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Productization Recommendations of Service Contracts for the Case Company

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PREFACE

I want to express my gratitude to the case company for providing me the opportunity to work on such an interesting topic. This work has helped me to grow as an individual and I have come out of this as a better person.

I want to extend a special note of thanks to my supervisor, Dr. Mari Hiljanen for the consistent support and guidance she provided throughout the thesis study. She has helped me immensely to maintain my focus towards the finish line.

I want to thank all my colleagues in the case company for helping me with valuable information without which this thesis study would not have been possible.

I want to dedicate this thesis study to my father. Though you were not in a state to support my studies, I wish I was able to share my joy in finishing this thesis with you. I can only imagine the joy you would have hearing this. A special thanks to my mother and younger brother for being a pillar of support throughout my studies.

Last, but not the least, I want to thank my wife for undertaking this journey with me. You were my biggest support through many a tough day.

Masala, 05.05.2024

Gnana Sambandhan Meikandaan

Abstract

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The case company is a rapidly growing company providing equipment, software, and services for coating extremely thin films over a required surface. Recently, the case company made the decision to productize its service offerings in order to cater to high volume manufacturing customers in the semiconductor business market. Specifically, these customers requested comprehensive service contracts to aid their businesses. Hence, this thesis study was performed to propose productization recommendations of service contracts for the case company.

The thesis study utilized the applied research approach for handling the business problem and for developing practical and useable solutions for the case company. The research approach involved four stages. The first stage was to study the existing literature regarding productization activities and to develop a step-by-step conceptual framework. The second stage was to understand the current service contract offering and the service contract offering process and to identify the key strengths and weaknesses. Out of the twelve identified weaknesses, five weaknesses that were relevant to the productization of the service contract were chosen for further study. The third stage was to co-create a set of initial recommendations based on the findings from the conceptual framework and the selected weaknesses. The initial recommendations included data requirements for calculating the cost of ownership for an equipment. The final stage was the validation of the initial recommendations.

The outcome of this thesis study is a set of productization recommendations of service contracts for the case company. These recommendations help the case company to improve its service offerings and provide better services to its intended customers.

Keywords: Productization, Service Contracts, Cost of Ownership

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1 Introduction

Service sales is an important part of any organization that intends to build trust with its customers. It is responsible for maintaining equipment in proper working condition after the equipment has been delivered to a customer. When an organization provides good support after the delivery of the equipment, it is helpful to maintain a successful and long-term relationship with the customer. This augurs well for increased sales to the customer in the future and helps a company stand out from its competitors.

A good service sales business needs to be easily scalable and repeatable. The process by which service sales can be made scalable and repeatable is known as productization. With a well-defined product, a company can streamline its operations and hence, can reduce its costs. A consistent service sales business also provides a predictable revenue to the company. It can help the company to follow legal frameworks and guidelines better and makes it easier to accommodate any changes. Consequently, companies have recognized a clear need for the productization of service sales business.

A company which manufactures and supplies any type of equipment needs to have a robust service business in order to cater to the demands of a customer. A key part of such a service business will be the service contracts that a company can offer its customers.

This study intends to provide recommendations for the productization of service contracts for the case company.

1.1 Business Context of the Case Company

The case company provides equipment, software, and services for coating extremely thin films over required surfaces. It is based in Finland and has more than 200 employees worldwide. The case company manufactures different

types of equipment and provides services and maintenance activities for the same to a global customer base. The customers are spread across both in the research and development and high-volume manufacturing segments. Thus, it is highly imperative that the case company has a good service sales business to support its customers. Numerous customers in the high-volume manufacturing segments specifically expect the case company to provide comprehensive service contracts to support their processes. The case company has specifically decided to focus on the customers in the semiconductor market.

1.2 Business Challenge, Objective, and Outcome

The case company has recently decided to productize its service sales business. Currently, the case company has an ad-hoc service sales business model. The service sales business is only reactive and caters to the customer's requirements on a case to case basis. There is no standard product that can be sold for multiple customers. This hampers the repeatability of the business, and it is difficult to predict the revenue pipeline. The service contract offerings of the case company contain all the above-mentioned weaknesses too as there has been no standardized contract that can be sold to a customer.

The current service sales team has two service sales engineers reporting to the business manager. The two engineers manage all the global customers. Majority of the service contracts are sold by the service sales engineers after an equipment has been sold and delivered to the customer. A few service contracts are also packaged together with the equipment itself. Without proper productization, there is a lack of clarity in what has been sold to a customer. It is also difficult for the engineers to focus on providing service which adds value to the customers.

The objective of this study is to propose recommendations for the productization of service contracts for the case company. The outcome is the recommendations for productization of the service contracts for the case

company. The outcome will provide information that can be helpful for the case company when the productization is implemented.

1.3 Scope and Outline of the Study

In order to cater to the business problem stated under 1.1, this study is divided into seven sections. The Introduction and Project Planning comprise the first two sections. The third section discusses the existing literature relevant to practices in productization. The fourth section addresses the current practices followed in the service contract offering process of the case company. The fifth section has the initial recommendations for the productization based on the findings of the Current State Analysis and literature. The sixth section is the final recommendations for the business problem. This section also contains feedback received for the initial proposal built in section 5. The seventh section delves into a summary of the study while addressing the possibilities of further studies.

This study does not include the implementation of the recommendations.

2 Project Plan

This section aims to describe the research approach selected for this thesis work followed by the research design that has been adapted for the same. The section ends with a description of the data plan for the thesis work.

2.1 Research Approach

The research approach is an important part of any research work. A good research approach will pave the way for an accurate and reliable research work and will help to validate the research itself.

There are multiple approaches to this part of the research work. Broadly, it can be categorized as basic research and applied research. Hedrick et al. (1993) mention the differences between basic and applied research. Basic research helps to identify and understand new innovations in theory and does not focus on the practical usefulness of the innovation. As a result, it is not very useful to solve real world problems. It is also not suitable for problem solving within a very short time frame. Conversely, the main focus of applied research is to focus on providing solutions to real world problems within a short period of time. This makes it highly attractive and the most suited for this thesis work. Applied research is also useful for solving specific problems instead of general problems.

Kananen (2013) mentions that applied research aims to create solutions that are practical to deploy in organizations. It combines research and development to achieve this. In order to meet the objective stated in section 1.2, applied research is chosen as the desired research approach. This thesis work aims to tackle a real world problem in an organization that requires a practical solution in a short time frame. Hence, applied research has been chosen. In an organizational setup, two types of research can be used. They are qualitative

approach and quantitative approach. Kananen (2013) states that in a quantitative approach, mathematical and statistical data is used by a researcher to understand a problem. However, in a qualitative approach, different factors from individual cases are studied to formulate a theory. In this study, a qualitative approach has been chosen.

2.2 Research Design

The research design that has been selected for this thesis work includes four stages. Figure 1 shows the research design of this thesis work.

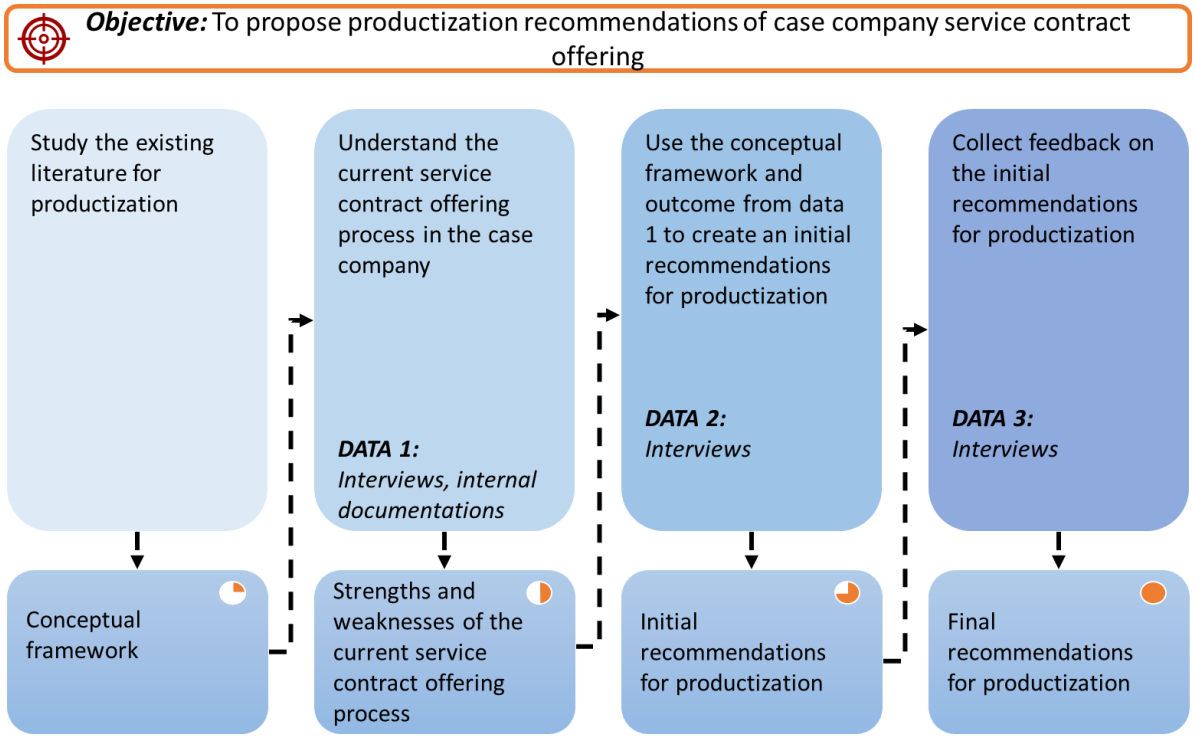

Figure 1. Research design of this thesis work

As shown in Figure 1, the first part of this work is to study best practices of productization. The case company has not performed any productization activities in the service sales business previously. The current service contract offering of the case company is not very well defined. The current service contract offering process is also very ad-hoc. Considering these factors, it was decided that understanding the existing literature relevant to productization was

imperative to form a solution for the business problem on hand. Since the selected research approach is applied research, only the relevant literature that can contribute to finding the solution should be studied. This research approach does not stress the importance on the quantity of the literature but on the quality and relevancy of it. The outcome of this stage will be a conceptual framework that informs the steps required to approach a solution to the business problem. The conceptual framework will summarize the key operational points from the literature and in a way that is connected to the business problem at hand.

The second stage of the research design focuses on analysing the current service contract offering process as shown in Figure 1. In this current state analysis, the main aim is to understand how the service contracts are offered currently in the case company. The outcome of this stage is a summary of the strengths and weaknesses in the current service contract offering process of the case company.

The third stage of the research design focuses on the initial recommendations for productization as shown in Figure 1. The outcome from first and second stage is used to obtain the initial recommendations. Based on the feedback obtained from the initial recommendations in the third stage, the final recommendations for productization are proposed in the fourth stage.

2.3 Data Plan

Collecting data is an integral part of this thesis work. Various types of data and data collection methods have been utilized in this thesis work. Figure 2 shows the data plan for the same.

DATA	DATA TYPE	DATA SOURCE	TIMING	DOCUMENTED AS	OUTCOME
DATA 1: Analysis of current service contract offering process in case company	• Interviews • Internal documentations	• Service Sales Engineer • Document titled "Service Contract Sales" • Document titled "Service and Spares Product Portfolio"	Jan-Feb 2024	Written notes	• Strengths and weaknesses of the current service contract offering process
DATA 2: Creating recommendations for productization	• Interviews	• Product Owner • Technical Project Management Engineer	Mar-Apr 2024	Written notes	• Initial recommendations for productization
DATA 3: Creating final recommendations for productization	• Interviews	• Senior Director • Product Owner	Apr 2024	Written notes	• Receive feedback for initial recommendations • Incorporate feedback and propose final recommendations for productization

Figure 2. Data Plan for this thesis work

As shown in Figure 2, the data collection was carried out in three stages. The first data collection was done during the analysis of the current service contract offering process in the case company. A summary of strengths and weaknesses was obtained from this data. The weaknesses that were directly related to the lack of productization was only considered for this study. Following this, the second data collection, as shown in Figure 2, was for the initial recommendations for productization. The data in this stage was utilized for actually building the initial recommendations. Relevant personnel were interviewed for this stage. The data gathered from the interviews were put together as a visual representation. This visual representation was then used for receiving feedback on the initial recommendations. This feedback was considered and utilized to create the final recommendations. The feedback and the final recommendations constitute the third data stage. The data collected during these stages will be explained in the upcoming chapters.

The following section describes the conceptual framework developed from various existing literary sources.

3 Best Practices of Productization

This section aims to discuss the best practices of productization. Various literary sources were studied to provide a set of steps that can be used to build the initial recommendations for productization of the service contracts. Though the literary sources deal with productization of services in general, the insight obtained can be applied for the productization of service contracts too. The section ends with the description of a conceptual framework that is used for building a solution for the business problem.

The outcome of this research stage is to provide a step-by-step process for productization of a service product. When this stage was planned, the focus was to identify the most relevant sources pertaining to this thesis study. Though the case company had decided to productize its service products already, it was decided that it is of utmost importance to understand the concept of productization first. Hence, the first part of this section explains the concept of productization and its various benefits and challenges. The second part aims to put together various ideas from literature into a step-by-step process.

3.1 What is Productization?

This section aims to understand the concept of productization. It is of high importance to understand this before delving deep into the process itself. Gallouj and Weinstein (1997) argue that productization refers to the activities in which the contents of a service is systematised and formalised. These activities can encompass a wide array ranging from understanding the target customer to internal communication of these activities within a company. Klassen et al., (1998) argue that service activities, by nature, are immaterial and hence these have been considered different from the goods which a company may sell. However, recent studies have emphasised the similarities between services and goods. Katriina Järvi (2016) proposes that strengthening and making visible the product nature of a service is the basic idea in productization. This helps a

company to better sell and promote its services to its customers. It also helps the company to communicate the value of its service offerings better.

Sundbo (2002) and Brax (2013) clarify that a complete standardization is not the aim of productization. It is rather the development of the basic processes and structures that are complemented with specific elements of the services. Service activities of any company require some degree of flexibility in order to be able to adapt to different customer requirements efficiently. Hence, complete standardization of services can be detrimental to a company.

3.1.1 Benefits of Productization

Sipilä (1996) and Radford (2004) list the various benefits of productization.

- **Clarification of strategy:** Productization eases the process of having a unified strategy that focuses on the core competencies of a company. Division of work and responsibilities are clearly defined because of this.
- **Effective Marketing:** A clearly defined and productized product is easier to market to the target customers. It enables the customers to identify the value of the product easily.
- **Improved credibility:** A productized product is more tangible to a customer. This improves the credibility of the product and the company.
- **Improved pricing:** A productized product allows for standardization in the offering and is predictable. A higher pricing of the products with better margins is possible as a result.
- **Improved resource allocation:** A clear definition and allocation of resources and responsibilities is possible as these requirements are decided during the development of a productized product.
- **Improved quality:** The service quality is improved by providing a standardized product.
- **Improved scalability:** Productization allows repeatability in the processes. Hence, this improves the scalability of services.
- **Improved efficiency in production processes:** A productized product allows for the production processes to be standardized too. This results in better efficiency in the production processes.

3.1.2 Challenges in Productization

Though there are benefits to the productization concept, it also carries inherent challenges. Sipilä (1996) suggests that productization carries a risk of increased competition. Since the customer can easily compare the service offerings of different companies, this can lead to increased competition. However, each company should study its target business area and its customers to negate this risk. Productization, as mentioned briefly before, does tend to standardize the service offerings thereby reducing the flexibility of a company. Blythe (2012) mentions that customizability of products may be a key competitive advantage for certain companies. In such cases, it provides an advantage to possess a customizable product. The service products of certain companies can be very unique and productization of such products can also be detrimental for the company. A company also needs to investigate and understand the availability of resources for a productization project. Lack of resources hinders the development of these activities. In the case of the service contract offerings for the case company, this can be countered by having a basic level of standardization in the offering while still providing the room for customization as per the requirements of a customer.

3.1.3 Customization and Productization

Sipilä (1996) and Kallioinen (2005) argue that customization of services can be implemented on various stages within a product. Figure 3 shows the various layers for customizing a service product.

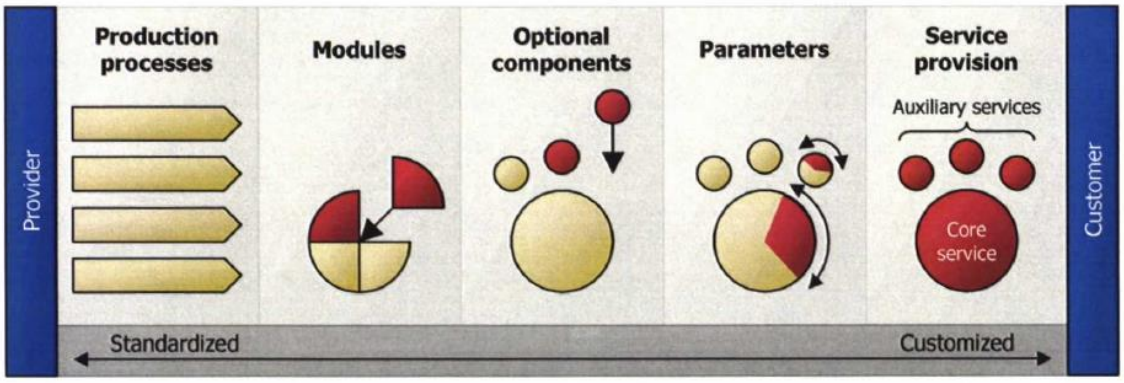

Figure 3. Layers of customization of a service product (Kallioinen, 2005)

As shown in Figure 3, there are different ways of customizing a service product. It can be completely standardized or completely customized. The key is to find a balance between these two stages. Lehtinen and Niinimäki (2005) suggests that modularization of a service product can help with the customization problem. Each module of a service can be standardized while the choice of modules can vary depending on the needs of a customer.

3.2 How to Productize Services

The previous section explains the concept of productization, its benefits and challenges in general. This section aims to identify the steps needed for productization of services. This section aims to build a logical step-by-step process compiled from different literary sources.

3.2.1 Identify and Define the Product

Sipilä (1996) suggests that the initial step in productization is to identify and define the product that needs to be productized. It is easier to identify and define an existing product rather than identifying and defining a completely new one. So, a relatively simple and existing product group from the existing services needs to be productized first before tackling the entire service business in any company. The benefits of such a productization activity are visible when the productized offering attracts new customers. Edvardsson and Olsson (1996)

put forward a simplistic representation of how a service product needs to be developed. Figure 4 shows the service concept model put forward by Edvardsson and Olsson (1996).

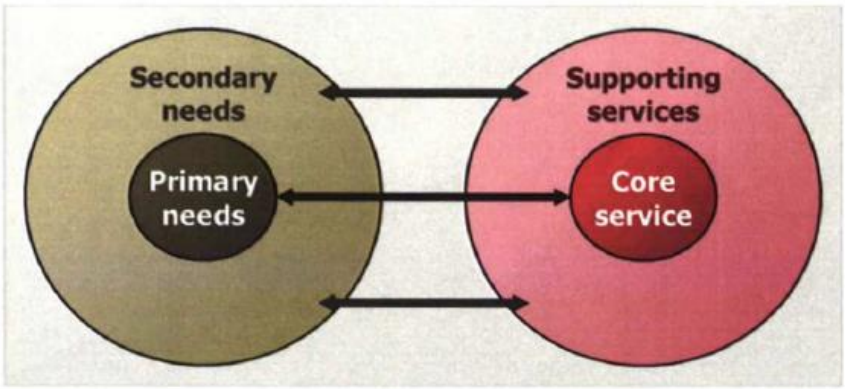

Figure 4. Service Concept Model (Edvardsson and Olsson,1996)

As shown in Figure 4, the service concept model suggests that it is important to distinguish the primary needs and secondary needs for a customer. The primary needs are factors that influence the decision of a customer to purchase a service product from a company. The secondary needs are factors that need to be completed in order to fulfil the primary needs. A company needs to fulfil the primary need of a customer with its core service product and the secondary need of a customer with its supporting service products.

3.2.2 Understanding the current product and process in a company

Normann (2000) argues that the next important step in a productization process is to understand the current product and process that is in place in a company. This is a prerequisite to a successful productization of a service product. As mentioned in the previous paragraph under Section 3.2.1, it is easier to productize an existing product. Lehtinen and Niinimäki (2005) argue that this makes it easier to identify the requirements and objectives of the productization of a product. Bullinger et al. (2003) describes the three different models involved in a complete description of a service design. They are described as follows:

- **The Product Model:** This describes the outcome of the service product under consideration. This includes a definition of what the service contains.
- **The Process Model:** This describes how the outcome of the service product is generated. Parts or stages that do not add value to the outcome are removed.
- **The Resource Model:** This describes the human resources needed to achieve the outcome of the service product under consideration.

The above-mentioned models help us to understand the current service product offering in the case company. After the current product and process in a company is understood, Apunen and Parantainen (2014) argue that standardization of the product and process is the next step. Lehtonen and Tuominen (2015) suggest that standardization is the process of identifying and developing repeatable elements in a service process. As mentioned previously under Section 3.1, complete standardization is not the aim, but a basic level of standardization needs to be in place. This leads to reduced costs and a predictability of the services.

3.2.3 Understanding the target market and customer

Understanding the customer and the market that a company needs to target is paramount in having a successful service product. This also helps in defining the components that need to be included in the productized service offering. Lapierre (1997) suggests that a customer should see both value-in-use and value-in-exchange from a service product. Value-in-exchange refers to the steps taken by a company to deliver a solution for the requirements of a customer. Value-in-use refers to the benefits that a customer sees when utilizing the solution provided by a company. Hence, it is very relevant and important to understand the customer needs and the market.

3.2.4 Idea Generation

Sections 3.2.1, 3.2.2 and 3.2.3 constitute the important base of any productized service product or offering. Since this is applied research, the focus is on creating solutions that are specific for the case company. With the base for productization in place, the aim is to now cater a solution specific to the business problem at hand. The concept of productization can be very similar to new product development in certain areas. Both have the need to identify and define a new product based on a customer or market demand. Therefore, some aspects of the new product development process can be utilized in identifying a solution for the case company. Akbar and Tzokas (2013) suggest that the front-end phase of a new product development process is very important to the outcome of it. The front-end phase refers to the activities that happen before the actual concept development phase and is inherently unstructured and has numerous scopes for improving the product.

Wirtz et al. (2021) suggest that a productized service offering will have the following characteristics:

- Specific solutions that have been developed to address specific customer needs.
- Specifications of the service has been pre-determined.
- The level of customization has been pre-determined.
- Services that will be provided by highly trained personnel.
- Easily understandable value proposition.

Sipilä (1996) and Lehtinen and Niinimäki (2005) suggest the following factors to be important for a productization activity to succeed in a company.

- **Coherent strategy:** A company needs to define the development and marketing strategies in order for the productization to be successful.

- **Systemic approach:** A systemic and methodical approach is needed as it ensures proper allocation of resources for productization.
- **Division into smaller projects:** Rather than approaching the productization process as a single development project, it is beneficial to divide it into smaller projects.
- **Integration into other business processes:** Integration into other business processes such as marketing and product development can reduce the overhead costs associated with productization.
- **Investments in technology systems:** Implementation of key technologies such as ERP systems helps in the productization activity.
- **Effective marketing:** Marketing activities tend to have a positive outcome to productization even though they are not an integral part of the productization process.
- **Employee motivation:** Employee motivation and commitment is an important factor in the success of a productization process as it reduces change resistance and improves the quality of the productized product. Employees also act as a means of internal marketing within the company for the productized product. Hence, it is better to have the relevant employees participating in the productization process at the key stages.

3.3 Modifications in Objective of the Study

During the initial phases of this thesis study, the objective was to propose productization recommendations for the service business in general. As the thesis study progressed, a decision was made to focus on the service contract offerings of the case company. As the initial stage of any productization activity is to identify and define the product to productize, it is prudent to focus on a particular service offering from the case company instead of the whole service business. Further explanation for this decision is provided in Section 5 of this report.

Since the business problem now focuses on productization of service contracts for the case company, a cost of ownership model assumes high importance both to the case company as well as the customer. Freiling and Dressel (2015) discuss the cost of ownership models in small and medium-sized enterprises

based on a Service Dominant Logic (SDL). Service Dominant Logic puts focus on improving the value proposition to the customer through customized solutions. It is different from Goods Dominant Logic (GDL) which has an emphasis on delivering tangible goods to improve the value offered to the customer. The final step is to define the training that is required within the company as well as to the customer if applicable. Gummesson (1978) suggests that training and updating the formal competencies of employees is needed for a successful productization of a product. This will also reduce the resistance of employees towards the new product.

There are numerous literary sources that concern with the productization of service products and processes. Certain suggestions from the literature were not considered for this study. For example, Edvardsson and Olsson (1996) suggest that productization activities should involve customer participation. They argue that a customer can provide crucial insights to the productization process and ensure that the final productized product is customer oriented. This is a highly important aspect of the productization activity. This aspect assumes even more relevance if the productized product includes any degree of modularity and customization. Lehtinen and Niinimäki (2005) argue that a customer perceives the customizability of a product very differently from the perception of a company that provides it. They suggest that the customer perceives the customization first while the company perceives the standardized options first. However, customer insights cannot be taken into account for the case company. The case company has already decided to productize the services without the involvement of customers in this development process.

In order to counter the absence of the involvement of the customers, Sipilä (1996) suggests having different types of service packages to the customers as follows:

- A stripped-down version of the product with only the standardized component for a price-sensitive customer base.

- An average version of the product with the standardized component and possibility to include modularized components for medium-scale customers.
- A complete version of the product with the standardized component and all possible modularized components for large-scale customers.

3.4 Conceptual Framework of this Thesis

This section describes the conceptual framework that is used in this thesis. The findings from the literature in Section 3.2 were put together as a visual representation. Figure 5 shows the same.

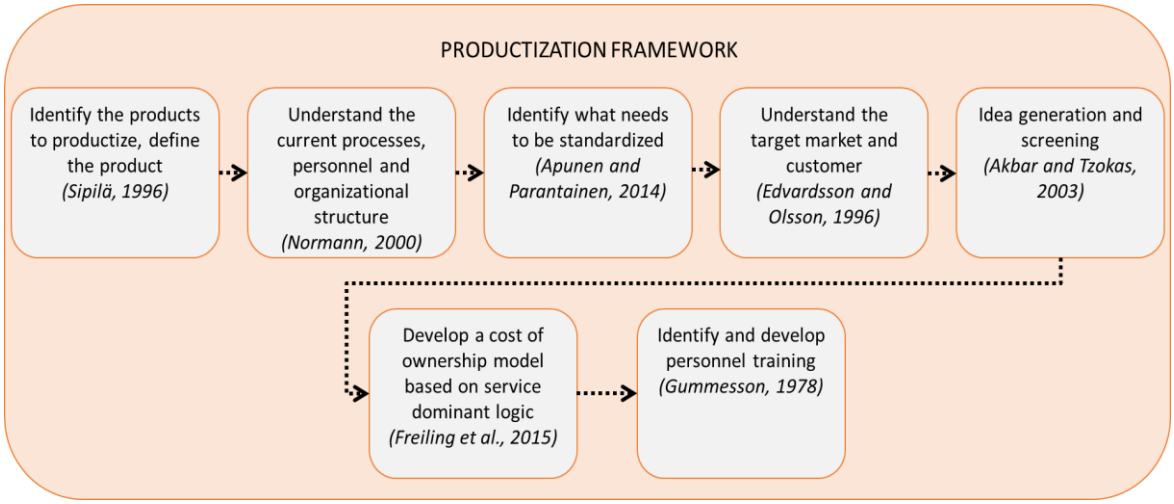

Figure 5. Conceptual Framework of this Thesis

As shown in Figure 5, the various findings from the literature were put together in the form of a step-by-step visual representation. The conceptual framework is a summary of the understandings inferred from various literatures during this thesis study. The aim of the conceptual framework is to provide clear instructions on the productization of a service product. This forms the productization framework for solving the business problem of the case company. In the step-by-step visual representation shown in Figure 5, the first four steps from identifying the product until understanding the target market and customer tries to identify the focus areas of the productization. The focus areas inform the case company on areas to concentrate the productization activity.

The remaining steps in the framework form the core productization activities that need to be executed after identifying the focus areas.

As mentioned previously, only the relevant literature was used to develop the conceptual framework of this study. Processes that do not add value or that are not applicable for the case company were not considered.

The next section explains the current service contract offering in the case company. The learnings from Section 3 are used in conjunction with the findings from Section 4 to develop the initial recommendations in Section 5.

4 Analysis of Current Service Contract Offering in the Case Company

This section aims to explain and discuss the current service contract offering in the case company. The section begins with an overview of this current state analysis. The section then extends to discuss the current service contract offering and the current service contract offering process. It concludes with a summary of strengths and weaknesses of the current service contract offering in the case company.

4.1 Overview of the Current State Analysis Stage

The case company does not offer any productized service contract offering currently. Therefore, as mentioned previously in Section 2.2, a conceptual framework was developed initially before the analysis of the current service contract offering. Two types of data sources were used for the Current State Analysis stage, namely internal documentations, and one-to-one interviews. The internal documentations provided a general overview on the current service contract offerings. However, a lack of info on the current service contract offering process was observed in the documents.

The service sales team of the case company has only two employees including the author of this study. The case company has a shortage of personnel who are directly involved in the service business. Hence, it was difficult to find multiple sources of data for this stage. However, the data that was collected was thoroughly analysed with careful consideration for subjective bias. Since there was only one person to be interviewed, a one-to-one interview was chosen as the preferred method for data collection. Since the author of this thesis study is part of the service sales team of the case company, the questions used in the questionnaires were created to be as open as possible without any subjective bias. This ensured that possible solutions to any weaknesses were not already considered or discussed during this data collection phase. Open ended questionnaires were used to exclude any bias

from creeping into the analysis. The questions used in the questionnaire can be found in Appendix 1.

A summary of strengths and weaknesses of the current service contract offering was made from the data collected during the analysis. Only the weaknesses that were relevant to the business problem at hand were selected for further study.

4.2 Overview of the Current Service Contract Offering in the Case Company

An example of the current service contract offering in the case company is shown in Figure 6.

	No Service Contract	Service Contract A	Service Contract B	Service Contract C
Regional Availability	xxxx	xxxx	xxxx	xxxx
Email Support Availability	x	xx	xxx	xxxx
Phone Support Availability	y	yy	yyy	yyyy
Remote Connection Support Availability	z	zz	zzz	zzzz
Spare Parts Discounts	Not applicable	xy	xyz	xyzz
On-site Field Service Engineer Availability	a	b	c	d
Price	Not applicable	xx EUR/year	xxx EUR/year	xxxx EUR/year

Figure 6. Example of Current Service Contract Offering in the Case Company

As shown in Figure 6, the current service contract offering is very simple. Since the details included in the service contract of a case company is confidential, letters such as a, x, y, and z were used instead to represent them. Different combinations of these letters show the differences between the service contract types. The current service contracts were essentially response time guarantee

agreements as they do not include any spare parts. The case company was focusing primarily on research and development entities as potential customers for service contracts. The service contracts fall into three types, namely service contract A, service contract B and service contract C. The customer can also choose to not purchase any service contract at all. Each service contract type provides different speed of response in each category. No separate documentation exists that explain each of the contracts separately. The contract types were applicable for all the equipment sold by the case company. Therefore, each equipment type did not have a separate service contract.

4.3 Overview of the Current Service Contract Offering Process in the Case Company

Figure 7 shows the current service contract offering process in the case company.

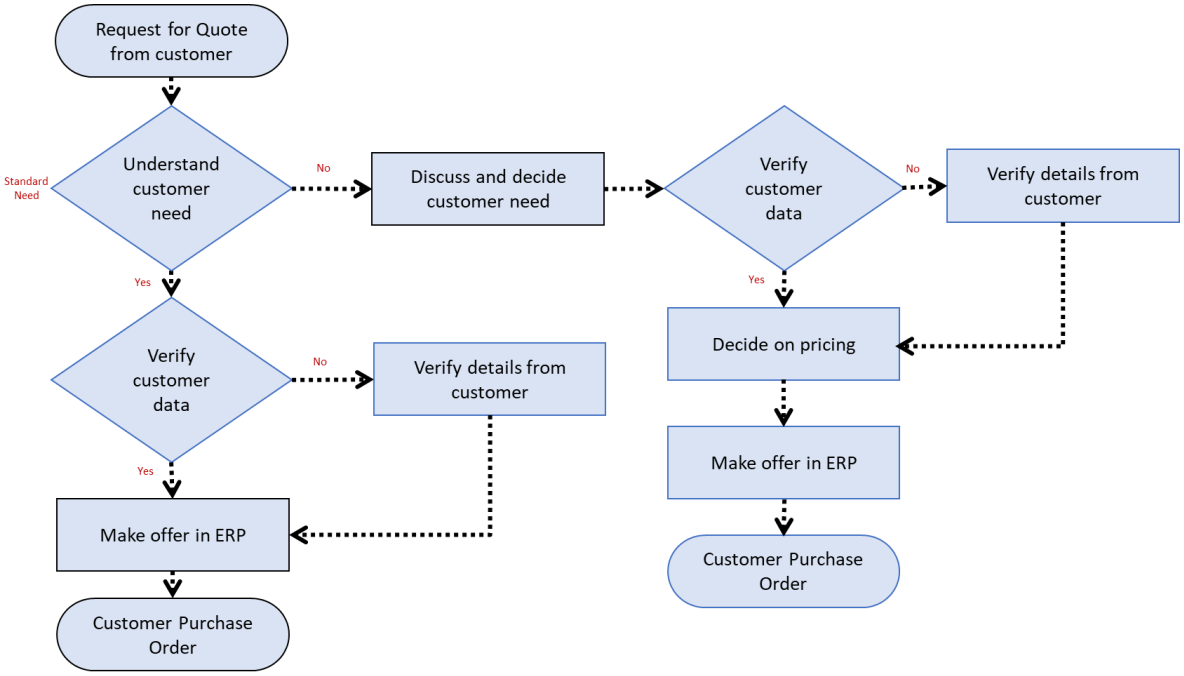

Figure 7. Current Service Contract Offering Process in the Case Company

The current service contract offering process, as shown in Figure 7, was not documented in any documentations in the case company. The process was

represented based on the data provided by the interviewee during the one-to-one interview.

Before discussing the overview of the current service contract offering process, it is important to understand the data storage tools utilized by the case company. Currently, the case company utilizes an Enterprise Resource Planning (ERP) system for generating sales documentations to the customers. Internally, the data is stored in Microsoft SharePoint and another document management tool.

The current service contract offering process typically starts with a request from a customer. Depending on the requirement from the customer, it is considered either as a standard need or a non-standard need. A standard need is one where the case company has previous experience catering to it. A non-standard need is one where the case company has limited or no previous experience catering to it. If it is a standard need from the customer, then the customer details are verified. Customer details included customer name, their delivery address, their billing address, the equipment type and the warranty status. As mentioned previously, the customer details are spread across three sources. The details need to be manually checked every time from each of these three systems. If the details exist, then an offer is generated through the ERP system. If some of the details such as, for example, the complete name of the customer without any abbreviations do not exist, then the details are verified from the customer themselves. In case of a non-standard need, the need is initially understood by discussing with the customer. This is also discussed internally to discuss on the feasibility. If feasible, then the same process as specified for the standard need is repeated. The interviewee stated that,

> *There is no standardized process to offer a service contract nor there is a standardized product to offer. It is very customer steered and not customer oriented.*

During this stage, it was also identified that the case company has a product development process in place for developing certain types of equipment they

currently sell. The product development process follows a stage gate model of development so that it can improve the equipment consistently.

4.4 Analysis of the Offering and the Process

Based on the data collected from Section 4.2 and Section 4.3, a summary of the strengths and weaknesses of the current service contract offering can be understood.

The existence of a service contract offering in the case company is seen as an advantage over its competitors. Though there are weaknesses in the product and the process, these can be developed over time. The case company acknowledges the need to improve the service contract offerings to its customers. There is also a clear demand from the customers for comprehensive service contracts to aid their business.

4.4.1 Analysis of the Offering

The current service contract offering is very simple and is essentially a response time guarantee agreement. Since there are no tangible parts to it such as the inclusion of spare parts needed for a yearly maintenance or prepaid days for a maintenance engineer visit, it is very difficult to show and present the value of the service contract to a customer. Majority of the customers of the case company do not have any type of service contract currently. The customer companies do not have any incentive to purchase these service contracts. The service contracts are very loosely defined. In order to increase the sales of the service contracts to its customers, the case company has been flexible to modify the service contracts as per the requirements of the customer. Even though the number of customers with a service contract is very low currently, there is a high degree of variability in each of these service contracts. The flexibility of the service contracts is seen both as a positive and negative within the case company. On the positive side, it attempts to take into account the requirements of a customer and leads to better customer satisfaction. However, on the negative side, there is a lack of control over the degree of flexibility. The

case company has experienced cases where it has overpromised but underdelivered.

4.4.2 Documentation Problems

As mentioned previously in Section 4.2, the service contracts do not have any separate documentation detailing their contents and the associated terms and conditions. The service contract is offered through a standard offer in the ERP system to the customer. If the customer places a Purchase Order (PO), then an order confirmation is generated in the ERP system and sent to the customer through an email. There is no signed contract or agreement that is created when a customer purchases a service contract. The offer and order confirmation created in the ERP system are not stored in Microsoft SharePoint or the document management system. Combined with the high degree of variability in the service contracts, it becomes highly difficult to follow up on the deliverables in the service contract. This leads to a stage where the case company fails to honour the commitments provided in the service contract.

During the current state analysis stage, it was also discovered that there is lack of proper documentation relevant to the maintenance of the tool itself. The documentation for cleaning specific spare parts that needs to be regularly cleaned has not been updated for more than five years. This affects the quality of the spare parts being cleaned and reduces the trust with the customers. It is also a missed sales opportunity as multiple customers have begun to use their own cleaning services and documentations to get the desired results. Hence, the lack of a standardized and documented process is affecting the business and impacting the trustworthiness of the case company. In the words of the interviewee,

People claim what they are not entitled to.

4.4.3 Lack of key data

It was discovered that the case company is lacking key data about its customers. Basic data such as the customer details were not maintained uniformly across the different data platforms.

When analysing the lack of proper documentation for key aspects of a service contract and an equipment sold by the company in general, it was found that there were no data on the cost of owning an equipment manufactured by the case company. Data was missing or incomplete on both the cost of ownership for the customer and for the case company too. This is a major problem as key information such as maintenances required per year, spare parts required per year and number of personnel required to maintain the equipment per year were missing. This information is also very relevant to all types of customers for the case company. Estimated figures have been used so far but these have too many assumptions considered to be of any real use. For example, the case company had provided estimated lifetime of spare parts to the customer. However, in multiple situations, the customer has faced the problem of a certain spare part breaking down before the estimated lifetime provided by the case company. This has once again eroded the trustworthiness of the case company.

4.4.4 Lack of KPIs

The service contracts were also found to have no Key Performance Indicators (KPIs) specified to monitor its performance. Typically, it is good to have a useful metric that will be achieved under a service contract type. This can be, for example, the uptime of an equipment of the case company. It was found that no such metrics were in use for any service contract types in the case company. The lack of meaningful data was impacting the creation of KPIs for the service contracts.

4.4.5 Pricing and billing

It was observed during the study that the pricing of the service contracts was inconsistent. The pricing varied depending on the customer and depending on the customization that had been offered to the customers. Missing data about key maintenance activities impacted the pricing of the service contract. As per the interviewee,

> *Pricing-wise, we miss data about maintenances and non-consumable spare parts at least. This reduces our ability to effectively price the service contracts.*

Since the service contracts were so poorly defined, it was difficult to convey the value to the customer. Therefore, these service contracts were priced very conservatively. The customer had a higher negotiation opportunity to reduce the pricing of the service contracts even further during the negotiation phase with the case company. It was identified that service contracts were offered as “add-ons” with the equipment for reduced prices due to these factors.

The billing of the service contracts was done primarily during the starting of the contract period. The billing schedules were not flexible as per different customer demands. It was identified that negotiations with few customers failed due to the rigidity of this billing practice. Some customers had also provided feedback that they will not pay for a service that has not been fulfilled yet.

4.4.6 Lack of training

Finally, it was also observed that the personnel of the case company do not receive proper training that is relevant to service the equipment. Since the case company is relatively small-to-medium scale and was primarily focusing on customers from the research and development market segment, the service engineers were trained to learn the job “on the go”. This is not an efficient mode of knowledge transfer. It also carries the risk of knowledge drain if an experienced service engineer resigns from the case company. Since the service engineers are often the direct point of contact between the case company and

the customers, a lack of proper training carries a risk of being projected as unprofessional. This affects the credibility of the case company. A need for training customers to perform certain maintenance activities and fault fixing was noticed during this stage. No documentations or training materials exist currently for this. The case company understands the need to control the type of trainings it can provide to the customers and also control the maintenances the customers can do themselves without consulting the case company. This is an important prerequisite if the case company intends to have a predictable business.

4.5 Strengths and Weaknesses of the Current Service Contract Offering

The findings from the current state analysis stage were used to obtain a summary of the strengths and weaknesses of the current service contract offerings. This section provides the same.

Table 1 provides a summary of the strengths and weaknesses observed during the current state analysis stage.

Table 1. Summary of Strengths and Weaknesses

#	**Description**	**Category**
1	Existence of a service contract	Strengths
2	Flexibility in service contracts	
3	Suitability for research and development customers	
4	Non-standardized product	Weaknesses of the product
5	Poor documentation of the service contract	
6	Insufficient training for service engineers	
7	Lack of KPIs	
8	Cost of Ownership unknown	

9	Poor documentation regarding equipment maintenance	
10	Non-standardized product offering process	Weaknesses of the process
11	Existing documentation stored across multiple data systems	
12	Poor quality of existing customer data	
13	No follow up with the customer during the offering process	
14	Inability to price the service contracts competitively	
15	Problems with billing the service contracts	

As shown in Table 1, the key findings were summarized into strengths and weaknesses of the process and the product. It was observed during the analysis that the weaknesses were spread throughout the entire offering process and that the service contract needed a complete redesign.

Out of the twelve weaknesses shown in Table 1, the following weaknesses were chosen for further study.

- Non standardized product
- Poor documentation of the service contract
- Insufficient training for service engineers
- Cost of Ownership unknown
- Poor documentation regarding equipment maintenance

The above-mentioned weaknesses were chosen as these were the weaknesses of the product, which in this case is the service contract. All the other weaknesses, though important, were not chosen as it falls outside of the scope of this thesis study. It is imperative to improve the service contracts first and then fix the associated processes later. Also, the weaknesses of the process

demand a study of their own and it is too large to handle within the time frame of this study.

The case company had decided to productize the service business already. Therefore, the aim of this current state analysis stage is not to identify reasons for productization of services. The aim of this stage is to rather determine the potential weaknesses that can be rectified and improved with a productization activity.

Inferring from the study of existing literature mentioned in Section 3, the key weaknesses identified in this stage can be developed and improved by productization of the service contract. The weaknesses align with the benefits of productization of a product.

The next section, Section 5, explains the initial recommendations for productizing the service contract offering. The focus on Section 5 is to use the ideas from the literature presented in Section 3 to address the weaknesses identified in Section 4.

5 Developing Productization Recommendations

This section aims to develop productization recommendations by using the insights gathered from the analysis of current service contract offering in the case company in Section 4 and the analysis of existing literature in Section 3.

5.1 Overview of developing productization recommendations

The main aim of this section is to provide an overview on the development of the productization recommendations. The conceptual framework developed in Section 3 forms the basis to create the initial recommendations. As mentioned in previous sections, there is shortage of personnel who are directly involved in the service business of the case company. Therefore, employees with relevant experience in developing products were sought for this stage. A Product Owner and a Technical Project Management Engineer were involved in the development of the recommendations. Both of them are not part of the service sales organization of the team. These employees were participants in other product development activities within the case company. The Product Owner, in particular, has knowledge and experience about developing a Cost of Ownership model.

The initial recommendations were developed mainly through one-to-one discussions. Due to the differences in work schedules, it was difficult to hold a workshop for this study. Therefore, one-to-one interviews were preferred. Since a large majority of people utilize hybrid work practices at the case company, the discussions were held through Microsoft Teams. These discussions were structured so that they did not become irrelevant to the business problem at hand. Initially, the business problem and objective of the thesis study were explained to the interviewees. This was followed by sharing and explaining the conceptual framework developed in Section 3 of this thesis study. Time was spent to explain the logic behind choosing every step of the conceptual framework to avoid any ambiguity in understanding them. Then the discussions shifted towards the explanation of the strengths and weaknesses inferred in

Section 4. This was then followed by a brainstorming session on the possible recommendations based on the conceptual framework. Finally, the ideas generated were noted down for further analysis. These discussions allowed the possibility of discussing the weaknesses and approaching the solution from different point of views. This also helped in discussing the weaknesses in depth.

Each step of the conceptual framework was discussed in detail with the interviewees. The recommendations for each step were then noted down. The data collected for all the steps from both the employees were developed as a visual representation and it was shared with them through email. The outcome of this stage is a summary of initial recommendations.

After the initial recommendations were developed, it was compared and evaluated against the key weaknesses identified in Section 4.5. This was performed to make sure the initial recommendations were in line with the objective of the study.

5.2 Developing the Initial Recommendations

The co-creation of the initial recommendations was done by discussing each step of the conceptual framework and finding relevant solutions for each of them. Figure 8 shows this process.

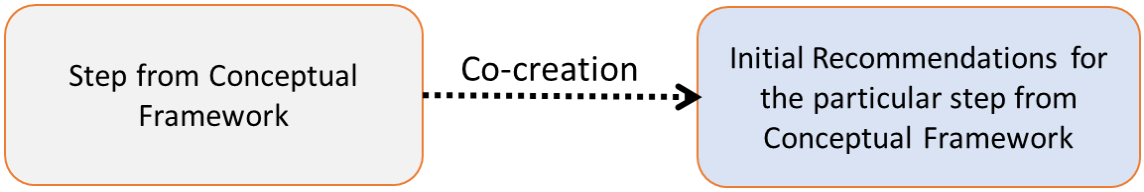

Figure 8. Developing Initial Recommendations

As shown in Figure 8, the initial recommendations were co-created during the one-to-one discussions based on the conceptual framework. As mentioned previously in Section 3.4, the first four steps of the conceptual framework deal with the identification of the focus areas of productization while the rest of the steps deal with the actual productization steps. Hence, the development of

initial recommendations was performed in two stages. The first stage is to identify the recommendations for the focus areas while the second stage is to identify the activities required for productization of the focus areas. Sections 5.2.1, 5.2.2, 5.2.3 and 5.2.4 discuss the recommendations for the focus areas while Section 5.2.5 discusses the productization steps after the focus areas have been identified.

5.2.1 Focus Area: Identifying the Product

The first step of the conceptual framework is to identify and define the product to productize. As mentioned in Section 3.2, the objective of the thesis study during the initial stages was to propose productization recommendations for the entire service business in the case company. As the conceptual framework was being developed in Section 3.2, the need to concentrate on a specific product offering was identified. From the business perspective of the case company, the service contracts were one of the most requested products from the customers. The inability to offer comprehensive service contracts was affecting the sales of the equipment itself. The service contracts also tend to tie in a customer to a company for their maintenance requirements. This offers the opportunity to have a predictable service business.

Figure 9 shows the recommended focus area for the first step in the conceptual framework.

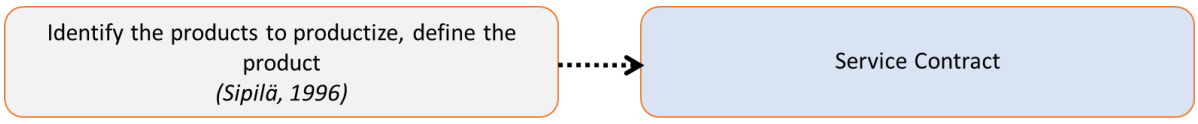

Figure 9. Recommended Focus Area for Identifying and Defining the Product

As shown in Figure 9, service contracts were chosen as the product to be productized. During both the discussions, other product offerings from the portfolio of the case company were considered for productization. Other product offerings that are offered by the case company currently include on-field retrofit packages for the equipment of the case company, annual maintenances

activities and spare parts sales for the equipment. Both the interviewees suggested separately that productization of the service contract will aid in productizing the other offerings in the future.

5.2.2 Focus Area: Understanding the Current Process

The second step of the conceptual framework is to understand the current processes regarding the service contract in the case company. This was performed in Section 4 as the current state analysis. Figure 10 shows the same.

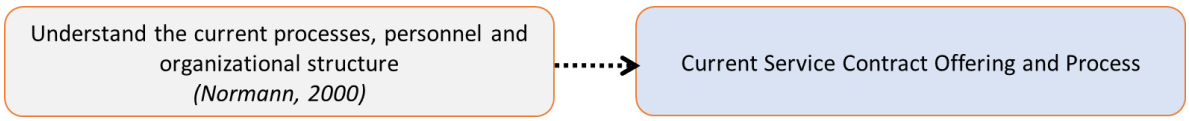

Figure 10. Recommended Focus Area for the second step from the Conceptual Framework

The recommendation for the second step, as shown in Figure 10, is to analyze the current service contract offering and process. The study carried out in Section 4 was explained separately to both the interviewees. The feedback on the strengths and weaknesses was positive in both the discussions.

5.2.3 Focus Area: Standardization

The third step of the conceptual framework is to identify the parts that need to be standardized in a service product. In the case of the service contract, it needs to be specified what it includes on a basic level for all customers who purchase a contract. One of the interviewees suggested that the service contract should include a certain number of spare parts and maintenance activities as standard. On further discussion, it was understood that including spare parts and maintenance activities is an effective way to convey value to a customer. Figure 11 shows the same.

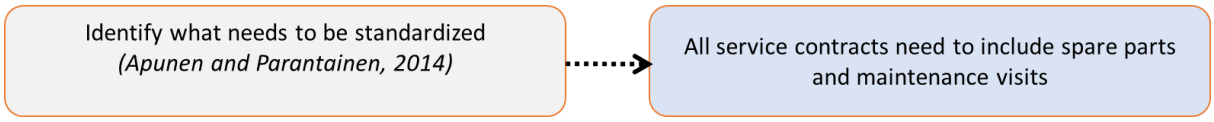

Figure 11. Recommended Focus Area for Standardization of Service Contracts

As shown in Figure 11, it was agreed that each service contract, irrespective of the type, should include spare parts and maintenance activities. The type of spare parts included, number of spare parts included, type of maintenance visits and number of maintenance visits can be varied between the contract types. This allows for a level of modularity and flexibility while still having a standardized product.

5.2.4 Focus Area: Understanding the Target Market

The fourth step in the conceptual framework is to identify and understand the target market and the customer. During the discussions, it was understood that the case company wants to move towards selling services to multiple industrial customers. The case company currently caters primarily to research and development and small-scale industrial customers. These customers do not utilize the equipment of the case company 24x7 for 365 days a year typically. Hence, it was acceptable to have a service contract which was non-comprehensive. However, the customers which the case company want to target in the future are large players in the semiconductor business. They demand a comprehensive service contract that ensures that their equipment is never out of use for prolonged periods of time. An equipment which is out of use for a couple of hours has the possibility to cost millions of Euros to these customers. Figure 12 shows the recommended focus area for understanding the target market and customer.

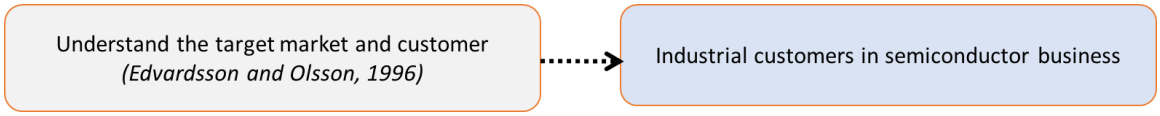

Figure 12. Recommended Focus Area for Understanding the Target Market

As shown in Figure 12, the initial recommendations for understanding the target market and customer were discussed and agreed with the interviewees. The interviewees mentioned that the case company wants to increase its business activities with semiconductor customers. Hence, the case company intends to improve its service contracts.

5.2.5 Initial Recommendations for Idea Generation, Development of Cost of Ownership Model and Personnel Training

After the focus areas for productization has been identified in the previous steps, the next step in the conceptual framework is to concentrate on the productization steps itself. The fifth and sixth step in the conceptual framework is idea generation and screening and to develop a Cost of Ownership model. The last step is to identify the training required for the personnel of the company. These three steps are interlinked with each other. The initial recommendations for the focus areas developed from the previous steps provide a good outline about what the service contract of the case company needs to be. A Cost of Ownership model requires certain data from the equipment of the case company. In Section 5.2.4, the decision was made to focus on industrial customers in the semiconductor business. The customers in this market segment are high volume manufacturing customers with strict requirements from their equipment. Considering this, the following data was identified as key to the Cost of Ownership model:

- Tool Uptime
- Mean Time between Clean
- Mean Time to Clean
- Mean Time to Repair
- Mean Time between Failure
- Mean Time between Interrupts

All the above-mentioned data are important to understand the maintenance requirements of the equipment and it was identified that this data does not exist in the case company currently. The maintenance requirements, in turn, provide information on the number of spare parts needed and number of engineers needed for the equipment. It was decided that the data can be collected in two different ways. The first way is to collect the data from the training equipment of the case company. The second way is to sign an agreement of cooperation with certain customers. These agreements of cooperation can help the customers to develop new processes with their equipment while the case company gathers valuable data in exchange. Figure 13 shows the initial recommendations for these two steps of the conceptual framework.

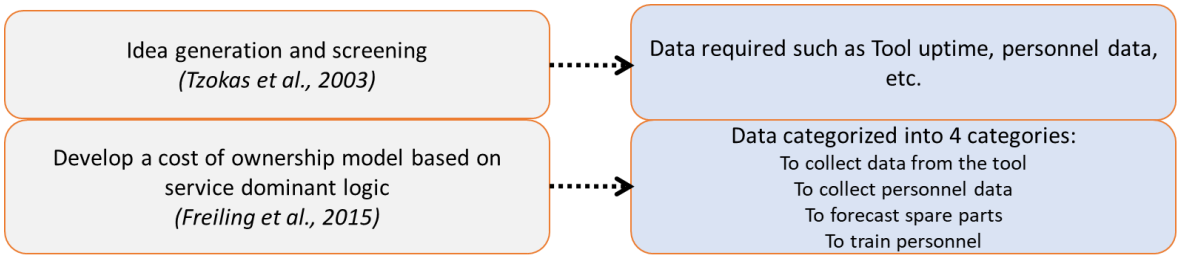

Figure 13. Initial Recommendations for Idea Screening and Cost of Ownership model

The initial recommendations in Figure 13 show only an overview of the steps needed to develop the Cost of Ownership model. Training of the personnel was also identified as a key part that was not properly defined in the case company. As mentioned in Section 3.1, a productized service offering includes service activities by properly trained professionals. During the discussions, two key areas regarding training were identified. The first one is to focus on training of the engineers of the case company and the second one was to focus on the customers. It was decided that the engineers can be trained using the training equipment of the case company initially. Regarding the customer training, it was decided that customer needs to be trained only on the basic functionalities and usage of the equipment.

It was understood during the discussions that the data requirements for the Cost of Ownership fall into four main categories. Therefore, a set of four

recommendations for the Cost of Ownership model were developed based on the data categories namely:

- To collect data from the tool
- To forecast spare parts
- To collect personnel data (number of engineers required, for example)
- To train personnel

Personnel data refers to data such as number of engineers needed for maintaining an equipment, number of days required to maintain an equipment and so on. All these key data allow the Cost of Ownership model to be based on the Service Dominant Logic explained in Section 3.2. A more detailed visual representation of the initial recommendations for this step is shown in Figure 14.

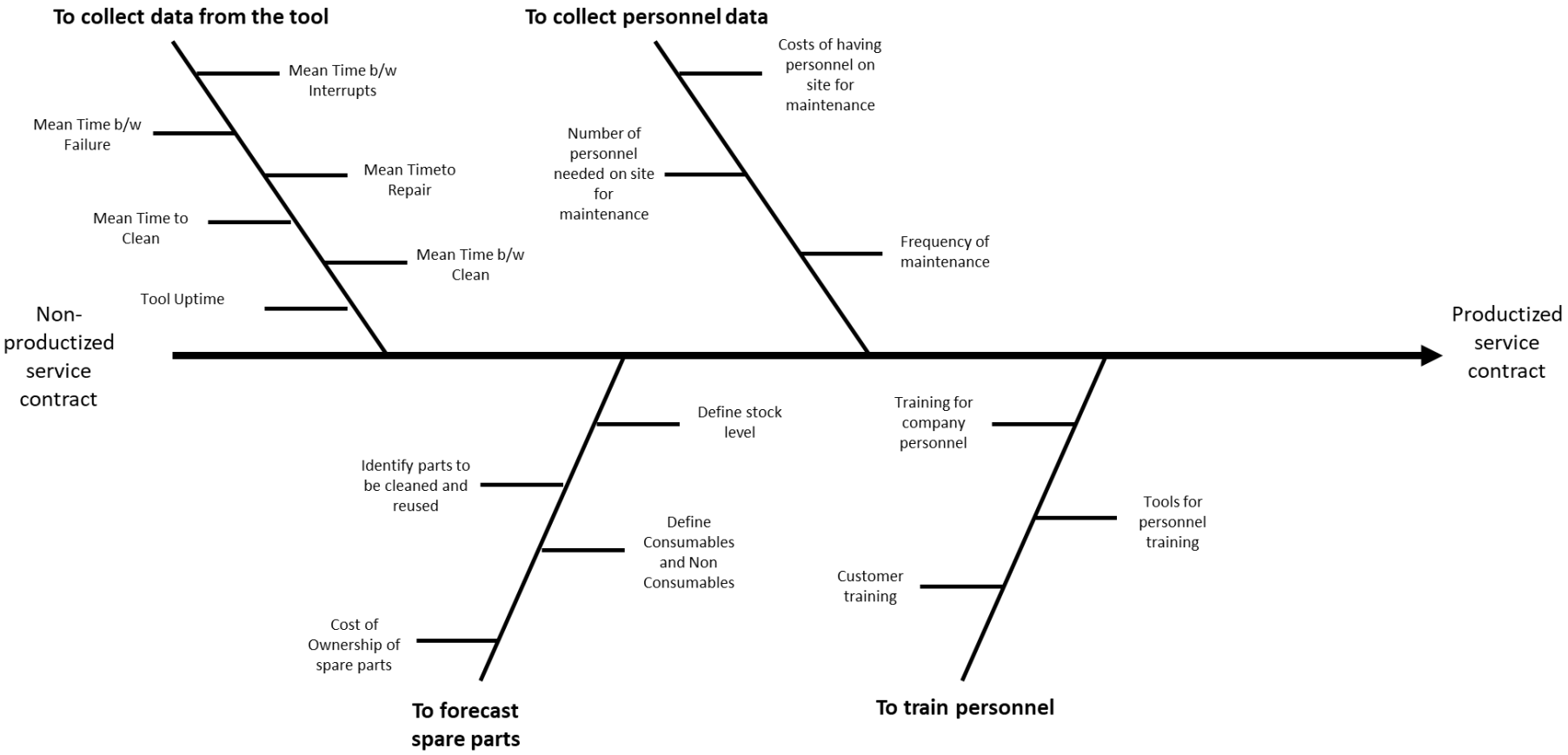

Figure 14. Detailed Initial Recommendations for Cost of Ownership model

As shown in Figure 14, the detailed initial recommendations for the Cost of Ownership model developed during the co-creation phase was put together as a visual representation. The representation is similar to a Fishbone diagram, but it is for visual purposes only. The Cost of Ownership model shown in Figure 14 forms the core of the initial recommendations for the productization of the service contract for the case company. It represents the productization steps to be performed after the focus areas have been identified.

All the initial recommendations were grouped into 4 categories as mentioned in Section 5.2.5. Collecting the data from the tool focuses on data that is needed to estimate the maintenance activities related to an equipment. The data collected under this category is a standard request from almost all the customers in the semiconductor business.

The data collected from the tool is then used to forecast the requirements for spare parts. In this step, the consumable and non-consumable spare parts are defined and the parts that can be cleaned and reused are also identified. Target stocking levels at the customer site and at the case company are also determined here.

After the spare parts forecasting has been completed, the recommendation is to then collect the personnel data. The maintenance activities are known from the first step. Hence, it is now recommended to collect the information about the personnel required to perform the maintenance activities. The costs associated with the personnel should also be determined here. All the data collected until this stage can be used to calculate the cost of ownership for an equipment.

A Microsoft Excel template can be developed in the future for collecting this data. This template can also be used for calculating the cost of ownership of different types of service contracts and equipment in the future. The Microsoft Excel template was not developed during this study.

The final set of recommendations is to train the relevant personnel. This applies to both the personnel of the case company and the customer. The training tool

of the case company is used to train the internal personnel. The customer is trained on only the basic operations of the tool.

5.3 Summary of the Initial Recommendations

The initial recommendations were created by combining the knowledge from the conceptual framework and the findings from the current state analysis stage. The recommendations were co-created with relevant personnel during one-to-one discussions. The discussions presented the opportunity to evaluate the ideas from the literature and to focus the findings on recommendations that can be applied in practice. The summary of the initial recommendations provides both the decisions arrived upon for the focus areas and also on the productization steps after the focus areas have been identified. Table 2 shows the summary of the initial recommendations developed.

Table 2. Summary of Initial Recommendations

Description	**Initial Recommendations**	**Category**
Identify and define the product	Service contracts	Focus Area
Understand the current process	Current State Analysis (discussed in Section 4)	
Identify what needs to be standardized	All service contracts include spare parts and maintenances	
Understand the target market	Industrial customers in semiconductor business	
Idea generation and screening	To collect data from the tool To collect personnel data To collect spare parts forecast data To train personnel	Productization Steps
Develop a Cost of Ownership model based on Service Dominant Logic		
Identify and develop personnel training		

Table 2 is a summary of all the initial recommendations. As mentioned previously, both the recommendations on the focus area and the productization steps are shown in Table 2. This enables the case company to concentrate the productization activity for the right product and customer and improves the chances of a successful productization. Since Table 2 is a summary, only the main data category has been mentioned under the Productization Steps. The data collection recommendations mentioned in Table 2 are categorized into four categories as mentioned previously in Section 5.2.5. A detailed explanation of the data collection recommendations has already been shown in Figure 14 under Section 5.2.5.

5.4 Comparison of Initial Recommendations against Key Weaknesses

As mentioned in Section 4.5, the aim of the current state analysis stage is not to identify reasons for productization of services but to identify weaknesses that can be improved with productization.

The key weaknesses identified and chosen in Section 4.5 are as follows:

- Non standardized product
- Poor documentation of the service contract
- Insufficient training for service engineers
- Cost of Ownership unknown
- Poor documentation regarding equipment maintenance

Out of the five key weaknesses considered for the study, documentation was not considered during the development of the initial recommendations due to the enormity of it. Both the interviewees considered that the insufficient documentation should be a separate study. Table 3 compares the key weaknesses against the initial recommendations that has been developed.

Table 3. Key Weaknesses against Initial Recommendations

Key Weaknesses	**Initial Recommendations**
Non-standardized product	Standardized service contract with defined spare parts and maintenance activities included
Insufficient training for service engineers	To train personnel using the case company training equipment
Cost of Ownership unknown	To collect data for developing Cost of Ownership model

The initial recommendations shown in Table 3 are the combination of all the initial recommendations that has been developed. It can be inferred that the identified weaknesses are improved adapting the initial recommendations.

The summary of the initial recommendations will be used further in the next section. The next section discusses the validation of the initial recommendations that were co-created.

6 Validation of the Initial Recommendations

This section aims to discuss the validation of the initial recommendations that were co-created in Section 5.

6.1 Overview of the Validation Process

The validation of the initial recommendations was done by two members from the Business Management team. These people were chosen as they had prior experience in product development relevant to the service business. The focus areas identified were found to be relevant after discussions during this stage. Therefore, the main area of discussion for validation was the detailed initial recommendations for the Cost of Ownership model.

The validation was done through one-to-one discussions with each member due to problems with availability. The discussions happened in Microsoft Teams and the feedback received was noted down as field notes.

6.2 Feedback received for the Initial Recommendations

The feedback received for the initial recommendations was positive overall. One interviewee in the validation process stated,

> *The visual representation used for the summary of initial recommendations is actually very nice and easy to understand. It provides information on what needs to be done and is clear.*

The initial recommendations received some feedback during the validation process. During the discussions, the documentation of key processes was put forward as an added category in the initial recommendations. Even though lack of documentations were identified as a key weakness during the current state analysis stage in Section 4.5, it was not considered during the development of the initial recommendations as it was too big a problem to tackle together. However, during the validation process, it was understood that it is prudent to begin documenting processes that are being modified for the productization.

Hence, the documentation part was added to the list of final recommendations. Figure 15 shows the final recommendations for the cost of ownership model.

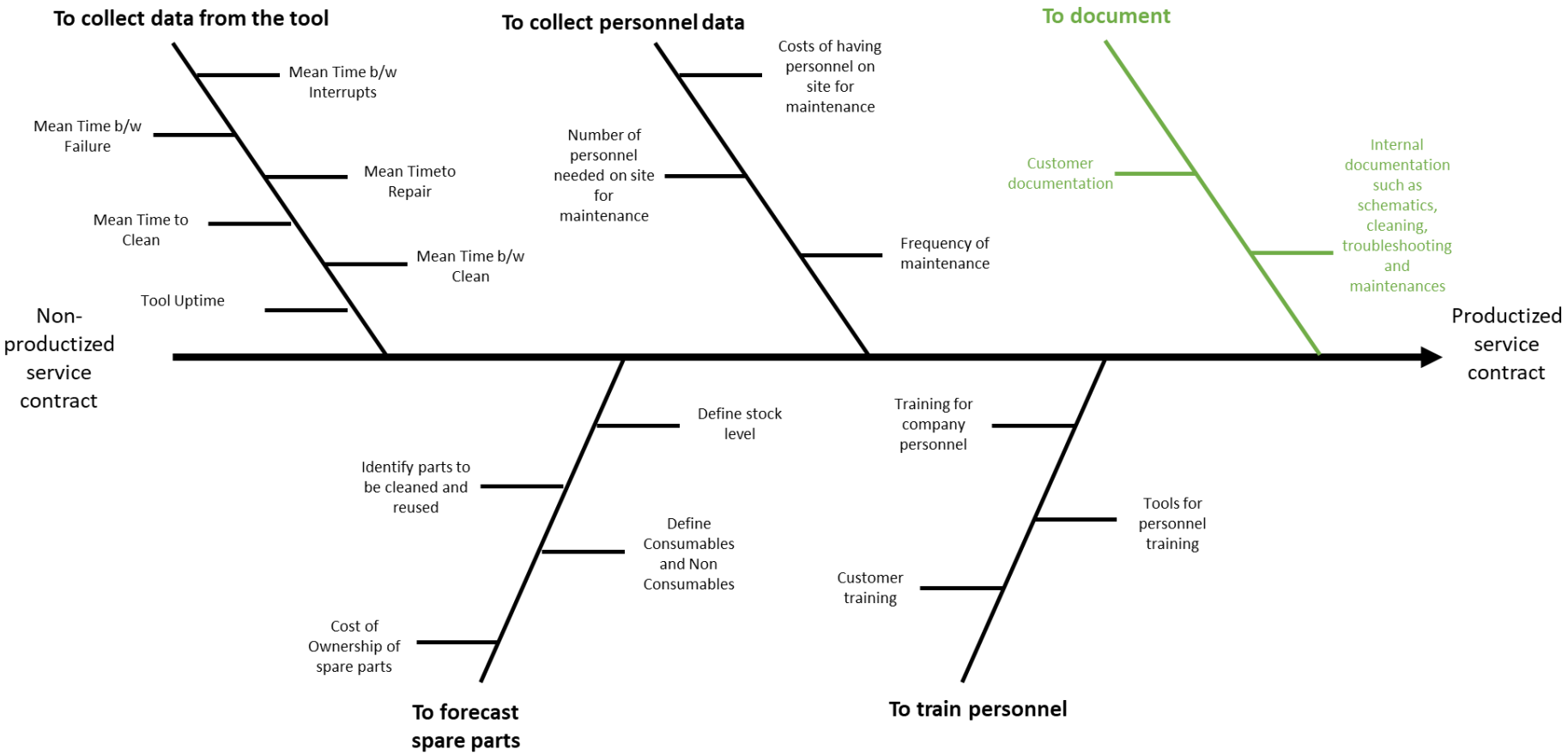

Figure 15. Final Recommendations for Cost of Ownership model

As shown in Figure 15, the feedback received during the validation phase was added to the initial recommendations for the Cost of Ownership model. The data collected from the tool, personnel data and spare parts forecasts are used to obtain the cost of ownership data for an equipment. Table 4 shows the summary of the final recommendations including the agreed focus areas and productization steps.

Table 4. Summary of Final Recommendations

Description	**Initial Recommendations**	**Category**
Identify and define the product	Service contracts	Focus Area
Understand the current process	Current State Analysis (discussed in Section 4)	
Identify what needs to be standardized	All service contracts include spare parts and maintenances	
Understand the target market	Industrial customers in semiconductor business	
Idea generation and screening	To collect data from the tool To collect personnel data To collect spare parts forecast data To train personnel To document internal and customer documentation	Productization Steps
Develop a Cost of Ownership model based on Service Dominant Logic		
Identify and develop personnel training		

As shown in Table 4, the summary of final recommendations includes the documentation of data in accordance with the feedback received during the validation phase. Since Table 4 is a summary, only the main data category has been mentioned under the Productization Steps.

The next section describes the executive summary of the thesis study, recommended next steps, self-evaluation of the thesis work and closing words.

7 Discussion and Conclusions

The aim of this chapter is to discuss about the executive summary, recommendations of next steps and self-evaluation of this thesis study. The section ends with the closing words.

7.1 Executive Summary

The case company of this thesis study provides equipment, software, and services for coating extremely thin films over required surfaces. The case company decided recently to productize its service business due to the need to cater to a different customer base. It was decided to productize the service contract offerings of the case company due to the expected volume of business from these contracts and also based on the need from the customers. The objective of this study is to propose recommendations for the productization of service contracts for the case company. The outcome is the recommendations for productization of the service contracts for the case company.

Applied research was chosen as the preferred choice of research approach. It was chosen as the business problem concerned a specific organization and the outcome needed to be a practical solution that can be implemented in the organization. The study was performed in four stages. The first stage was to study the existing literature to understand the concept of productization and steps involved in a productization process. This was chosen as the first stage of study as the existing service processes in the case company were too weak and the case company lacked any prior experience with productization of the service business. The second stage of the study was to perform a current state analysis. This stage involved studying the current service contract offering and the current service contract offering process in the case company. A summary of strengths and weaknesses were developed in this stage. The third stage of this study was to co-create a set of initial recommendations for productization of service contracts. This was performed by combining the knowledge from the literature and the findings in the current state analysis stage. The final stage of

this thesis study was to validate the initial recommendations co-created in the previous stage and to develop the final recommendations.

In the four stages of the study mentioned in the previous paragraph, data needs to be collected from various sources in three different stages. Except the first stage, all the other three stages require data collection from sources. This study replied on documentation and data from employees of the case company for this. The data from employees were collected through one-to-one interviews and discussions. Only the employees relevant to the business problem in hand were selected for this.

The study of existing literature provided insights into the various steps in a productization activity. These steps were developed into a conceptual framework which can then be utilized during the development of initial recommendations. In the current state analysis stage, the current service contract offering, and the offering process were studied. Three strengths and twelve weaknesses were summarized from the current state analysis. Out of the twelve weaknesses, five were selected as critical to this thesis study.

The initial recommendations were co-created by combining the facets from the conceptual framework and the findings from the current state analysis stage. The initial recommendations include a step-by-step process to standardize the service contract and a Cost of Ownership model that includes key data. The initial recommendations were validated by collecting feedback from relevant employees. The final recommendations were developed after taking the feedback into account. This study does not include the implementation of the productization recommendations.

The outcome of this thesis study is the final recommendations for productization of service contracts. This helps the case company to understand better the requirements for productizing a service contract. If implemented, it will aid in the requirement of the case company to serve the customers better.

7.2 Recommendations for Next Steps

Figure 16 shows the recommendations for next steps.

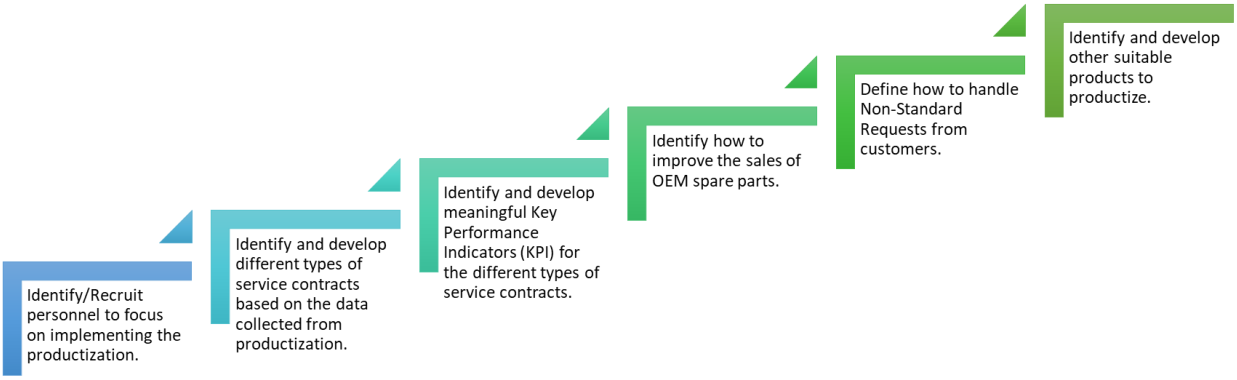

Figure 16. Recommendations for Next Steps

As shown in Figure 16, the recommendations for next steps consists of six suggestions. The first step is to identify and recruit the right personnel for implementing the productization. The second step is to diversify the types of service contracts. The data collected during the implementation of productization can be utilized here. The third step is to identify and develop meaningful and relevant Key Performance Indicators (KPIs) for the service contracts. This makes it easier to show the value of the service contracts to customers. The fourth step and fifth steps encompass the wider service business of the case company. The fourth step is to identify ways to improve the sales of Other Equipment Manufacturer (OEM) spare parts. The fifth step is to define how to handle Non-Standard Requests (NSRs) from the customers. All the above-mentioned steps improve the service offerings of the case company. After improving these, the final step would be to identify other service products than can be productized.

7.3 Self-Evaluation of Thesis Project Credibility

This thesis study utilized the applied research approach as its research methodology. This led to a logical approach in understanding the business problem on hand and to develop practical solutions. A qualitative approach was used in this thesis study as different methodologies collected from various sources were used to develop the conceptual framework and to co-create the initial recommendations. This ensures the internal validity of the study. External validity is not applicable to this thesis study as the study cannot be generalized.

A potential weakness of this thesis study could be the number of data sources utilized during the co-creation of initial recommendations and validation of initial recommendations. However, considering the scale of the case company the shortage of relevant personnel was inevitable. On a positive note, the data provided by the personnel were all taken into consideration carefully in order to develop the recommendations. Each individual provided their own perspective on the problem and the recommendations take all of it into account.

The reliability of the study was ensured by considering relevant literary sources for the conceptual framework and utilizing the applied research approach. The objective was carefully considered during all the research stages, and this allowed for the objective to slightly change as the conceptual framework was being developed. The final recommendations achieved the objective in the end of the thesis study.

Credibility of the thesis study was ensured by providing quotes from the interviewees wherever possible and the questionnaire used during the current state analysis stage in the Appendix. The study has been open about the change in the objective that happened as the study progressed and the limited number of relevant employees as data sources.

Through this thesis study, the complexities of a productization effort were understood. Due to the nature of the business problem and the limited time frame of the thesis study, it was highly difficult to adapt to certain uncertainties

and mistakes. The study highlighted the importance of better planning and being prepared for uncertainties in a business environment. The study also helped to understand the benefits of an organized workflow with defined deliverables. Finally, the thesis study threw light on the importance of having a strong base to build on when tackling problems.

7.4 Closing Words

Productization is an extensive process, and it requires consistent efforts from various personnel across multiple departments in an organization. This thesis study is the first step in researching this vast topic and it paves the way for further studies pertinent to this topic in the case company.

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APPENDIX 1- Questionnaire for the Current State Analysis stage

1 What are the current service contracts that are offered?

2 What is the current service contract offering process?

3 What are the sources of data that are used?

4 What are the key data that are missing?

5 How do you handle data that is missing?

6 What do you think are the key strengths in the current product and the process?

7 What do you think are the key weaknesses in the current product and the process?

8 Which of the key weakness do you think would be most important to tackle immediately?

9 Open comments