during an assessment with TENA Identifi is also face to face, to assist the customer in their value creation. As Frei (2008) and Kannan and Healey (2011) stated, the customers are hard to train even though customer labor cost are low. It can be concluded that TENA has faced issues in making the customers creators of their own value, due to the amount of face to face support needed. This is a major cost driver which is often hard to charge for, hence why it is often included for free, as is the case for TENA. This results in a lower profitability generated from offering the solution.

5.3.3 Service blueprinting as a service development tool

Services are less tangible than products and are ultimately harder to explain to customers, to ensure that they understand what to expect from it (Morelli, 2002). This also hinders internal communication regarding possible service concepts, which was found through this case study. Service ideas and concepts were hard to explain and visualize to Essity personnel in order to receive feedback on them. Service aspects are harder to communicate between people due to their nature since they are loose concepts and hard to visualize. The customer journey map and service blueprint were two tools that facilitated this communication. The importance of these tools is highlighted in chapter 4.3.2 were it became clear just how more extensive the service blueprint became after iterations with Essity personnel. The visual representation of the services made communication, feedback and clarification of the concept easier. Even though interviews were held prior to using the service blueprint, these were not as fruitful as the ones where the service blueprint was used as a visual representation.

5.4 Interaction

Companies who want to provide not only solutions, but integrated solutions, needs to manage the interactions between themselves and their customers. These occur all throughout a solutions life cycle and hence are important to identify since they directly affect the customers' experiences.

5.4.1 Managing the customer experience

Literature within the area of service management stated the importance of identifying and understanding the interactions taking place between the provider and the customers (Evenson & Dubberly, 2010; Phelps, 2017; Frei, 2008; Meyer & Schwager, 2007), which is something that the framework by Jagstedt et al. (2018) also emphasized. Evenson and Dubberly presented how service development should be oriented towards providing a service experiences, which Meyer and Schwager (2007) states takes place within all interactions. Interactions for a solution hence are both interactions as well as experiences, and can be both direct and indirect. When customers use solutions, they have an interaction and an experience simultaneously, which is the same for interactions with the physical product and the service offerings such as customer support. Therefore, an evaluation of the final integrated solution should be conducted when interaction points have been mapped through e.g. a service blueprint. In this study the service blueprint was used to identify people and functions responsible for the different customer interaction. These were then used to elaborate on how the interaction should be managed and what front-end and back end processes that were required. Jagstedt et al. (2018) stresses that interactions are as impactful for the overall solution as the product and service aspects of it are. When testing and iterating the solution, it is therefore of equal importance to evaluate the interactions, which is something Evenson and Dubberly (2010) and Holmlid (2009) states should be done in close collaboration with the customers. In the conducted study, the contact with the customers during the development has been limited and customers' input has been used mainly for mapping customer needs.

5.4.2 Exploiting existing channels

As previously mentioned, customer interactions take place throughout the entire customer journey (Voorhees et al., 2017; Lemon and Verhoef). Jagstedt et al. (2018) suggested that newly developed solutions should be re-using existing channels to an as high extent as possible, since it re-uses already established processes and standards and makes the experience recognizable for both the customers and employees in the provider's organization. The future solution followed this suggestion and kept existing channels the same in order to be able to deliver the solutions as intended. Implementing new interaction points to the customers might be unwanted and will take effort to get used to, leading to them being reluctant to using the solution. It was found from discussions with Essity employees that for this case study, an integrated solution would be deemed successful when it alters the customers' own processes and the existing interaction points as little as possible. The future solution hence keeps the existing ways of: raising awareness, handling customer support and complaints, implementing the solution and finally keeps the software interface similar to already existing ones. To find how and when to utilize existing ways of interacting, the mapping of customer activities and Essity front-end activities in chapter 4.4 were used to find what functions in the Essity organization to look closer at. Mapping of customers' journeys for TENA Identifi was translated into the service blueprint for the future solution, which illustrated what areas to look closer into. The extensive iteration process for the service changed the service blueprint extensively from the original version together with Essity personnel responsible for interaction points. Iterating and developing these interactions together with the responsible personnel increases the chances of them being accepting of the future state and its possible new processes and interactions.

Companies that transition from selling physical products to delivering solutions needs to consider the increase in direct customer-provider interactions that entails. According to Frei (2008) and Kannan and Healey (2011) this emphasizes the need of service companies to recruit and keep talented and good personnel, since that will have great effect on the profitability of the solution, compared to for physical products. The industry in which TENA operates are predicted by SimaVita (2018) to shift from being commodity products to being solutions. This results in a need for companies transitioning to delivering solutions to invest in their employees, since the company with the employees who can deliver the best customer experiences are the ones that will take charge of the market (Kannan & Healey, 2011). Essity as a company have for a long time invested in their employees as the survey by Randstad (2019) show. During the customer interviews, it was found that TENA's products and their provided customer service is seen as top of the class by customers, which puts them in a strong position for the projected future.

5.5 Integration

Integrating the parts of the solution; products, services and interactions, to fit both the customers and the own firm, is a delicate process when finding the right fit between customization and standardization. The integration ends up in a full solution concept that needs to be presentable and understandable to the entire firm.

5.5.1 Integration process of solutions development

The final part of the framework derived by Jagstedt et al. (2018), namely the integrating phase, aims to integrate the product, service and interactions to ensure that they fit together, as well as making sure that they fit both the customers and the own organization. To ensure that everything fits together, alterations and changes to the different parts of the solution is almost always necessary, which requires feedback loops from customers, internal employees and testing. Such an approach would according to Lewrick et al. (2018) benefit from an iterative way of working where unfinished concepts are tested with various stakeholders. But Evenson and Dubberly (2010) raised concern to making changes late in the development process since the product, the service and the interactions are more established and harder to change. Therefore, both Evenson and Dubberly (2010) and Holmlid (2009) suggested customer co-development throughout the entire process. By constantly testing out concepts with customers for feedback, issues can be made visible before committing on specifics. In the study, few iterations with customers were achieved since customer co-development is harder to facilitate than internal employees, that is because internal employees were easier to get access to.

An iterative way of working has been conducted, but iterations and feedback on concepts has mainly been with Essity employees. In order to capture the voice of the customer, customer-facing functions such as sales, customer support and brand management has been involved. The customer dominant logic by Heinonen and Strandvik (2015) seek to put the provider in the customers' shoes and investigate how the provider can add value to the customers' business. From this perspective, the customers should be kept as the main focus and the customers' actions and front-end processes should be created according to the identified customer needs. The service blueprint was used to visualize the concept and provided an illustration and correlation of product usage, service aspects and interactions between the customer and the provider, as well as how these were supported by back-end and support processes (Bitner et al., 2008). To follow the customer dominant logic by Heinonen and Strandvik (2015), the back-end and support processes were created to have minimum negative effects on the front-end processes and customer actions.

To get a broader view of the entire business of the proposed solution, business model canvases were a fitting tool since they, as proposed by Osterwalder (2004), shows the architecture of what is supposed to be delivered, which in this case is an integrated solution. The different parts of the canvases illustrate what the solution seeks to fulfil, the necessary resources to provide it, who it is intended for, what value they receive and how the cost and revenue structures is built. To conclude, the business model canvases were used to visually tie all business apsects of selling and delivering the future solution together in a way that could be presented for internal stakeholders. Osterwalder (2004) showed that the next step, after conducting the business model canvases, is the implementation step, where it is defined how the business will be implemented and what processes and operational procedures will be necessary to do so. This can raise concern that there should be an extra step in the framework on how to implement the proposed business, which will be discussed more in the following chapter.

5.5.2 Integration through business models

In order to illustrate how the future solution should be turned into a relevant business, three different business model canvases were used in study. The three models had different focus which were used to complement each other in the study. As described in chapter 3.6.7, the business model canvas from Osterwalder and Pigeur (2010) is the most commonly used across industries and the most general canvas. Therefore, it was conducted first to give a foundation on which the service logic business model canvas by Ojasalo and Ojasalo (2018) and the lean business model canvas by Lewrick et al. (2018) was added to give broader perspective. The service logic canvas is splitting up each part and viewing them from both the provider's and the customers' perspective, which is important for the service aspects. The lean business model adds aspects valuable for creating new business by clarifying early adopters, growth barriers etc., which fitted the current setting with a solution breaking into a new market. As can be seen in chapter 4.5.2, most of the information needed for all canvases was already existing in various ways. What was needed to create the canvases was mainly to gather the information present in in the service blueprint, stakeholder map or previous interviews and re-formulate it. The service blueprint was the major source of information used for all canvases since the value proposition was derived from the physical output of service delivery, the front-end showed what channels were used and the back-end and support processes worked as input for the key resources, actions and partners. The new information in the canvases that had not been included in the results before, were the cost and revenue structures. No previous tool had shown how the cost for providing the solution would be divided between material, logistics, installation, customer support etc. No previous tool had addressed how the revenue streams should be established for the new solution, how pricing would look like and how the customers would be charged.

The service logic business model canvas by Ojasalo and Ojasalo (2018) adds a part called "value creation" to elaborate on how value is created from both the provider's and customers' perspective. It addressed what the provider can do to ensure that value is created in the customers' processes and what value-adding actions the customer is taking. When it comes to providing solutions, literature is consistently addressing the need to focus on value creation, and how to define value (Jagstedt et al., 2018; Frei, 2008; Holmlid and Evenson, 2008; Holmlid ,2009; Evenson and Dubberly, 2010). The goal of adding services to an existing product is to bring extra value to the customer business. The other business model canvases put focus on what is valuable in the offering through the "value proposition" but only the service logic business model by Ojasalo and Ojasalo (2018) addresses what activities are needed to create the value. This is probably due to the service logic mindset, where the business model is derived for pure services. As Morelli (2002) writes, services are produced through processes of both

the provider and the customers and are consumed simultaneously as value is created. Therefore, focus needs to be on not only what brings value, but how it is derived.

In order to, as a provider, ensure that the customers are realizing the value sold, various KPIs can be used to measure for example customer usage, to ensure that the solution is actively used by the customers. If it is not, actions can then be taken from the provider's side to investigate what the reasons are for not using the product and use that input for future development efforts if it is something crucial. The service logic business model by Ojasalo and Ojasalo (2018) includes suitable KPIs to measure business success and for this case the business success comes from ensuring the customer does not lose the value originally bought by the solution.

In conclusion, there are very important aspects to consider from all three canvases, but the purpose of the business model canvas according to Osterwalder and Pigneur (2010) is that it makes distributing information easier. Having three different canvases are contra productive to that purpose, which is why it was sought to find a canvas layout where all the important insights from the three became visible. The layout presented in figure 27 is created from all the used canvases to fit the purpose of making the visible insights for a solution viewable on a single page.

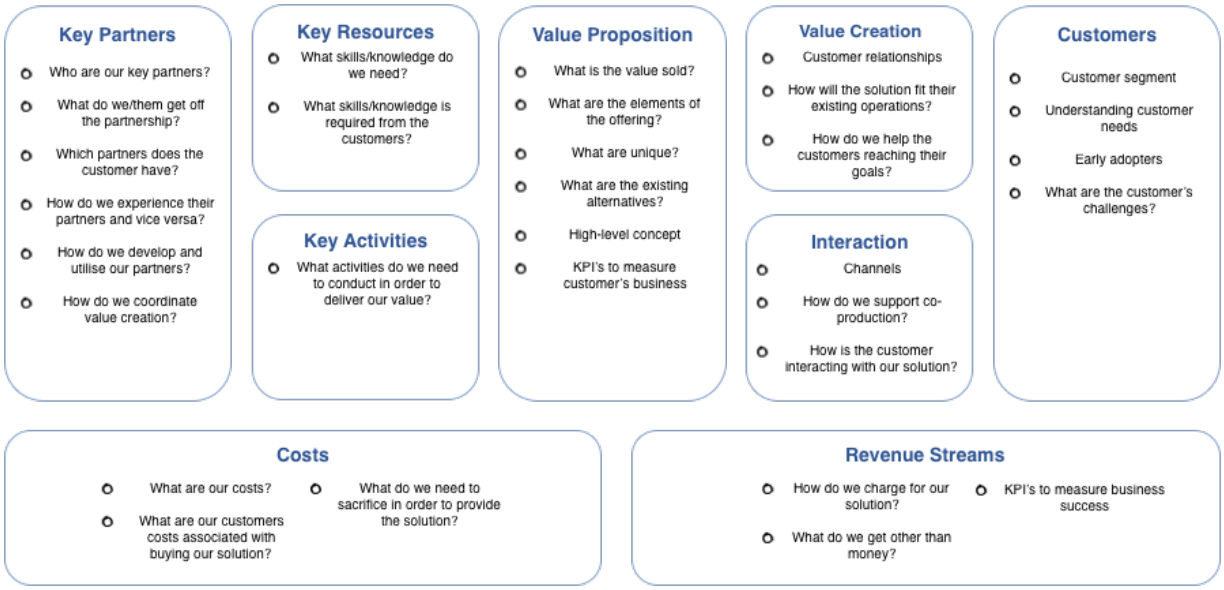


Figure 27: Business model canvas layout created by containing the valuable aspects from all three canvases used in the study

6. Discussion

The discussion will continue the analysis with a more holistic perspective on the entire framework discussing its applicability, its issues and limitations, its transferability and ability to deal with the service paradox. The service paradox will be given extra attention and lessons from the study regarding how to deal with the service paradox will be addressed.

6.1 Full Framework

The framework aims to exploit commonalities and re-use assets in order to create solutions which are valuable both to customers and the provider. This chapter addresses whether the framework does that in a suitable manner, and were it is not, alterations of the framework is suggested.

6.1.1 Iterative approach to developing solutions

The framework presented by Jagstedt et al. (2018), had a graphically linear structure where each step of the framework is conducted and fully completed before moving on to the next step. Jagstedt et al. however states that using the framework is an iterative and cyclic process since changing elements of products, services or the manufacturer-customer interactions effects one another since they are interconnected. The iterative approach is first stressed in the final part of the framework, namely integration, where the final solution needs to be altered and re-designed if it does not meet the intended requirements. By looking at the graphical representation of the framework and reading the explanations to each phase provided in the paper published, the framework both looks and sounds more linear, as each of the first four steps are to be conducted before moving on to the next one. The iterative process is first emphasized when it comes to the explanation of the last phase, integration, and in the managerial implications where Jagstedt et al. (2018) explained that, for example, changes to the product affects the services and hence they will have to be changed accordingly. It is however not mentioned or emphasized in the framework that when conducting each of the four first steps, they are best of to be conducted iteratively before reaching the integration and making changes to a finished product. Evenson and Dubberly (2010) presented an iterative framework for developing specifically services, where they specify that it is essential that the process of planning and constructing the service system is iterative. Lewrick et al. (2018) emphasized the need for an iterative approach when delivering something with the purpose to raise emotions, which Meyer and Schwager (2007) stated that services and customer experiences will always do. Hence, the iterative approach to developing solutions should be clearer in the graphical design of the framework.

This study found that collecting the customers' needs had to be conducted throughout the development of solutions, since as the solution got closer to being finished, the more information and questions got raised that needed verification and answers to from the customers to truly understand the value of the future concept. It was further found that iterations between the second and third step of the framework were needed since after designing the product, the service found to best suit the future concept affected the needed product characteristics from the previous step in the framework. The case study at Essity was furthermore closer related to a radical innovation, creating new business, rather than a small incremental enhancement, which requires an iterative development process according to Kurtz and Snowden (2003). If the development conducted however is small and incremental, Kurtz and Snowden stated that they believe a structured and linear manner to be sufficient. In order for the framework to be able to develop customized solutions, for both incremental and radical innovation projects, the framework hence needs to be iterative in all steps of the framework. As mentioned previously, Jagstedt et al. (2018) stated the importance of approaching the framework with an iterative

approach but it is not clear if it is intended for all steps for the framework or only in the latter phases where the solution needs to be configured iteratively until it meets the customers' needs.

6.1.2 Commonalities

When developing new innovations that are more similar to radical innovation projects, such as the future concept for this case study, the amount of re-usable components was not as high as it would have been for minor enhancement projects where small derivates is developed which can re-use most or many of the previous model's components. The framework presented by Jagstedt et al. (2018) introduced sharing commonalities as a key enabler to offer customized solutions at the same time as standardization and efficiency is improved. Potential commonalities which Jagstedt et al. presented are: knowledge, components, processes and people and relationships. Interviews with the process and quality manager (see interview 10 & 11) revealed that the development of TENA Change Indicator gained great benefits from re-using knowledge, people and processes that were used for TENA Identifi. Re-using these commonalities allowed them to develop TENA Change Indicator much faster and more accurate from the beginning, compared to TENA Identifi which was built completely from scratch without re-using commonalities. This case study utilized commonalities, as suggested by the framework, all throughout the different steps, which enabled much faster development of the future concept. For example, knowledge was re-used by studying previously made studies regarding customer needs and nursing homes in order to broaden the understanding of customer needs, prior to conducting their own customer interviews. This led to a good foundation and understanding of customers' needs which enabled more elaborate interviews to get an even deeper understanding of the true needs. The future solution concept was derived with shared components and processes in mind, which ended up in the future solution re-using some of the old characteristics from TENA Identifi and TENA Change Indicator and sharing many processes with other TENA digital solutions. Sharing these commonalities opened up discussions and team-work across the solutions' project groups, minimizing the total work required to build a common platform of shared commonalities and improved the integration of the solution into the company. In order to achieve this, the service blueprint served as a great enabler for discussions and visualizing sub-processes and also to identify areas to investigate. To conclude, the importance and the value of re-using commonalities were understood and considered during this study, which is a fundamental part of the framework derived for developing solutions by Jagstedt et al. (2018).

6.1.3 Features lacking in the framework for developing solutions

When conducting all of the steps in the framework, it was found that the framework was lacking the view of the market and the competitors. Perhaps this is something that needs to be performed prior to conducting the framework, or is by all rights excluded from it, but either way the competitor landscape mapping was a crucial task in this case study and wasn't included or mentioned in the framework. For smaller incremental development projects were the market is already known, the competitor knowledge is already existing prior to the development project, but for radical innovation projects going into new markets, such as the one for this case study, it is essential to understand what competition exists and how this new solution will compete in the future marketplace. It is therefore suggested that such a step should be included in the beginning of the framework, when understanding customer needs, to also understand the competition in the intended marketplace. What the competition are offering and developing will drastically affect what type of solution is developed in order to capture certain market segments and to differentiate themselves in marketing.

Another aspect which is missing in the framework is the emphasis on post-purchase support. Tuli et al. (2007) highlighted four areas which must be achieved for a solution to be deemed effective, where one of the four is post-purchase support. Töllner et al. (2011) evaluated and tested all four areas for another industry than the one tested by Tuli et al. (2007) and found that they were indeed highly important for a solution to be deemed effective. Post-purchase support for solutions contains more than just providing spare parts, it includes developing and providing new products to meet newly found or developed needs (Tuli et al., 2007). Due to the emphasis in literature on solutions having to provide post-purchase support efficiently, it seems necessary to be mentioned in a framework derived for developing solutions. Even though it might be an integral part of the "Interaction" part of Jagstedt et al.´s (2018) framework, it isn't mentioned as something that needs explicit focus, which is something that is suggested to include, to ensure that the framework is making sure that profitable and effective solutions are being developed from using it.

6.1.4 Adding implementation to the process

The framework by Jagstedt et al. (2018) is influenced by the platform and modularization literature by Robertson and Ulrich (1998) where assets are shared between products and minor changes in standard assets are swapped or altered to create new products as a combination. This results in minor changes in the final product and product development projects are often minor enhancement projects. In the case at Essity the project is more radical in terms of innovation where nearly no standard assets exist since the two solutions TENA Identifi and TENA Change Indicator that the future solution builds upon is highly immature, and so were their markets. In these cases, there exists bigger needs for creating new assets in order to reach the intended future state and implementing the future solution. Therefore, extra emphasize in the framework on the implementation of the developed integrated solution is necessary for more radical innovation.

The final phase implementation is missing in the framework by Jagstedt et al. (2018), where integration is the last step in order realize a new solution but what were seen in the case at Essity is the importance of identifying gaps in the present state and the intended future state. What needs to be in place in terms of products, tools, work-processes, contracts with partners etc. in order to realize the solution and start working according to the concept should be made clearer. The framework by Jagstedt et al. (2018) could benefit from an extra step of implementing the solution. Evenson and Dubberly (2010) adds implementation as their final step that serves to bring system resources to life through beta testing, feedback mechanisms and tuning of the supporting system after delivery. Their implementation step focuses on long-term durability of the system and to ensure that improvements are made after the product has been introduced to market, to ensure long-term success. Additionally, this case study has illustrated the need for the framework to include the needed actions and resources to close the gap between the present state and the intended future state. In order to do so in this case study, the service blueprint was used as tool since it illustrates the future state of the entire system regarding both deliverables and internal processes. This illustration makes it easy to identify what is missing in today's resources and processes to realize the intended future state. In the service logic business model created by Ojasalo and Ojasalo (2018) the internal parts; key resources, key partners and how to mobilize them in order to succeed, focuses on the what resources is required to seize the business. This can in addition to the service blueprint be used to identify gaps in today's business outlook that needs to be overcome to reach the intended future state.

6.2 Service paradox

The service paradox is an important aspect for servitized firms to consider since it might lead to non-profitable solutions (Gebauer et al., 2005). The conducted study gave both practical and theoretical insights into how services can be developed and combined with products, and will be presented in this chapter in connection to how the service paradox can be managed.

6.2.1 Mitigating the effects of the Service Paradox through price and cost structures

Service companies have higher expenses than traditional manufacturers due to their additional services offered (Gebauer et al., 2005; Neely, 2008). Blok et al. (2010) as well as Reim et al. (2015) claimed that a lacking cost structure is the reason to why service companies are experiencing the service paradox. Even though servitized companies often generates higher revenues, their additional costs are too high for offering these services, which results in lower profits (Neely, 2008). Frei (2008) stated that when service companies wants to provide excellence in certain areas, it always comes at a cost which needs to be funded in the correct way. One way is to simply increase the price tag to cover the additional expenses, however this might not be possible in markets where competition is high due to the customers having many options of leaving the company and choosing a different one with a similar solution. Even if the market is not competitive, raising the price might generate negative effects on customer satisfaction and retention (Umashankar et al., 2016; Frei, 2008). Frei (2008) presented other ways of charging for the services offered, where one which does not increase the price tag and reduces costs related to offering the service is self-service options. These inherit costs associated with developing and producing the self-service option, but once it is up-and-running, the customers are doing the value creating work themselves, meaning less personnel-related costs for offering that specific service (Kennan & Healey, 2011). Such self-service options are airport self-service kiosks where passengers can check-in and process themselves in the system, and might be online Q&A which the customers can use instead of calling customer service. As mentioned by Frei (2008) it is however important that these are delivered such that the customers see value in using them instead of the full-service, more labor-intensive, option which is the case for an airport self-service kiosks where the passengers are provided seat maps and doesn't have to stand in long lines for the manned desks. The funding mechanism for providing the added service hence is in the form of customer labor. Self-service options lead to reduced costs and an increase in operational performance (Scherer et al., 2015) but are not always a suitable option since they might decrease customer loyalty and reduce customer retention (Neslin et al., 2006). They are more suitable to use for highly repetitive and simple interaction points and is an option to reduce the costs associated with offering additional services.

The loss in profit when providing services does not only relate to the cost structure, as the literature mainly focuses on (Frei, 2008; Nelly, 2008), but also relates to how they are being charged for. The most commonly used pricing method is cost-based pricing and is based on the amount of costs related to producing the service or product (Macdivitt & Wilkinson, 2011). This pricing method is currently the one utilized by TENA when providing TENA Identifi. From interviews, it became clear that the personnel are aware that they are offering services that are not charged for since the price is based on the product and a few core service features. Calabrese (2013) states that this pricing approach is not suitable for companies offering multiple services, as TENA does for their current and future solutions, since the pricing itself is inaccurate and becomes hard to employ for multiple services. Compared to the cost-based approach to pricing, value-based pricing puts the customer in the center and is aligned with the fundamental elements of services, making this approach most preferable to service companies (Calabrese, 2013). The value-based pricing approach leads to a win-win situation where both

the customer and the supplier gains benefit from the purchase (Macdivitt & Wilkinson, 2011), and is far superior to the other conventional pricing methods such as cost-based pricing (Ingenbleek et al., 2003). It leads to higher margin earnings than other methods and is proven to lead to profitable newly introduced services (Calabrese, 2013). It furthermore seems to lead to an improved new product performance as well as improvement of overall firm performance (Kienzler, 2018). Since value-based pricing leads to higher margin earnings due to all value provided being captured in the pricing and the fact that it leads to profitable newly introduced services, this is a pricing method all servitized companies, including Essity, should adapt in order to mitigate the potential profit reduction associated with the service paradox. It is however important to note that the pricing method used should be utilized prior to launching a new service rather than afterwards since the addition of fees to services previously free of charge tends to prompt irritation and customer dissatisfaction (Frei, 2008).

6.2.2 How well does the applied framework combat the service paradox?

Neely (2008) presented three challenges which servitized companies are facing and where they all can lead to companies ending up in the service paradox if not faced. For a framework regarding solutions development to be deemed effective in its cause, it must address these challenges presented so that the service paradox is combated (see figure 28). Otherwise, solutions will be developed which will be hard to realize any profit from (Neely, 2008). There are however more benefits from selling solutions than the monetary ones, which is identified in the business model canvas of Ojasalo and Ojasalo (2018) where other gains than revenue are mentioned. This can, for example, be an increased marketing segment, improved brand reputation and overall PR amongst many others depending on the company and its situation. Solutions however need to be able to generate profit on their own, otherwise they will only be seen as a subsidiary to regularly sold products, a necessary cost which will have other benefits, but that pure products sold will always be needed in order to gain profit.

Shifting Mindsets	Of marketing - from transactional to relational marketing	✓
	Of sales - from selling multi-million dollar products to selling service contracts and capability	✓
	Of customers - from from wanting to own the product to be happy with the service	✓
Timescale	Managing and delivering multi-year relationships	
	Managing and controlling long-term risk and exposure	
	Modelling and understanding the cost and profitability implications of long-term relationships	
Business model and customer offering	Understanding what value means to customers and consumers, not producers and suppliers	✓
	Developing the capability to design and deliver services rather than products	✓
	Developing a service culture	(✓)

Figure 28: Challenges of servitization presented by Neely (2008), where each challenge is marked if it is addressed by the framework

The first challenge is shifting the mindset on customers and marketing, where the servitized companies must strive for the customer to be happy with the service provided, be relational in marketing and be selling service contracts in sales (Neely, 2008). Even though the framework does not explicitly emphasize the importance of shifting mindsets, the framework focuses on truly understanding the customers and their needs for products, services and interactions or

experiences (Jagstedt et al., 2018). This forces companies adapting the framework to investigate how customers would want to experience not only the products but also the services provided, which deals with the presented challenge of shifting mindsets regarding the customers. With this framework, customers are viewed upon both as to how they experience and enjoy the products as well as the services. The framework furthermore focuses on how the customers and the provider interacts, aiming to find interaction points and optimal ways of incorporating the products into the customer's existing operations. This part of the framework deals with the second part of the challenge, namely to shift focus from being purely transactional to becoming more relational in marketing, which comes as an effect of working more closely together with the customers to deliver a more customized solution. The framework isn't explicitly stating that a relational marketing approach is needed, but it is achieved as an effect of conducting the "interaction" and "integration" parts of the framework. The framework can finally be argued to deal with a needed shift in focus from selling only products to selling service contracts and solutions, due to the fact that services are a fundamental part of the offering in the framework, but the exact specifics of how the pricing should be conducted isn't mentioned. To conclude, even though the framework doesn't explicitly mention how to deal with the challenge of shifting mindsets, it deals with them as an effect of following the framework when developing solutions.

The second challenge presented by Neely (2008) is the timescale issue, where servitized companies needs to be able to manage and deliver multi-year partnerships, manage and control long-term risk and exposure and understand the cost and profitability associated with such long-term relationships. Jagstedt et al. (2018) promotes extensive customer relationships as something that simplifies finding suitable interaction points due to deeper customer knowledge, but doesn't handle relationships in any other way. Hence, the timescale issues presented is not dealt with in any clear way by the framework. If solutions are to be developed using this framework, with the aim of being profitable, they would have to be aware of and consider the challenge of managing multi-year relationships.

The third and final challenge presented by Neely (2008) is changing the existing business model and customer offering. A servitized firm needs to understand what the actual value is for the customers, develop the capability to design and deliver services and develop a service-oriented company-culture. The framework by Jagstedt et al. (2018) emphasized the importance of the first step, mainly understanding the customers true needs and what value are for them, which is one of the challenges presented. Even though the framework does not explicitly state how the capability should be developed for designing and delivering services, it is something that gets developed by following the framework and re-using commonalities. The third part of the framework is dedicated to understanding what service aspects are needed to fulfil the customers' needs, and the following parts is regarding how to incorporate and deliver these services to the customers in an optimal and efficient way. Therefore, it is deemed that the framework efficiently deals with the presented challenges regarding the business model and customer offering. The only one not as certainly addressed is the challenge of developing a service culture, which is not mentioned in the framework, but which also comes as a consequence of delivering and developing services.

7. Conclusions

The conclusions are presented in three sections where each section corresponds to one of this study's research questions. This chapter raises the most important findings from the chapters of analysis and discussion and aims to answer the purpose of the master thesis study.

7.1 What methods are suitable in the current setting for applying the framework presented by Jagstedt et al. (2018)?

Revealing the customers' needs and understanding them, is an important part of the framework by Jagstedt et al. (2018). As suggested by many authors (Bergman & Klefsjö, 2010; van Boeijen et al., 2013; Ulwick & Bettencourt, 2008) it is important to use different methods to reveal different levels of explicit needs. This study followed the suggestions to use interviews, shadowing or customer observations and group discussions with customers to reveal customers' needs and also what stakeholders exist in the customers' organizations. In this case, with a business to business solution, managing the customers' stakeholders were essential, as suggested by both Griffin (2013) and Anderson et al. (2009). Mapping the customer organization and agreeing upon what stakeholders are important for success, affect how the final solution should be designed. Since different stakeholders are involved in different parts of the solution and are interacting with the solution in different ways, how to fulfill the identified customers' needs is affected by which stakeholders experiences it.

In accordance to the framework by Jagstedt et al. (2018) previously conducted customer needs studies by Essity was used extensively and were verified through interviews with Essity employees. However, developing solutions without conducting own customer studies can give skewed result due to misinterpretation of previous collected information according to Bryman (2011). Wherefore the customer studies should not only try to find new insights but also strengthen the previous insights to ensure they are still valid, which is much less time consuming than discovering the actual insights from the beginning.

In the development of the final solution concept, service blueprinting served as a key method that spanned over several steps of the framework. It visualized service aspects, mapped interaction points and showed how the solution was integrated in the customer's processes as well as internal back-end and support processes. Lemon and Verhoef (2016) as well as Lewrick et al. (2018) presented service blueprinting as being a key method for developing services and facilitating inputs and feedback regarding the solution concept. As Morelli (2002) stated, services are fuzzy and harder to grasp than physical concepts, but service blueprinting makes it easier to communicate concepts. In accordance to the framework by Jagstedt et al. (2018), the comparison of service blueprints for different solutions can be vital when searching for shareable sub-processes. If the components for service blueprints presented by Bitner et al. (2008) are used, customization of customer actions and front-end interactions are to strive for and exploitation of commonalities in back-end and support processes are essential for sharing assets.

To deliver a final solution concept, the service blueprint visualized how the solution will be delivered but lacks aspects such as cost structure and revenue streams and can be complicated to grasp. To provide a better illustration of the future solution, business model canvases were used. The information needed to create business model canvases could mostly be derived from the service blueprint and the actual creation raises important discussions regarding for example what customer processes that creates value and how the provider can act as facilitator. Different business model canvases provide different perspectives and insights, but business model canvases are a graphical representation which is easily understood. Having multiple business

models is good but makes understanding them and visualizing them more complex, which is why all used business model canvases in this study were consolidated into a single illustrative canvas which could then serve as a good communication tool.

7.2 What issues or limitations with the framework can be seen when applied in practice?

The framework was considered to be useful in practice for developing solutions after applying it at the practical case study at Essity. However, it was missing a few key features, where the first aspect is that it was not as iterative as is needed when developing solutions. The work in this study was done iteratively, as suggested by Evenson and Dubberly (2010), to develop effective and efficient services. This was done between all steps together Essity staff and was highly beneficial, however the literature stresses the importance of doing iterations together with the customers as well, something this case study did not manage to utilize in the desired extent due to it being hard to arrange, since the customers are already low on available time (Lewrick et al., 2018; Meyer & Schwager, 2007). Even though Jagstedt et al. (2018) stated the importance of working iteratively when presenting managerial challenges in their publication, it is not mentioned when explaining the framework for any other part than the final part which is "Integration". Due to the importance of working iteratively, especially in development of new radical solutions and involving the customers, it is suggested that the framework needs to emphasize the iterative approach all throughout the framework by presenting it graphically more similarly to Evenson and Dubberly's (2010) framework.

It is furthermore lacking features such as post-market support and competition analysis. Post-market support was identified by both Tuli et al. (2007) and Töllner et al. (2018) to be a fundamental part of effective solutions and is not explicitly mentioned in the framework. The same goes for analyzing the competition and the market, which is required especially for radical innovations or products entering new markets to understand how to develop the solutions in order to target certain market segments or market positions. By simply looking internally and developing a solution, a company might end up with a solution similar to competition which might not get the intended market shares. It is therefore suggested that the framework adds emphasis to these two features, for the framework to become applicable to companies in the struggle of developing profitable solutions.

Finally, the framework was found to be missing a vital part in the closing stages, namely an "Implementation" phase. Evenson and Dubberly (2010), adds such a step to their framework for developing services, where it aims to gather feedback and tune the supporting systems after the delivery. The study revealed that an important final part when developing solutions was to identify gaps between the desired future state and the existing state. These gaps were then intended to be focused on, so that the future state can efficiently be reached. Gaps can be anything from products and tools to contracts with certain partners. These gaps are even more prominent when developing radical innovation projects, which is why the framework could benefit from adding this final step to the framework, to make it usable for other settings.

7.3 Is the framework theoretically solid to use for deriving a profitable solution?

As can be seen in figure 28, the framework is addressing two out of three of the presented challenges by Neely (2008), but is still lacking elements of it facing the timescale issues inherent with delivering solutions. Since these are the most prominent challenges of companies which are adding services to their offerings and where each of them needs to be addressed in order to ensure that the service paradox isn't actualized, the framework needs to address also the timescale issues in order to be a framework for developing profitable solutions.

The literature focuses on the cost structure as part of the reason for why solutions are not profitable, and states that there are more costs inherent with providing services which aren't met in revenue (Blok et al., 2010; Reim et al., 2015). Even though adding services increases the overall revenue, the profit is oftentimes reduced, leading to non-profitable solutions. The framework does suggest utilizing commonalities between different solutions to reduce the cost per unit and provide a more efficient cost structure, but lacks features presented by Frei (2008) regarding how the cost structure can be built up so that services are paid for by themselves. Even though the framework addresses cost structures, it doesn't emphasize the importance of reducing costs inherent with services to increase the profitability of the overall solution. As mentioned, the literature focuses on cost structures to reduce the probability of ending up in the service paradox, but it fails to highlight the importance of pricing being a possible solution, as do the framework. It was found that Essity still utilize traditional cost-based pricing for their offered solutions today, and according to literature, Value-Based Pricing is the most appropriate pricing method for solutions. It leads to higher margin earnings, improved new product performance and profitable newly introduces services (Calabrese, 2013; Kienzler, 2018), and is therefore an aspect to consider when addressing the service paradox, that the reduction in profitability is not only due to bad cost structures, it can also be due to bad pricing.

Suggestions are that the framework needs to add elements regarding choosing the right cost structure and pricing, so that the solution offered can be profitable. It finally needs to add elements regarding the time-scale issue, to ensure that all challenges of the service paradox are being met, in order for the framework to be deemed efficient in delivering profitable solutions.

8. Contribution and Future Research

This study has contributed to literature by reviewing a recently published framework derived for developing solutions. The study has shown how the framework was applied in practice, which was missing from the publication where the framework was presented, and provided practical insights regarding its benefits and limitations. Theoretical insights were also presented where it was primarily discussed how the framework is theoretically suited to developing solutions, as well as how well it combated the service paradox. The final theoretical contribution was regarding how the service paradox can be combated through other ways than highlighted in existing literature.

The practical contributions were such that Essity was provided with a concept for a future solution, developed by the reviewed framework of Jagstedt et al. (2018) and complemented with other solution development theory, to increase the chances of it being a profitable solution. Essity was furthermore provided with a service blueprint and a merged business model canvas, which were created during the study by merging three of the most commonly used ones. These practical contributions helped the company visualize the organization and broaden the knowledge within the existing teams.

There are possible future research areas which would need investigation to follow-up and build on this study. The first one is to actually test the profitability and success of the finished concept to validate if the solution derived from utilizing the framework performed as theory suggests. Essity was given a future solution concept with a service blueprint and a business model which was derived from theory with the aim of having developed a profitable solution concept. Even if Essity employees are counseled for advice on how they think that this future solution would perform, it cannot be proven until the solution has actually been launched and put on the market. Future research would hence be to follow a company from the beginning of deriving a solution, using the framework, to when the solution has been created and is being sold.

The framework was derived from the automotive industry and this study presents insights regarding limitations for its applicability into other industries. It has been seen that the composition of the physical product and the radical nature of the development project affects the transferability of the framework, but it was not a focus area of this study. Therefore, further research is needed in order to understand what other factors might affect transferability so that a better understanding of the framework's usability for different industries is achieved.

Finally, future research would need to look into how not only the cost structure leads to the service paradox but also how pricing methods affects the service paradox, since from this study it was concluded that the existing literature has focused mostly on the cost structure and less on the pricing when discussing reasons for the service paradox. By studying pricing methods such as value-based pricing and understanding how literature states that it differs from more conventional pricing methods, it was found that pricing might impact the service paradox even more than the cost structure. However, this is an area of future research, to investigate the impact and correlation to the service paradox.

References

Al-Samarraie, H. & Hurmuzan, S. (2018). A review on brainstorming techniques in higher education. *Thinking Skills and Creativity, 27*, 78-91. doi: 10.1016/j.tsc.2017.12.002

Alänge, S. (2009). *The Affinity- interrelationship Method AIM*. Accessed: 2019-02-12 from http://publications.lib.chalmers.se/records/fulltext/204517/local_204517.pdf

Anderson, J., Narus, J., Narayandas, D. (2009). *Business market management: Understanding, creating and delivering value.* London: Pearson Education

Baines, T. S., Lightfoot, H. W., Benedettini, O., & Kay, J. M. (2009). The servitization of manufacturing: A review of literature and reflection on future challenges. *Journal of Manufacturing Technology Management*, *20*(5), 547–567. doi: 10.1108/17410380910960984

Baines, T., Lightfoot, H., Smart, P. (2011). Servitization within manufacturing: Exploring the provision of advanced services and their impact on vertical integration. *Journal of Manufacturing Technology Management, 22*(7), 947-954. doi: 10.1108/17410381111160988

Bergman, B. & Klefsjö, B. (2010). *Quality from customer needs to customer satisfaction.* Lund: Studentlitteratur AB

Beuren, F. H., Gomes Ferreira, M. G., Cauchick Miguel, P. A. (2013). Product-service systems: a literature review on integrated products and services. *Journal of Cleaner Production, 47*, 222–231. doi: 10.1016/j.jclepro.2012.12.028

Bigorra, A. & Isaksson, O. (2017). Combining customer needs and the customer's way of using the product to set customer focused targets in the house of quality. *International Journal of Production Research, 55*(8), 2320-2335. doi: 10.1080/00207543.2016.1238114

Bitner, M., Ostrom, A., Morgan, F. (2008). Service blueprinting: a practical technique for service innovation. *California Management Review*, *50*(3), 66-94. doi: 10.2307/41166446

Boehm, M. & Thomas, O. (2013). Looking beyond the Rim of One's Teacup: A Multidisciplinary Literature Review of Product-Service Systems in Information Systems. *Journal of Cleaner Production, 51*, 245-260 doi:10.1016/j.jclepro.2013.01.019

Bolweg, J. (1976). *Job design and industrial democracy: The case of Norway*. Boston, MA: Springer US.

Bottani, E. & Rizzi, A. (2006). Strategic management of logistics service: A fuzzy QFD approach. *International Journal of Production Economics, 103*, 585-599. doi: 10.1016/j.ijpe.2005.11.006

Brax, S. & Jonsson, K. (2009). Developing integrated solution offerings for remote diagnostics: A comparative case study of two manufacturers. *International Journal of Operations and Production Management, 29*(5), 539–560. doi: 10.1108/01443570910953621

Bryman, A. (2011). *Samhällsvetenskapliga metoder.* Malmö: Liber

Bryman, A. & Bell, E. (2015). *Business research methods.* Oxford University Press, USA

Böttcher, M. & Klingner, S. (2011). Providing a method for composing modular B2B services. *Journal of Business & Industrial Marketing*, *26*(5), 320-331. doi: 10.1108/08858621111144389

Campbell, C. S., Maglio, P. P., & Davis, M. M. (2011). From Self-Service to Super-Service: A Resource Mapping Framework for Co-Creating Value by Shifting the Boundary Between Provider and Customer. *Information Systems and e-Business Management, 9*(2), 173-191. doi: 10.1007/s10257-010-0142-4

Carbone, L. & Haeckel, S. (1994). Engineering Customer Experiences. *Marketing Management, 3*(3), 8-19.

Cenamor, J., Rönnberg Sjödin, D., Parida, V. (2017). Adopting a platform approach in servitization: Leveraging the value of digitalization. *International Journal of Production Economics, 192*, 54-65. doi: 10.1016/j.ijpe.2016.12.033

Charan, P., Panda, S.K., Madaan, J. (2015). *Analysing the strategic service vision and its' performance implications: A case of two eco-resorts*.

Clancey, W. (2006). Observation of Work Practices in Natural Settings. In K. Ericsson, N. Charness, P. Feltovich, & R. Hoffman (Eds.), *The Cambridge Handbook of Expertise and Expert Performance* (pp. 127-146). Cambridge: Cambridge

Day, G. S. (2004). Achieving Advantage with a New Dominant Logic. Invited Commentaries on 'Evolving to a New Dominant Logic for Marketing'. *Journal of Marketing, 68,* 18–19.

Denscombe, M. (2014). *The good research guide: For small scale research projects.* Maidenhead: Open University Press.

De Blok, C., Luijkx, K., Meijboom, B. & Schols, J. (2010). Modular care and service packages for independently living elderly. *International Journal of Operations and Production Management, 30*(1), 75-97. doi: 10.1108/01443571011012389

Ding, J., Liu, J., Tian, Q., Wu, Z., Yao, W., Dai, Z., … Wu, W. (2016). Preparing of Highly Conductive Patterns on Flexible Substrates by Screen Printing of Silver Nanoparticles with Different Size Distribution. *Nanoscale research letters, 11*(1), 412. doi:10.1186/s11671-016-1640-1

Dubé, L., Michael, D. & Renaghan, L. (1999). Adapting the QFD approach to extended service transactions. *Production and Operations Management 8*(3). doi: 1059-1478/99/0803/301$1.25

Evenson, S. & Dubberly, H. (2010). Designing for Service: Creating an Experience Advantage. Salvendy, G. & Karwowski, W. (Eds.), *Introduction to Service Engineering* (pp. 403-413). Chichester, England: John Wiley & Sons, Ltd

Frei, F. (2008) The Four Things a Service Business Must Get Right. *Harvard Business Review, 86*(4), 70-80

Gebauer, H., Fleisch, E., Friedli, T. (2005). Overcoming the service paradox in manufacturing companies. *European Management Journal, 23*(1), 14–26. doi: 10.1016/j.emj.2004.12.006

Griffin, A. (2013) Obtaining customer needs for product development. Kenneth, K., Evans, K., Slotegraaf, R. & Uban, S. (Eds.), *PDMA Handbook of new product development*, (pp. 213-230). Chichester, England: John Wiley & Sons, Ltd

Grönroos, C. (2000). *Service Marketing and Management: A Customer Relationship Management Approach*. Chichester, England: John Wiley & Sons, Ltd

Hallencreutz, J., Parmler, J. (2018). *Important drivers for customer satisfaction - from product focus to image and service quality*. EPSI Rating Group

Hanyeong, K., Yun Shin, L., Kun Soo, P. 2018. The Psychology of Queuing for Self-Service: Reciprocity and Social Pressure. *Administrative Sciences, 8*(4), 75. doi: 10.3390/admsci8040075

Hassani, M., Shahin, A. & Kheradmandnia, M. (2018). Service quality function deployment by the C-shaped QFD 3D matrix: The case of post bank services. Benchmarking: *An International Journal, 25*(9), 3386-3405. doi: 10.1108/BIJ-04-2017-0065

Hinterhuber, A. 2008. Customer value-based pricing strategies: why companies resist. *Journal of Business Strategy, 29*(4), 41-50. doi: 10.1108/02756660810887079

Holmlid, S. (2007). Interaction design and service design: Expanding a comparison of design disciplines. *Nordic Design Research, 2*.

Huang, B. H. (2010). What is good action research? Why the resurgent interest? *Action Research, 8*(1), 93-109. doi: 10.1177/1476750310362435

Ingenbleek, P., Debruyne, M., Frambach, R. & Verhallen, T. (2003). Successful new product pricing practices: a contingency approach. *Marketing Letters, 14*(4), 289-305.

Jagstedt, S., Hedvall, K & Persson, M. (2018). The Virtue of Customising Solutions: A Managerial Framework. Kohtamäki, M., Baines, T., Rabetino, R., Bigdeli, A. (Eds.), *Practices and Tools for Servitization - Managing Service Transition* (pp. 291-306). Cham: Springer International Publishing.

Johne, A. & Storey, C. (1998). New Service Development: A Review of the Literature and Annotated
Bibliography. *European Journal of Marketing, 32*(3). 184-251. doi: 10.1108/03090569810204526

Johnston, R. (1999). Service operations management: return to roots. *International Journal of Operations & Production Management, 19*(2), 104-124. doi: 10.1108/01443579910247383

Johnston, R. (2005). Service operations management: from the roots up. *International Journal of Operations & Production Management, 25*(12), 1278-1297. doi: 10.1108/01443570510633666

Kannan P.K., Healey J. (2011) *Service Customization Research: A Review and Future Directions*. In: Demirkan H., Spohrer J., Krishna V. (eds) The Science of Service Systems. Service Science: Research and Innovations in the Service Economy. Springer, Boston, MA.

Kurts. C., Snowden, D. (2003). The new dynamics of strategy: sense-making in a complex and complicated world. *IBM Systems Journal, 42*(3), 462-484.

Lemon, K. & Verhoef, P. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing, 80*(6), 69-96. doi: 10.1509/jm.15.0420

Lewrick, M., Link, P & Leifer, L. (2018). *The design thinking playbook.* New Jersey: John Wiley & Sons, Inc

Macdivitt, H., & Wilkinson, M. (2011). *Value-Based Pricing: Drive Sales and Boost Your Bottom Line by Creating, Communicating and Capturing Customer Value*. US: McGraw-Hill.

Mahut, F., Daaboul, J., Bricogne, M. & Eynard, B. (2017). Product-Service Systems for servitization of the automotive industry: a literature review, *International Journal of Production Research, 55*(7), 2102-2120. doi: 10.1080/00207543.2016.1252864

Magnusson, M., Pasche, M. (2014). A Contingency-Based Approach to the Use of Product Platforms and Modules in New Product Development. *Journal of Product Innovation Management, 31*(3), 434-450. doi: 10.1111/jpim.12106

McDonald, S. (2005). Studying actions in context: a qualitative shadowing method for organizational research. *Qualitative Research, 5*(4), 455-473. doi: 10.1177/1468794105056923

Meyer, H., & DeTore, A. (2001). PERSPECTIVE: Creating a platform-based approach for developing new services. *The Journal of Product Innovation Management, 18*(3), 188–204. doi: 10.1016/S0737-6782(01)00070-4

Meyer C. & Schwager, A., (2007) Understanding customer experience. *Harvards Business Review, 85*(2), 116-126.

National Board of Trade, (2010) *Servitization of Swedish manufacturing.* Stockholm: National Board of Trade

Neely, A. (2008). Exploring the financial consequences of the servitization of manufacturing. *Operations Management Research, 1*(2), 103–118.

Neslin, S. A., Grewal, D., Leghorn, R., Shankar, V., Teerling, M. L., Thomas, J. S. & Verhoef, P. C. (2006). Challenges and Opportunities in Multichannel Customer Management. *Journal of Service Research, 9(*2), 96-112. doi: 10.1177/1094670506293559

Ojasalo, J. & Ojasalo, K. (2018). Service Logic Business Model Canvas. *Journal of Research in Marketing and Entrepreneurship, 20(*1), 70-98. doi:10.1108/JRME-06-2016-0015

Osterwalder, A. (2004). *The business model ontology - a proposition in a design science approach* (Doctoral thesis, University of Lausanne in commercial studies). Retrieved 2019-04-16 from https://serval.unil.ch/resource/serval:BIB_R_4210.P001/REF.pdf

Osterwalder, A., Pineur, Y. (2010). *Business model generation*. New Jersey: John Wiley & Sons, Inc.

Parida, V., Rönnberg-Sjödin, D., Wincent, J., Kohtamäki, M., (2014). Mastering the transition to product-service provision: insights into business models, learning activities, and capabilities: results of a large-scale survey suggest that a thorough and comprehensive organizational transformation is required to support the transition to servitization. *Research-Technology Management, 57*(3), 44–52.

Phelps, S. (2017). *Mind the customer expectation gap.* Retrieved 2019-03-07 from https://www.forbes.com/sites/stanphelps/2017/01/27/mind-the-customer-expectation-gap/

Purvis, B., Mao, Y. & Robinson, D., (2019) Three pillars of sustainability: in search of conceptual origins. *Sustainability science, 14*(3), 681-695 doi: 10.1007/s11625-018-0627-5

Qaqish, D. (2018) Customer journey mapping in 3 steps. *Marketing News, 52*(8), 4-5.

Randstad. (2019). *Employer brand research 2019, landsrapport Sverige*. Retrieved 2019-04-29 from https://info.randstad.se/employer-brand-research-2019

Reim, W., Parida, V., Örtqvist, D. (2015). Product–Service Systems (PSS) business models and tactics – a systematic literature review. *Journal of Cleaner Production, 97*, 61–75. doi: 10.1016/j.jclepro.2014.07.003

Robertson, D., & Ulrich, K. (1998). Platform product development. *Sloan Management Review, 39*(4), 19–31.

Rosenbaum, M., Otalora, M & Ramirez, G., (2017). How to create a realistic customer journey map. *Business Horizons, 60*(1), 143-150. doi: 10.1016/j.bushor.2016.09.010

Sayadi, S., Erraach, Y. and Parra-López, C. (2017). Translating consumer's olive-oil quality-attribute requirements into optimal olive-growing practices: a quality function deployment (QFD) approach. *British Food Journal*, 119(1), 190-214.

Scherer, A., Wünderlich N. V., von Wangenheim, F. (2015). The value of self-service: long-term effect of technology-based self-service usage on customer retention. *MIS Quarterly, 39*(1), 177-200

SimaVita. *(2018). Investor Slide Deck.* Retrieved 2019-02-27 from: http://www.simavita.com/irm/content/presentations1.aspx?RID=392

Swedish Quality Index. (2017). *SKI Kvalitetsindex Sverigekollen 2017*, Retrieved 1 February 2019 fro*m: www.kvalitetsindex.se/branschmatningar/sverigekollen-2017/.*

Suef, M., Suparno, S., Singgih, M.L. (2017). Categorizing product attributes efficiently in QFD-Kano: a case analysis in telecommunication. *The TQM Journal, 29*(3), 512-527. doi: 10.1108/TQM-03-2015-0036

TENA. (2019a). *TENA Identifi.* Retrieved 2019-02-27 from https://www.tena.nu/vardpersonal/vart-erbjudande/tena-identifi/

TENA. (2019b). *Vilka vi är.* Retrieved 2019-02-27 from https://www.tena.nu/om-tena

Toivonen, M. (2016). *Service Innovation: Novel Ways of Creating Value in Actor Systems.* Tokyo, Japan: Springer.

Tuli, K., Kohli, A. & Bharadwaj, S. (2007). Rethinking customer solutions: From product bundles to relational processes. *Journal of Marketing, 71*(3,) 1–17. doi: 10.1509/jmkg.71.3.1

Töllner, A., Blut, M. & Holzmüller, H. H. (2011). Customer solutions in the capital goods industry: Examining the impact of the buying center. *Industrial Marketing Management, 40*(5), 712–722. doi:10.1016/j.indmarman.2011.06.001

Ulwick, A., Bettencourt, L. (2008). Giving customers a fair hearing, *Sloan Management Review, 49*(3), 62-68

Umashankar, N., Bhagwat, Y. & Kumar, V. (2016). Do loyal customers really pay more for services? *Journal of the Academy of Marketing Science, 45*(6), 807-827. doi: 10.1007/s11747-016-0491-8.

van Boeijen, A., Daalhuizen, J., Ziljstra, J & Van der Schoor (eds.). (2013). *Delft Design Guide.* Amsterdam: BIS Publishers.

Vandermerwe, S. & Rada, J. (1988). Servitization of business: Adding value by adding services. *European Management Journal, 6*(4), 314-324

Vargo, S. L., Lusch, R. F. (2008). Service-Dominant Logic: Continuing the Evolution. *Journal of the Academy of Marketing Science, 36(*1), 1-10. doi: 10.1007/s11747-007-0069-6

Violante, J., Pogor, I., Lam, T., Davari, D. (2010). Comparison study of two Italian restaurants: Vapiano & Trattoria Il Panino. *Operations Management of Services: Concepts, Design, and Delivery*. MIT Sloan School of Management.

Voorhees, C., Fombelle, P., Gregoire, Y., Bone, S., Gustafsson, A., Sousa, R & Walkowiak, T. (2017). Service encounters, experiences and the customer journey: Defining the field and a call to expand our lens. *Journal of Business Research, 79*, 269-280

Wallén, G. (1996). Vetenskapsteori *och forskningsmetodik.* Lund: Studentlitteratur.

Westphal, J., Edwar, Z. (1998). The Symbolic Management of Stockholders: Corporate Governance Reforms and Shareholder Reactions. *Administrative Science Quarterly, 43*(1), 127–53. doi: 10.2307/2393593

Yin, R. (1994). *Case Study Research*. London: SAGE.

Appendix

Appendix 1 – Interviews conducted

ID	Date	Job Position	Topic	Type of interview	Amount of time
1	21/01/2019	Senior Laboratory Engineer	Incontinence Patterns in diapers	Unstructured	30 min
2	24/01/2019	Process and Quality Manager	Development projects of software and hardware for Tena Smart Care	Unstructured	60 min
3	07/02/2019	Global Brand Innovation Manager	Understanding Customer Needs, Incontinence Assessments, routines at Nursing Homes	Unstructured	60 min
4	08/02/2019	Global Product Owner	Debriefing of insights from her business trip to Canada, visiting nursing homes using Tena Change Indicator	Unstructured	60 min
5	11/02/2019	Global Brand Communication Manager	Customer Needs, Stakeholders, Nursing Homes	Unstructured	60 min
6	12/02/2019	Global Brand Innovation Manager	Customer Needs, Stakeholders, Nursing Homes	Unstructured	60 min
7	19/02/2019	Brand Manager Sweden	Sales processes to customers	Unstructured	60 min
8	21/02/2019	Sales Manager	Sales processes to customers	Semi-structured	60 min
9	27/02/2019	Sales Manager Key Account Manager	Findings after customer interviews	Unstructured	30 min
10	01/03/2019	Process and Quality Manager	See interview template in appendix 4	Semi-structured	60 min
11	6/03/2019	Process and Quality Manager	See interview template in appendix 4	Semi-structured	60 min
12	13/3/2019	Global Brand Director Services	Service Business Model for other Essity products	Unstructured	60 min
13	13/3/2019	Brand & Product Manager	Competitors and substitutes	Unstructured	45 min
14	18/3/2019	Global Solutions Owner	Service blueprinting for TENA digital product	Unstructured	45 min
15	26/3/2019	Global Product Owner, Global Solution Owner	Feedback on service blueprint	Unstructured	45 min
16	26/3/2019	Brand Manager Sweden	Feedback on service blueprint	Unstructured	30 min

17	2/4/2019	Global Solutions Owner	Synergy effect between solutions	Unstructured	30 min
18	28/3/2019	Global Brand Director Services	Consultation as a service and value based business model	Unstructured	30 min
19	2/4/2019	Post Market Surveillance Manager	Customer support processes of Essity	Unstructured	60 min
20	2/4/2019	Product Specialist	Implementation of TENA digital products in customer operations	Unstructured	60 min
21	29/4/2019	Global Product Owner	Feedback on business model for future TENA digital solution	Unstructured	90 min

Appendix 2 – Interviews with customer staff

ID	Date	Job Position	Topic	Type of interview	Amount of time
A	26/02/2019	Personnel at Nursing Home Tre stiftelser Kallebäck	See interview template in appendix 3	Semi-structured	90 min
B	28/02/2019	Personnel at Nursing Home Tre stiftelser Vega	See interview template in appendix 3	Semi-structured	60 min
C	26/3/2019	Personnel at Nursing Home Tre stiftelser Otium	See interview template in appendix 5	Semi-structured	60 min
D	03/4/2019	Responsible for digitalization at Tre Stiftelser	Possibilities and hinders for implementing digital products	Semi-structured	90 min

Appendix 3 – Interview template for professional Care giver and prescribing nurse

Arbetsrutiner dag

- Kan du berätta lite om dig själv?
    - Hur länge man har jobbat här?
    - Vart har man jobbat tidigare?
- Hur ser en arbetsdag ut?
- Hur är din syn på de individuella inkontinensplanerna som sätts?

Arbetsrutin kring inkontinensvård

- Hur ser produktbytesprocessen ut?
- Enkelt/tidskrävande
- Hur tar hyresgästen denna processen
- Vad är jobbigast med produktbytet
- Hur får ni reda på att det är dags att byta?
- Händer det att ni byter för sent så att obehag som odör och hudirritationer uppstår för hyresgästen? Om så, vad är anledningen till detta?
- Är det tydligt och klart vilken produkt som skall användas som är mest optimal för hyresgästen?
    - Är detta den som står i dess individuella vårdplan?
- Är rapporteringen av inkontinensarbetsrutiner enkel? Hur ser den ut? Måste något rapporteras/fyllas i efter att hyresgästen tagits till toaletten eller bytt produkt?
- Hur väl följs de individuella inkontinensplanerna gällande tider för toalettbesök och produktval?
- Vilken möjlighet finns att påverka individuella inkontinensplaner?
- Känner du att den informationen du behöver för att ge god inkontinensvård finns lättillgängligt?

Arbetsrutiner natt

- Hur ser natten ut? Skiljer det sig mycket från dagspasset?
- Hur ofta väcks/kontrolleras hyresgästerna och vad är anledningarna?

Produkt

- Vilket värde ser du i en produkt som Tena Identifi?
- Är loggern och TENA Identfifi systemet enkelt att använda?
- Är det tidskrävande?
- Vad är det jobbigaste/mest frustrerande under en assessment`?

Arbetsrutin kring Assessments

- Hur ofta är du som sjuksköterska inblandad i Assessments?
- Vilka mer är involverade i att lägga upp en personlig plan för inkontinensvård?
- Hur ser du på TENA Identifi's webportal?
    - Är den intuitiv?
    - Lättanvänd?
    - Komplicerad eller "få steg till resultat"?
- Hur ser du på rapporterna som skapas?
    - Är det enkelt att utifrån rapporten tolka och definiera fasta tider som hyresgästen bör tas till toaletten?

Appendix 4 – Interview template regarding new product development

Hur såg utvecklingen av TENA Change Indicator ut?

- Hur initierades projektet?
- Fanns det ett behov av denna produkten på marknaden som man visste om eller tryckte man bara ut produkten för att den "är bra".
- Gjorde man någon typ av kundundersökning före uppköpet/projektutvecklingen?
- Vad återanvände man från Identifi? Vad var nytt?
- Vet man vilka behov som Change Indicator uppfyller? Är detta behov man hittat från undersökningar eller annan data eller tänkta behov?
- Utvecklades CI som en fristående produkt eller som ett paket med Identifi?
- Hur såg samma process ut för Identifi? Gjorde man kundundersökningar osv eller skapade man en produkt man "Tryckte ut"?

Några commonalities med TENA Identifi?

- Vad är likt?
- Vad skiljer?

Appendix 5 – Interview template for Nursing Home Unit Manager

Mer om rollen som enhetschef

- Kan du berätta lite mer om dig själv och din bakgrund?
- Vad är din främsta uppgift som enhetschef?
- Vilka nyckeltal mäts du på i ditt arbete?
- Vilka nyckeltal tittar du på?
- Hur ser dina dagliga rutiner ut?
- Vad har du för svårigheter i dagsläget med arbetsuppgifter?

Care plans and schedules

- Hur sätts den totala vårdplanen?
    - Inkontinens planen?
- Hur sätts arbetsscheman?
- Hur fungerar Appva som stöd?
- Vad är din påverkan på vårdplaner?
- Hur fungerar beställning av nya produkter, främst Identifi?
    - Lagerhållning, lagersaldon

Additional questions

- Upplever du ett problem med personalomsättning?
    - Vilken introduktion får ny / tillfällig personal?
- Upplever personal att det är svårt att ta på inkontinensprodukter rätt?
- Vilken information är viktig att ta hänsyn till när det kommer en ny boende?
- Hur mäter man in inkontinensprodukter?
    - Vilka verktyg används? Måttband?
- Vilka digitala verktyg använder ni i arbetet?
    - Hur nyttjar ni smart telefoner?
- Vad är din definition av:
    - Quality of care?
    - Effective care?
    - Efficiency in care?
    - Cost of care?

Appendix 6 – Workshop customer needs

Brainstorming session kring kundbehov

Vad behöver du?

- Penna
- Post-it lappar

Steg 1. Kartläggning av aktörerna

1. Skriv ner alla aktörer i kundens organisation som är involverade i TENA Identifi och Change Indicator. *OBS! Skriv 1 aktör per post-it lapp.*
2. Sätt dina post-it lappar på bordet så hämtas dem och sätts på tavlan.

Steg 2. Validering av aktörerna

Vi går tillsammans igenom lapparna så att alla är överens om de aktörer som är involverade och bör tas i hänsyn gällande TENA Identifi och Change Indicator.

Steg 3. Kartläggning av kundbehov

1. Skriv ner samtliga kundbehov som du identifierar, för varje individuell aktör (dvs du skriver lappar som är dina identifierade kundbehov för aktör 1 och lappar som är för aktör 2 osv). *OBS! Skriv endast ett kundbehov per post-it lapp!*
2. Sätt dina post-it lappar på bordet så hämtas dem och sätts på tavlan.

Steg 4. Validering och förtydligande av kundbehoven

Vi går tillsammans igenom lapparna så att alla är överens om och förstår de identifierade kundbehoven för varje aktör.

Steg 5. Gruppering av kundbehov

Gå upp tillsammans med alla andra och gruppera kundbehoven under varje aktör under en gruppering som *du* tycker passar. ***Detta måste göras i komplett tystnad***, och du får flytta lappar som andra har flyttat före dig. Du behöver inte be om lov utan du ska gruppera lapparna enligt din bild. Detta pågår tills lapparna har grupperats färdigt.

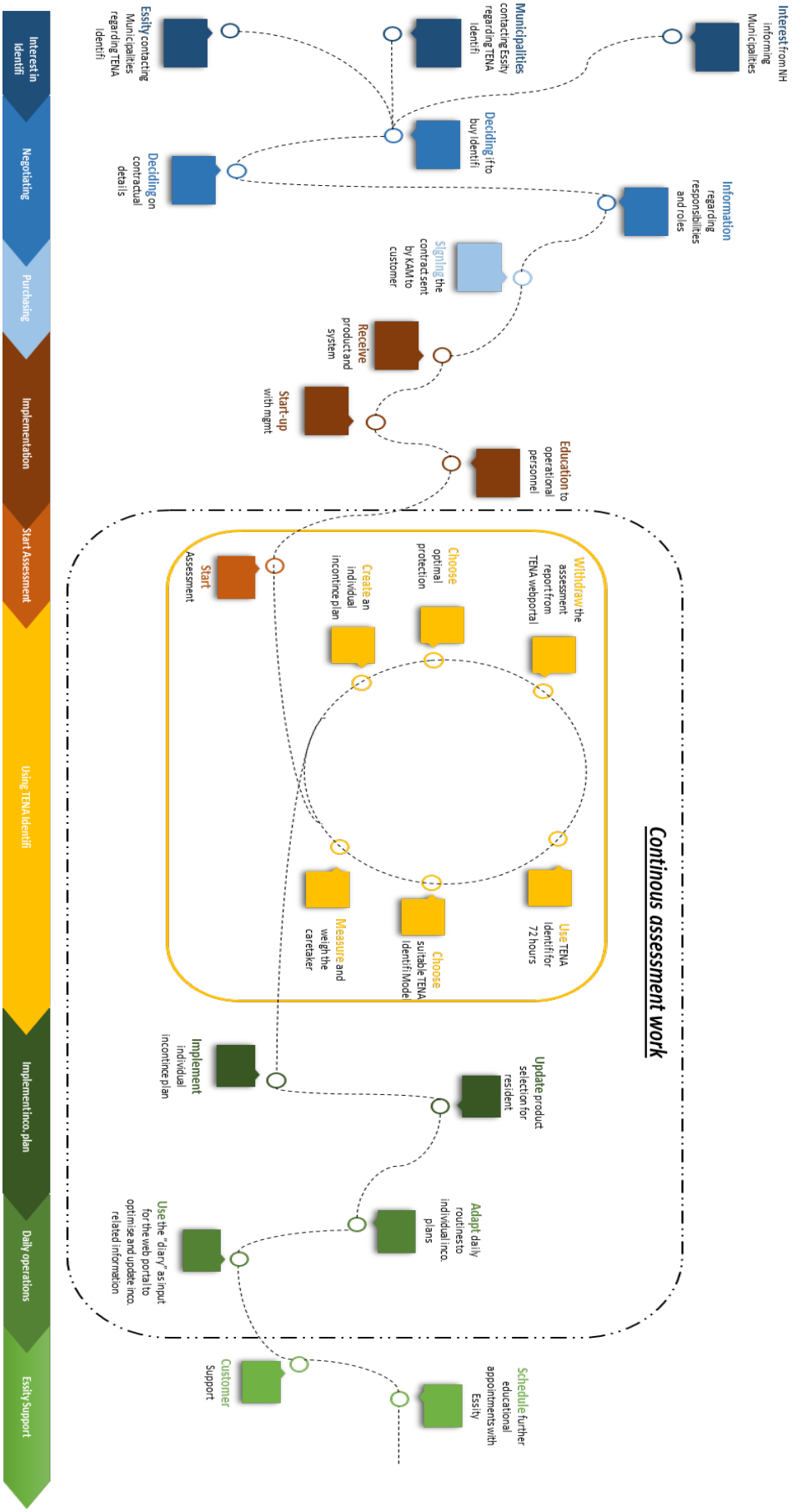
Steg 6. Rubriksättande

I detta steg ska ni alla enas om en rubrik som passar de grupperingarna ni har genomfört av kundbehoven. En rubrik ska skapas för varje gruppering.

Steg 7. Prioritering av kundbehov

I detta steg ska ni enas om ett prioritetsvärde för varje kundbehov mellan 1-5 där 5 är högsta prioritet och 1 är lägsta prioritet.

Appendix 7 – Complete customer journey map for TENA Identifi



Appendix 8 – Contributions to sustainability

Sustainability is according to Purvis, Mao and Robinson (2019) often divided into the three different dimensions; environmental, social and financial. In this chapter the impact and contribution this master thesis provides on each specific dimension will be discussed.

The work conducted in this master thesis study contributes to environmental sustainability on two different levels. The solution itself was developed by applying the framework in a practical setting and has, for this case study, the possibility to improve people centric care by ensuring that incontinence products are changed when necessary and that the right product size is used. In the long term, this leads to a reduction in (incontinence-related) waste material produced by nursing homes using the future solution (TENA 2019a). On another level, the master thesis provides a deeper understanding and knowledge on regarding how to combat one of the existing barriers for servitization, namely the service paradox. By assisting firms in overcoming that barrier they can achieve an increased environmental performance Neely (2008).

The future solution, and therefore the thesis, contributes on two aspects regarding social contribution. Firstly, the solution has the potential to increases the quality of life for elderly residents suffering from incontinence issues in nursing homes all around the world. Secondly, the solution can improve the work environment in nursing homes due to introducing technologies in nursing homes which removes previously unwanted work assignments and eases the overall work burden. From customer studies it can be seen that introducing technologies in a nursing home increases its LIKA-rate which increases the reputation of the nursing home and the happiness among the staff.

Finally, the thesis contributes mostly to the dimension of financial sustainability. The third research question focuses on how the framework can be used to develop profitable solutions and overcoming the service paradox. The thesis provides insights on how to develop solutions that can be delivered efficiently and through correct pricing methods, amongst others, overcome the service paradox. The financial sustainability is an actual problem that companies are facing whilst becoming servitized and moving towards future business models.