

**Servitization:  
Approach towards advanced services  
contract**

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Master's thesis  
May 2017  
School of Business  
Master's Degree Programme in International Business Management

Author Latonen, Tero	Type of publication Master's thesis	Date May 2017 Language of publication: English
	Number of pages 89	Permission for web publication: x
Title of publication Servitization: Approach towards advanced services contract		
Degree programme Master's Degree Programme in International Business Management		
Supervisor Akpinar, Murat		
Assigned by Anonymous commissioning company		
<p>Abstract</p> <p>In the current business environment, companies concentrating purely on manufacturing are exposed to fierce competition. The servitization business model, a way of competing through value propositions that integrate services with product offerings, is seen as a promising option of a business model for companies to gain success and competitive advantage against their rivals. Servitization is, however, considered a rather complex business model to carry out, and one that, when wrongly implemented, can lead to a catastrophic outcome. In order to have a successful contract of advanced services, the approach must be systematic and sustained.</p> <p>The study examined the phenomenon of advanced services contracting in servitization. The aim of the study was to find elements that were considered essential for a systematic, sustained and successful delivery of an advanced services contract. The research context was a company having an advanced service contract in place with one of its customers. The study had a qualitative research approach. The theoretical framework for the study was established based on earlier literature on servitization. Based on the theoretical framework, an approach towards an advanced services contract was established. The design research method was used to find the elements.</p> <p>The findings of the study suggest a systematic and sustained approach towards a successful advanced services contract. In light of the results the study is seen to contribute to the existing literature on servitization. The managers can use the approach as a basis for evaluating their approach towards advanced services contracts. The limitation of the study was that the findings were based on the perspective of one company and that also no customer perspective was included. Future research avenues could be studying the phenomenon of advanced services contracting more thoroughly from the customer perspective and studying whether the results would also be applicable to other companies and business environments.</p>		
Keywords/tags ( <a href="#">subjects</a> ) servitization, feasibility study, advanced services contract		
Miscellaneous		

Tekijä Latonen, Tero	Julkaisun Laji Master's thesis	Päivämäärä Toukokuu 2017
		Julkaisun kieli: Englanti
	Sivumäärä 89	Verkojulkaisulupa myönnetty: x
Työn nimi Servitization: Approach towards advanced services contract		
Koulutusohjelma Master's Degree Programme in International Business Management		
Työn ohjaaja Akpinar, Murat		
Toimeksiantaja Anonyymi toimeksiantaja yritys		
<p>Tiivistelmä</p> <p>Nykyisessä liiketoimintaympäristössä, yritykset jotka ovat keskittyneet ainoastaan valmistukseen, ovat alttiina kiivaalle kilpailulle. Palvelullistumisen (servitization) liiketoimintamalli, arvolutaus joka integroi palveluja tuotetarjontaan, on osoittautunut lupaavaksi liiketoimintamalliksi yrityksille saavuttaa menestystä ja kilpailuetua kilpailijoihin nähden. Palvelullistaminen on kuitenkin monimutkainen liiketoimintamalli toteuttaa ja väärin toteutettuna voi johtaa katastrofaalisiin seurauksiin. Saavuttaakseen menestyksensä kehittyneiden palvelujen sopimuksen, lähestymisen tulee olla systemaattista ja kestävä.</p> <p>Tutkimus tarkastelee palvelullistamisen ilmiötä kehittyneen palvelusopimuksen näkökulmasta. Tutkimuksen tavoitteena oli löytää elementit, jotka mahdollistavat systemaattisen, kestävä ja menestyksensä kehittyneen palvelusopimuksen läpiviennin. Tutkimuksen kontekstina oli yritys jolla oli olemassa kehittynyt palvelusopimus asiakkaansa kanssa. Tutkimus oli luonteeltaan laadullinen. Tutkimukselle luotu teoreettinen viitekehys perustui aikaisempaan kirjallisuuteen ja lähestymismalleihin palvelullistamisesta.</p> <p>Tutkimuksessa tehdyt löydökset osoittavat johtavan systemaattiseen, kestävä ja menestyksensä kehittyneiden palvelujen sopimukseen. Esitettyjen tulosten valosten tutkimuksen koetaan tuovan lisäarvoa aiemmalle kirjallisuudelle palvelullistamisesta. Tutkimusta rajoitti, että ilmiön tarkastelu keskittyi vain yhteen yritykseen, lisäksi asiakkaan osallistuminen jäi puuttamaan empiirisestä tutkimusosioista. Päättäjät voivat hyödyntää tutkimuksessa luotua mallia arvioidessa ja luodessa uusia kehittyneiden palvelujen sopimuksia. Mahdolliseksi jatkotutkimukseksi ehdotettiin muun muassa, tarkastella kehittyneiden palvelujen sopimista enemmän asiakkaan näkökulmasta, tutkimustulosten hyödynnettävyyden testaaminen toisessa yrityksessä/-liiketoimintaympäristössä.</p>		
Avainsanat ( <a href="#">asiasanat</a> ) palvelullistaminen, toteutettavuustutkimus, kehittyneiden palvelujen sopimus		
Muut tiedot		

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# 1 Introduction

This chapter briefly introduces the background, the topic and the research phenomenon that was examined in the study. Secondly, the chapter introduces the motivation and the relevance of the study from the perspective of the case company, personal motivation and motivation and the contribution of the study to the industry. Thirdly, the research question is introduced, and finally, a short description of the structure of the thesis is presented.

## 1.1 Background

This study examined the phenomenon of servitization within the manufacturing industry. In literature servitization is used to describe a transformation of a manufacturing company's business model to offering a combination of goods and services from offering goods alone, as in order to survive the manufacturing firms are rarely seen to stay in competition while remaining purely as manufacturing firms (Neely 2008<sup>b</sup>, 4). Surviving within the competition against rivals is not the only reason for firms to go towards servitization. Another reason is that by adding service offerings along with the core products already supplied, servitization is seen as way for firms to differentiate their offerings from those of their competitors, increase customer dependency and, hence, establish barriers to competition (Barnett, Parry, Saad, Newnes & Goh 2013, 3).

It is argued that, even though servitization has its roots as far as back as in the 1960's, servitization has been seen to receive fairly little attention in literature, and it has not been until the few recent decades that the phenomenon of servitization has become more known and gained stronger foothold among the scholars and the manufacturing industry operations. However, even today servitization is argued to be an unfamiliar business model for many companies (Neely 2008<sup>b</sup>, 4). Companies may have practiced servitization in their operations without knowing better, but only during the recent years the understanding of and approach towards servitization has become more systematic.

Among the manufacturing industry, servitization has become more attractive mainly due to a better understanding of business models and the mechanics within them, as well as also due to the pressure by the extremely difficult market environment that the manufacturing companies are encountering, especially the ones concentrating purely on manufacturing goods and having no service offerings in place. There can be a surplus of manufacturing companies with identical or at least very similar product offerings that operate in the same market environment. Hence, the market environment has become saturated by companies having the same and/or similar offerings for the customer to choose from. This scenario leads to extreme rivalry based purely on price and price alone. Due to this, companies have encountered a need to evolve themselves by being innovative and differentiating themselves against this type of rivalry.

Moving towards servitization, in other words, having a combination of goods and services offerings, is seen as a promising option to gain success and competitive advantage. However, simple and tempting as it may sound, moving towards servitization cannot be taken for granted and must not be considered a solid way to immediate success. This is because servitization is considered a rather complex business model to carry out, and because there are many obstacles along the way as is demonstrated in the next chapters of this study. The main interest of this research lay on the contracting of servitization. The purpose was to study, design and present how a company can gain a more structured and systematic approach towards advanced services throughout servitization contracting.

## 1.2 Motivation for the research

### ***Relevance to a broader audience (society, industry)***

Within the past decade, companies' economical structures have been exposed to a severe market turbulence, and they have changed dramatically due to the international depression that started in 2008. Starting from 2008 and even until the recent days, news in the media have been reporting how companies are going



bankrupt or at least how they are heavily downsizing their workforce or cutting their operations, which normally leads to downsizing the number of employees. This sort of news is not surprising, and the atmosphere among people is more cynical than earlier. What is also noticeable is that companies, especially the ones operating globally, are heavily moving their operations to lower cost countries due to the high cost structure mainly based on labor costs. However, one must acknowledge that the trend of companies allocating their operations to lower cost countries took place well before the global depression so that the depression cannot be considered the only reason for moving operations abroad. Companies' decisions of allocating their operations abroad are based on strategic decisions to cut costs in order to remain competitive. However, one cannot deny the current depression, and the uncertainty of the market has been seen to enforce this trend.

One factor in the above trend is the fact that companies are no longer able to sustain their competitiveness with the current cost structures. This leads to a situation where the companies compete intensely for what is left. Fierce competition forces companies to re-evaluate their existing operations and ways of doing business and to seek better and more innovative solutions. The ones that show a capability to adapt themselves to a new environment and are able to renew themselves and their operations, are the ones that most probably will survive through the tough competition and depression and sustain their competitiveness. On the opposite side of this are the companies that remain static or passive towards the changes of the business environment and hope for the better days. They will most likely stumble on their cost structures and lose their market share to more innovative and dynamic companies. Losing market share will lead to a loss of revenue and profit, which, in turn, leads to downsizing, which then leads to a lower operational level or even worse, bankruptcy. Companies that stay static in a changing environment gradually just fade away. Gaining back the lost market share (loss of revenue, loss of profit) is more difficult than at least trying to sustain it through innovation, new offerings or through differentiation.

As mentioned earlier, servitization has received fairly little attention both in literature and in practice even though it has roots far back in history. This was the story until the past few years, because nowadays there is an extensive body of

research conducted on the various aspects of the phenomenon of servitization. Most of the literature and research on servitization, however, normally concentrates on studying the phenomenon of servitization from an overall, more holistic perspective and there is quite little literature concentrating on the actual practicalities, in other words “how to do it”. However, a few studies concentrating on the practicalities can be found, y but they also stay on a rather superficial level. There is reason to believe that the actual phenomenon of servitization is fairly well understood among the industries, at least the very basics of it, but it seems that literature is missing a certain practical approach to how to evaluate whether it is actually sensible for companies to go towards servitization or not. It was also believed that the outcome of this study would provide a detailed set of tools for helping the companies to better evaluate and justify whether or not to go for servitization.

### ***Relevance to the commissioner of the thesis***

The relevance of this study was significant to the assignor company. The author decided to respect the wishes of the company and honour their request of keeping the company’s name and its customer’s name confidential. The case company and its customer are only referred to as the case company and the case company’s customer or simply as the customer.

The case company is located in Finland and it is part of a large globally operating corporation. . The case company was established in the beginning of the 1970’s and it has achieved a respected and well recognized status both locally and globally in the field of process industry by the OEM’s (Original Equipment Manufacturer) and end users. For decades the company had manufacturing of their own. Along with manufacturing they practiced maintenance services to some extent, but the main focus was on the manufacturing of new products. Service mainly consisted of selling spare parts, maintenance and some customer consulting, and, hence, the service operations were more transactional rather than advanced types of service. The distinction between transactional and advanced services is presented in greater detail in Table 2.

In the year 2011 the assignor company made their first advanced service contract with one significant Finnish company operating in the oil and gas industry. As so many other globally operating companies or corporations that had allocated their operations to lower cost countries, the corporation of the case company also had a similar strategy. In line with the corporation strategy, the actual manufacturing operations of the case company were moved to a lower cost country in 2013. From that moment on, the focal point of the company's operations changed and the case company turned from a manufacturing company to a full-time service company. At the same time, the strategic thinking moved from manufacturing to more service oriented, and hence towards being more servitization oriented.

As presented earlier, going towards servitization is not "a walk in a park", and this was also the case with the case company. The company started to move towards servitization and especially towards advanced services in a rather rapid pace, and, one could say, rather unexpectedly. Going towards advanced services did not, however, happen blindfolded. On the contrary, massive preliminary studies and assessments, in other words, feasibility studies were conducted before entering to a servitization contract of advanced services. This was done by a separate, especially assigned unit of people who had prior experience of advanced services. This process of a feasibility study and the design of it was what this research process focused on. The process of the feasibility study is presented in more detail in Chapter 4. However, despite the excellent support offered by the group, one could argue that from the point of view of the case company, heading towards servitization happened in most parts through trial and error as none of the company's local representatives had any previous practical experience on servitization and especially on advanced services. Even today, as years have gone by and the case company has gained more experience of servitization, it can be argued that there is still much to learn about servitization and that deeper knowledge and knowhow of the phenomenon of servitization is needed. This study aimed at increasing the knowledge of the phenomenon especially in the field of servitization contracting within the case company by going more into the details of the phenomenon and by creating a systematic approach toward servitization contracting.

### ***Relevance to the author***

The author's personal interest in and motivation towards the phenomenon of servitization began from an actual experience of working in a servitization project within the case company. As the other employees in the company, most of the project team members had no or very little prior knowledge nor experience of servitization and advanced services. Being one of the key members of the project team implementing servitization and setting up conditions for the advanced services really raised the author's interest in servitization. Instead of just reading about the phenomenon, the author had a real life opportunity and privilege to witness and truly experience close by what it actually takes from a company to transform itself from being a more traditional manufacturing company with basic service alongside its operations to a more servitized way of having advanced service offerings.

Throughout the author's previous bachelor level studies and previous work experience, he has always had a genuine interest in projects. Being able to take part in such a massive project as the implementation of an advanced services contract inspired him and still does. In order to gain a successful project outcome, all the elements (people, resources, operations etc.) of the project must be in perfect harmony in order to reach the goal that is set for it. During his work career, the author has always tried to observe the company operations from a larger perspective and see how different elements are set up and how they are linked to one another with the purpose to achieve success. In all of its complexity, servitization is a good example of a case where all the elements need to be in perfect harmony in order to reach the targets set for it.

### **1.3 Research questions and research approach**

As presented earlier, the world economy has faced severe turbulence over the past decade, which has had a direct impact on companies' structures as well as on operational and business models. In many cases, the "good old way" is no longer sufficient or an option if a company wishes to maintain its competitiveness towards

its rivals. Companies need to evolve together with their surroundings and, better still, be innovative by doing things differently from their rivals in order to gain competitive advantage over them. One solution for a manufacturing company to survive could be to change its operations more toward servitization. The company must have a profound and holistic understanding what servitization is and understand the benefits that it may bring to the company but also the risks that going toward servitization may bring.

This study examined the phenomenon of servitization and more precisely the contracting of servitization. Starting from the assumption that in order to gain a successful delivery of an advanced service contract, a company must understand and be able to exploit the key elements affecting it.

Given this a following research question was created:


**“What elements are considered essential for a systematic, sustained and successful delivery of an advanced services contract?”**

In order to find the essential elements for systematic, sustained and successful delivery of advanced services contract one must first understand and explain the phenomenon of servitization. The research question is approached through a literature review where carefully selected and relevant theory and prior researches on the phenomenon is introduced to support the research and the research question. Literature review helps the author to familiarize himself on earlier researches done on the phenomenon, how things have dealt with, what kind of measures have been used, and what kind of conclusion have been drawn before (Kananen 2011, 21). Based on the existing theories and prior researches a framework for the research is established. This is followed by the empirical study. The empirical study is conducted through by interviewing the key members of the case company that are working closely with the phenomenon. Case company material on the phenomenon is also exploited in the empirical section. Once the empirical study is conducted and analyzed it is followed by presenting the results.

## 1.4 Structure of the thesis

The thesis consists of five main chapters. The structure of this thesis follows the process of the thesis structure introduced by Kananen (2011, 11). This process is illustrated in Table 1 below.

Table 1. Structure of the thesis

Sections of thesis	Direction	What does this mean?
Title (subject)		The title is chosen on the basis of the field of study.
Abstract		Abstract provide the reader a basic information on the work such as background and research objectives, theoretical framework, methodology used, main results of the research (answers to the research questions) and discussion of implications for managers, future research recommendations.
Introduction		The introduction deals with the subject and the research problem on a general level
Research problem, research questions and objectives		The research problem describes the problem that the researcher wants to solve. The problem is converted into research question(s) to which the researcher looks for answers by means of research material. The materials may consists of of documents, literature, interviews, questionares etc. if the the objective is to solve and remove the a problem, measure should be chosen or designed to measure how well the objective have reached.
Literature review		In the theory section, the theories, models and earlier research related to the subject of thesis are intorduced and discussed. In this section is shown what writer knows on the subject.
Methodology		Methodology refers to all methods that are used in research. The main division is based on either qualitative or quantitative research, each of which apploes methods that suits certain types of situations/research phenomena. The methods are needed at the data collection, analysis and interpretation stages of the work. The choice of the methods should be justified.
Results		The empirical material that has been collected is tested by means of various analysis methods to find and provide answers to the research problem and the questions derived from it.
Discussions		Discussions are drawn on the basis of the research results, and, if necessary, recommendations are made based on the dicussions.
References		All the sources are listed in the list of references.
Appendices		Appendices are placed at the end of thesis. They are numbered and they are referred to in the text.

After the Introduction chapter, the thesis continues with the literature review in Chapter 2. The key concepts relevant for the study are first presented in the literature review chapter. Secondly, the key concepts are explored through various perspectives in order to provide a holistic view of the key concepts that provide the basis of the current literature. Thirdly, a theoretical framework is presented according to the existing literature. In Chapter 3, the approach and methodology applied in the study are first introduced, after which comes the presentation of the data collection and data analysis. Lastly, the verifications of the results are presented. This is followed by Chapter 4 where the results of the empirical study are presented. Chapter 5 discusses how the result are in line with the set research question and with the literature and the theoretical framework as well as what the practical and managerial implications are. The limitations of the study and recommendations for future research are also presented in this chapter.

## **2 Literature review**

The purpose of the literature review is to provide the reader a theoretical framework for the study and for the research question the study is based on. In the literature review chapter is introduced the key concepts relevant for the study outcome. In the first chapter the chosen key concepts for the study are introduced briefly in logical order so that the reader can build a clear image on the structure what to expect. In the second and third chapter the actual chosen key concepts, *Servitization* and *Business model* are analyzed and introduced in more detailed through which the linkage is built to support the research question. Finally in a theoretical framework chapter a conceptual model(s) is presented that presents the features essential for the study outcome.

## 2.1 Key concepts

In this chapter is introduced the key concepts chosen for the study. The key concepts in literature review are carefully chosen so that they would create a logical and structured approach for the theoretical framework applied in the study and to support the research question to be answered in this thesis:

**“What elements are considered essential for a systematic, sustained and successful delivery of an advanced services contract?”**

As already mentioned there are two key concepts chosen for the thesis: *Servitization* and *Business model*:

### ***Servitization***

In the second chapter of the literature review is explained and introduced servitization, what is servitization, for what purposes it is designed for and what benefits and challenges it brings to the company from competitiveness perspective against the global and local rivalry. Also the possible disadvantages of servitization are covered in this chapter. The concept of Servitization is in a key role for the whole thesis and was an obvious choice as for a key concept. The purpose of the servitization chapter is to provide clarity for the reader what he/she is about to read and also that the reader can create linkages between the servitization and other key concepts introduced along the study.

As it will be presented along the way of literature review in literature the phenomenon of servitization is typically presented more as a transformation and change or better as an evolution of business model of company from more traditional product-centric of manufacturing to more product-service-centric way of doing business. Although transformation from product-centric to product-service-centric is considered to be general element in servitization, the actual transformation is not covered in that detail in this study. The main aim of this study is to observe and create servitization implementation concept more from the scope of advanced service level of company operations. More precisely the assumption in this study is



that the actual transformation from product-centric to service-centric has already taken place and therefore the servitization is observed in this thesis as a single case study from the scope how can a company implement advanced services contract so that they are closely coupled with manufacturer's/customer products creating a linkage between servitization and vertical integration (Baines, Lightfoot & Smart 2011, 949). Advanced service level is introduced more detailed in the following chapter.

Although servitization is more commonly known among the industry of service, yet the actual phenomenon of servitization as a business model may not be that familiar for the larger audience. In that sense the roots of servitization cannot be ignored completely as it is vital to introduce servitization not only through advanced services but also as a whole first as it creates a certain backbone for the literature review and for the whole study.

### ***Business Model***

In a third chapter of literature review is observed business model, what is business model, what is meant with business model and what are their purposes, for what reason they are designed for and how the concept of business model relates to servitization. The purpose of the business model chapter is to bring to attention what is business model and what the company should focus on when choosing the most appropriate business model for their purposes. Although servitization being a business model of its own it is vital to create a broader understanding of business model and understanding how it is designed for what purposes it is designed for and what good comes out of servitization business model and what are the possible pitfalls of servitization business model.

### ***Theoretical Framework***

Finally a theoretical framework is presented. According to Kananen (2011, 22) theoretical framework can be understood as referring to what has been written

before on the subject and as a review of what as a review of what material is available on the phenomenon researched. These theories and previous researches can then be used to support the own research (ibid., 22).

Theoretical framework in this research is created on the basis on the key concepts or the theories and the previous researches done by other authors on the phenomenon of servitization. Total of three previous research or theories are exploited in the theoretical framework to create a holistic approach process chart that will support the research and the research questions. Theoretical framework structure and the elements of it will be presented in more detail next chapters.

In the following chapters these key concept are analyzed more thoroughly through literature review in light of the implementation of servitization and challenges of the implementation.

## 2.2 Servitization

In this chapter is explained and introduced the concept of servitization. The aim is to provide holistic picture on what is servitization, how it has evolved, for what purposes it is designed for, and what advantages and challenges it may bring to the company from perspective of competitiveness against the global and local rivalry. Also the possible disadvantages of servitization are studied in this chapter.

While going through the literature on the phenomenon of servitization and having several years of personal of experience of working within the industry of manufacturing and service one can quickly realize that the term servitization is modern but as a phenomenon or as a concept servitization cannot be kept as a novel idea that has suddenly emerged over the past years. On the contrary companies are seen to practiced servitization along their operations but it is argued that the understanding and interest of servitization as phenomenon and as a business model has become more popular among scholars and industry offering only in the last past decades (Baines 2014, 14). It is commonly recognized in literature that the term Servitization was originally introduced by Vandemerwe and Rada (1988) already in

the late 1980's and its evolution is said to have roots traced back as far as the 1960s (Baines, Lightfoot & Smart 2013, 1427; Vandemerwe & Rada 1988). However, according to Baines (2014, 14) even today after decades when servitization was first introduced in its modern presence, servitization still might not be understood nor considered as a segregated business model of its own by practitioners but more of as a nuance or as a subtle that company practices. Gebauer, Ren, Valtakoski, & Reynoso (2012, 121) argues that the mindset towards servitization business model, a bundled offering of product and product-service offerings, might be hard to understand by companies as the distinction and understanding between product and services offerings the manufacturers develop, sell, deliver and manage is limited. In other words servitization is understood as something done alongside manufacturing and not as a core business. The lack of understanding of the servitization phenomenon is also supported by the statement of Bustinza, Bigdeli, Baines, & Elliot (2015, 53) where among larger audience servitization is often understood simply as sort of a 'service' that should be provided automatically alongside the standard product offering rather than as a segregated and a different approach of a business model in order to create differentiated value offering to its customers and through which the company could achieve competitive advantage against its rivals.

The concept of service is broad and can mean and understood differently in different business environments, therefore when speaking of services plain definition of service is not sufficient and accurate enough when related to servitization. Vargo & Lusch (2008, 2) defines service as a process of doing something for another party in collaboration by integrating internal and external (intangible) capabilities in order to co-create value for customers and capturing value for the service organization (Ritala, Hyöttylä, Blomqvist, & Kosonen 2013, 497).

One reason why companies may have difficulties of seeing themselves of practicing and having service offerings may originate from the lack understanding and ability of classifying the scales or variances of service operations. The scale of variances of service operations can vary from simple service input to more advanced service. In literature the scale of servitization has different terminology by researchers, policy makers and industry leaders. As an example in Germany is spoken of Industry 4.0, in Scandinavia is used term product service system, United Kingdom the focus is on

servitization and the circular economy, whereas in the United States is spoken of servitization and innovation within the industry (e.g. Advanced Services) and so no one single uniform terminology for servitization exists (Baines 2015, 9). Companies may also have created trademarks for their own service offerings that are based purely on servitization but are more known for larger audience through gained success and therefore the term of servitization is overwritten by company trademarks. Also as mentioned earlier that due to the lack of understanding of the classifying and distinction between the product and service, companies may also have difficulties of classifying themselves whether they have more conventional 'product-centric' operation or do they actually have combined 'product-service-centric' operations or are they only have 'service-centric' operations. With 'product-centric' is referred to a company that concentrates on 'pure' product manufacturing, whereas 'product-service-centric' is referred to a company that has both, product and service offerings and 'service-centric' that is concentrated only service operations and offerings. Whether being either extreme end Product-centric/Service-centric or milder approach both extreme end approaches (Product-centric / Service-centric) may differ quite significantly on one another, it is noticed that the complex business models can create tensions of paradoxical strategies that the can lead to inconsistencies or contradictions in the products/services marketplace, and/or the processes, rewards and competencies associated with each strategy (Smith, et al. 2010, 450). Therefore it is critical for company distinguish these different levels of services so that no matter which level is chosen it eventually will be in-line with the company strategy and do not harm or confuse the business. This requires management of different operations.

Below in Figure 1 is illustrated the operations variances between pure 'product-centric', 'product-service-centric' and pure service provider (Baines et al. 2011, 950).

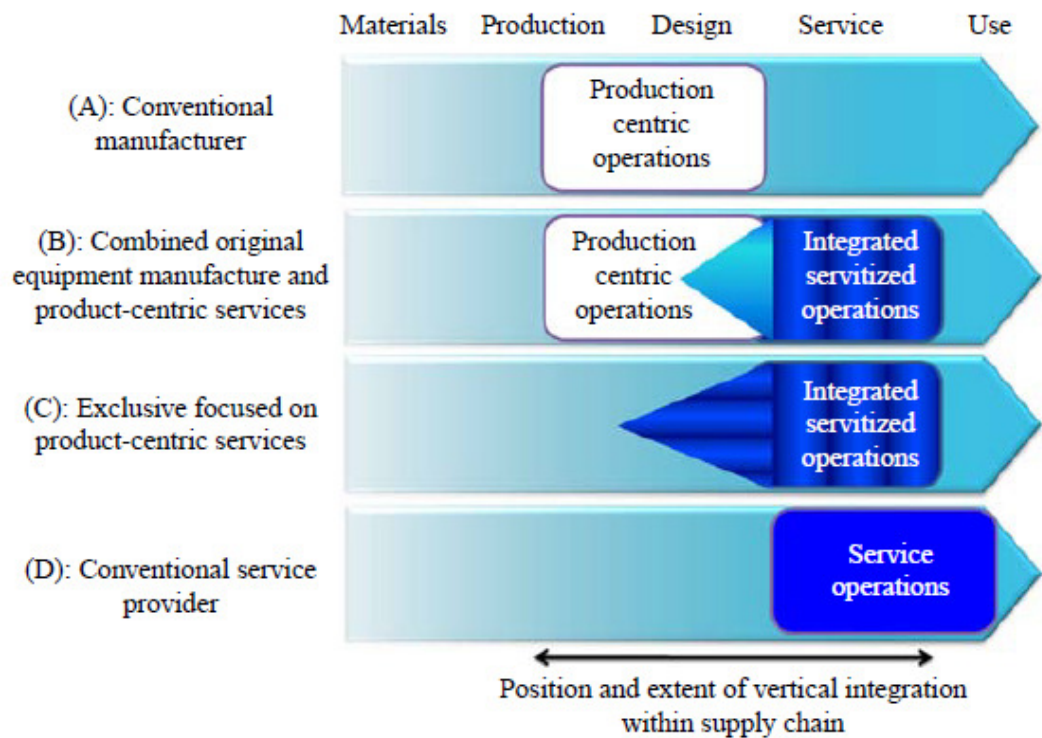


Figure 1. Vertical integration practices for production, servitizing, and service operations

As can be seen from the Figure 1 above, *conventional manufacturer* (A) is only concentrated on manufacturing of products, whereas at the other end *conventional service provider* (D) is only concentrated on service offering having no manufacturing or design of its own. Between these clearly distinctive and rather extreme ends are somewhat compromises on having both, some extent of production, design and service offerings. These two operations are considered as practicing servitized operations. However, It is argued that this rather simplistic, extreme and overemphasizing ‘product-service’ classification on company operations is not sufficient as it fails to recognize the diversity of manufacturing companies and the variety of services they offer (Gebauer et al. 2012, 121).

Further on, Baines, Lightfoot, Smart, & Fletcher (2012, 638) define that a manufacturer’s services can be classified into as, *Base-*, *Intermediate-*, or as an *Advanced-services*. Each different form of service has different scale of focus, range

of service activities and scope of risk and revenue payment. Below, in Table 2 the variances of these three levels of services are compared and explained in more detail.

Table 2. Meta-clustering of service offerings

	Principle on which cluster is defined	Relative characteristics of cluster			Examples of services offerings within cluster
		Range of service activities	Extent of risk	Revenue payment	
Base services	Focus on product provision	Narrow: activities centred on and around production competences	Low: easily delivered for an enterprise with manufacturing competences	Point: largely on completion of contract	Product/ equipment provision, spare part provision
Intermediate services	Focus on condition maintenance	Broadening: based on the exploitation of production competences to assure state and condition of equipment	Medium: increased expose to the consequences of equipment faults	Periodic: some upfront and/or on completion. Maybe with interim payments	Scheduled maintenance, technical help-desk, repair, overhaul, delivery to site, operator training, condition monitoring, in-field service
Advanced services	Focus on outcome assurance	Extended: stretching the manufacturing enterprise to take on activities that are usually internal to the customer	High: financial penalties incurred almost immediately if equipment fails to perform as specified	Linear: pay-through-use with period adjustments in rate	Customer support agreement, risk and revenue sharing contract, revenue-through-use contract, rental agreement

As can be seen above from the Table 2, the service offerings can vary from simple (focus on product provision), narrow activity and minimum risk of responsibility services (Base) to more complex (focus on outcome assurance), more demanding to manage, high risk responsibility services (Advanced) that are highly individualized

and unique by each customer. This thesis is mainly observed from the perspective of advanced services.

### **Benefits of Servitization**

Why servitization? The basic principles of practicing business is that you are better than your rivals on whatever industry of business you operate in. Companies strive to gain as much market share as possible in order to increase their revenue and profits. To achieve this company must achieve and/or sustain competitive advantage over their rivals. This is however, easier said than done as there are many variables and obstacles company must overcome to achieve its goals. To sustain competitiveness and/or to gain competitive has become even more difficult especially now when economical structures have dramatically changed due to the international depression that started in 2008. Companies competing intensely on the remains what is left. In literature Servitization is proposed as good approach to gain and sustain competitiveness.

In this study the benefits of servitization are observed from the perspective of *competitiveness, economical aspect and customer relationship*.

#### *Competitiveness aspect*

In a current economic environment that has led to an ever growing global and local competition, it is argued that manufacturing firms (product-centric) can rarely remain as pure manufacturing firms and they are seen to seek possibilities to differentiate themselves from their rivals through service and solution offerings and seek possibilities to capture value through service offerings in order to stay competitive (Neely 2008b, 1). According to Gebauer et al. (2012, 120) “competing through services is no longer limited to service companies”. Being competitive and being able to differentiate against rivals has gained more attention in past decade in the business environment. Not only are the current economic structures chances affecting the competition but also other external threats. According to Porter (2008,

80) there are five forces that shape the competition: Threat of New Entrants, Bargaining Power of Buyers, Threats of Substitute Products or Services, Bargaining Power of Suppliers and Rivalry Among Existing Competitors. The five forces that shape the competition by Porter (2008, 80) is illustrated below in Figure 2.

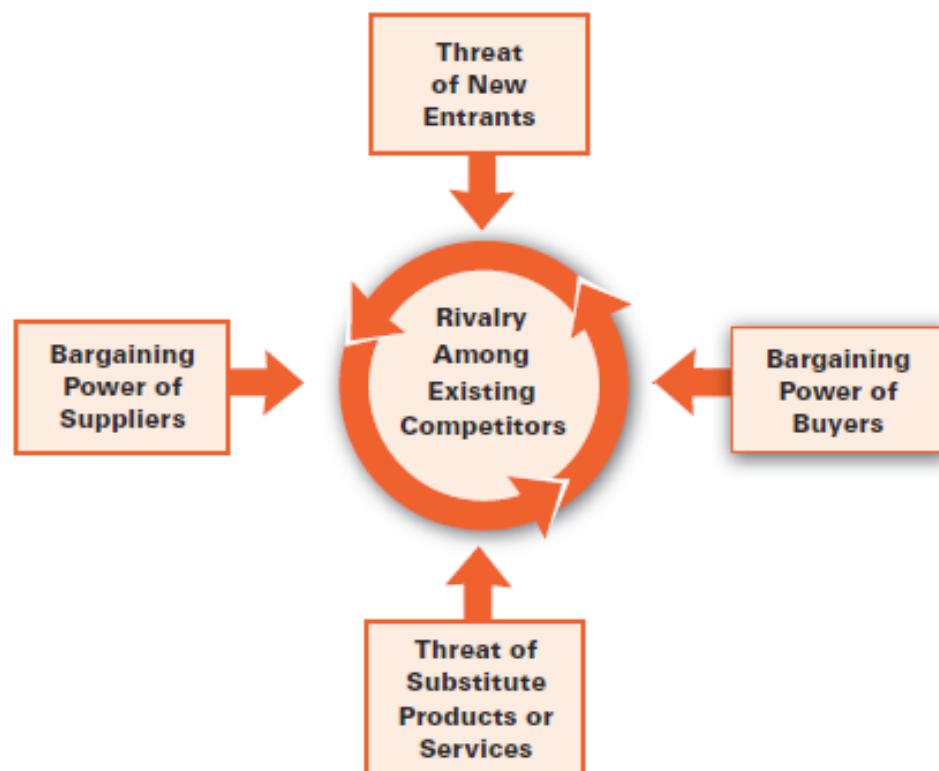


Figure 2. The five forces that shape the industry competition

According to Neely (2008a, 6) moving towards servitization is seen by many as one of the best way to tackle these external threats. Not only the market environment has changed to more demanding and challenging but also it is evident that technology becomes obsolete, customer demands change, and new value propositions, competitors and imitators emerge (Kindström & Kowalkowski 2014, 98). External threats expose more traditional 'product-centric' companies to more fierce



competitions than more service oriented once, as according to Baines, Lightfoot, Peppard, Johnson, Tiwari, Shehab & Swink (2009, 495) servitization (service offerings) is seen as a means to create value-adding capabilities that are distinctive, sustainable and easier to defend from competition. Argued by Gebauer (2009, 81), in a more product-centric environment striving differentiation and competitiveness through technical differentiation is increasingly more difficult to achieve as a lasting strategy, whereas through servitization can be achieved strategic opportunity to secure long-term competitive advantage by adding service alongside product offering which increases the barrier of imitation and creates attractiveness and also achieving product differentiation through customization (Parida, Rönnerberg Sjödin, Wincent & Kohtamäki 2014, 45).

#### *Economical aspect*

Better profits, compensation of decreasing margins and gaining competitive advantage over rivals attracts traditional product-oriented companies more and more to increase their service orientation as part of their business strategy by expanding and innovating their existing offerings by providing services to accompany their existing products throughout the life cycle. (Gebauer 2009, 79; Visnjic Kastalli, I. and Van Looy, B. 2013, 2).

Oliva & Kallenberg (2003, 160) define there are three commonly acknowledged rationales that speaks on behalf servitization and why companies should move towards servitization:

- Increased revenue and profit
- Customer demand changes (outsourcing non-core activities)
- Sustainable source of competitive advantage

*Increased revenue and profit*, adding services alongside product offering company can gain additional sales and/or in an another scenario can compensate their

decreased product margins as services are seen more stable source of income and bring additional revenue and profit (Gebauer 2009). However as stated earlier, it is debatable how profitable service offerings truly are (Neely 2008a, 21), as it depends on the terms, scale and complexity of contract, pricing mechanism etc. By added service activities and through close relationship the servitization is seen to increase communication between service provider and customer (Bastl, Johnson, Lightfoot & Evans 2012, 652). Hence, as the communication increases the service provider becomes much better informed about the customer's broader needs which then again can imply enlarging the scope of the product offering to the customer, which in turn can lead into more additional sales of related products and add-ons (Kastalli & Van Looy 2013, 9 -10). In case where the customer installed base is mainly covered by competitor equipment/products, the service provider has possibility to gain additional product sales by replacing competitors with the product-service providers own products (ibid., 9-10). Hence, by replacing competitors' products with own product increases the barrier of entry to rivals.

*Customer demand chances*, from the customer perspective servitization represent a solution and opportunity for organizations that wish to outsource their non-core activities to an independent service provider or to the original product manufacturer in order to strengthen their strategic focus (Hallikas, Immonen, Pynnönen, & Mikkonen 2014, 4). This could also be seen as where customer value focus does not lie on the actual ownership of the product but the focus is on benefits the product brings (Smith, L., Maull, R., & Ng, I., 2012, 244). Through outsourcing services customer is able to capture the required capabilities that it may not possess itself, increase cost efficiency and leverage economies of scale and scope (Visnjic Kastalli et al. 2013, 8). Observing from the scope of installed base economic scale arises as by outsourcing services single customer does not need to invest in service resources (people) and capabilities (machines) as the service provider can exploit its existing installed base for customer purposes (Visnjic Kastalli, & Van Looy 2013, 8). From the customer perspective, servitization and especially through advanced services offers a route of reducing risks by transferring the responsibility to the service supplier and decreasing or at least stabilizing and making predictable maintenance and support costs (Neely 2008a, 6).

### *Customer relationship aspect*

According to Neely (2008a, 5) and Colen & Lambrecht (2013, 509) Vandermerwe (1988), presented there are three reasons speaking on behalf on why manufacturing firms should servitized is to:

1. Lock in customers
2. Lock out competitors
3. Increase level of differentiation

*Lock in customer and Lock out competitors* and Increased level, close customer relationship plays a significant role in the delivery of successful and sustained advanced services contract. Through the servitization the interaction and communication between customer and supplier increases (Bastl et al. 2012, 652). As the organizations, service provider and customer, are moving towards servitization relationship they are more likely to lock themselves into long-term relationship with one another making the rivals difficult to come between them (ibid., 652). According to Gobble (2015, 64) "Close customer relationships are both a key enabler and a key benefit of Servitization". Early alignment on customer process design and co-produced design of services helps the service provider to gain better understand on customer and customer needs and meet the customers, often individualized needs for example cost of product functioning (e.g. energy cost cuts, lower breakdowns/longer MTBR) (Benedettini, Neely, & Swink 2015, 946–947; Gobble 2015, 64; Visnjic Kastalli & Van Looy 2013, 9-10). These sort of individualized needs are often unique and difficult to imitate so they often create numerous opportunities for service provider such as customer loyalty and differentiation in services, which creates barriers for entry which then again leads to sustained competitive advantage (Gobble 2015, 64; Benedettini et al. 2015, 946 – 947; Oliva and Kallenberg, 2003). According to Heskett, Jones, Loveman, Sasser, & Schlesinger (2008, 121), service offerings are seen to create increased positive customer satisfaction through value it brings to them. An example of creating value for customer, instead of selling all the

time new, high cost product for to replace the broken or malfunctioning product (Base services) with preventative maintenance, in this context meant by changing regularly the disposable parts avoiding the product to malfunction or broke and by accessing the availability of replacement product (new or refurbished) at the customer location (Advanced services), customer will experience any or minimum downtime of its process due to breakdowns, hence leading to customer value . Satisfied customer is seen to lead then again can lead to service loyalty (Hesket et al. 2008, 121), implying that customers who are satisfied with the services delivered will be more likely to purchase product replacements from the same manufacturer, hence service offerings promotes *lock in customer*.

The benefits and relationship between the vertical integration practice and business pressures for advanced service contracts are presented in Figure 3 below (Baines et al. 2011, 950).

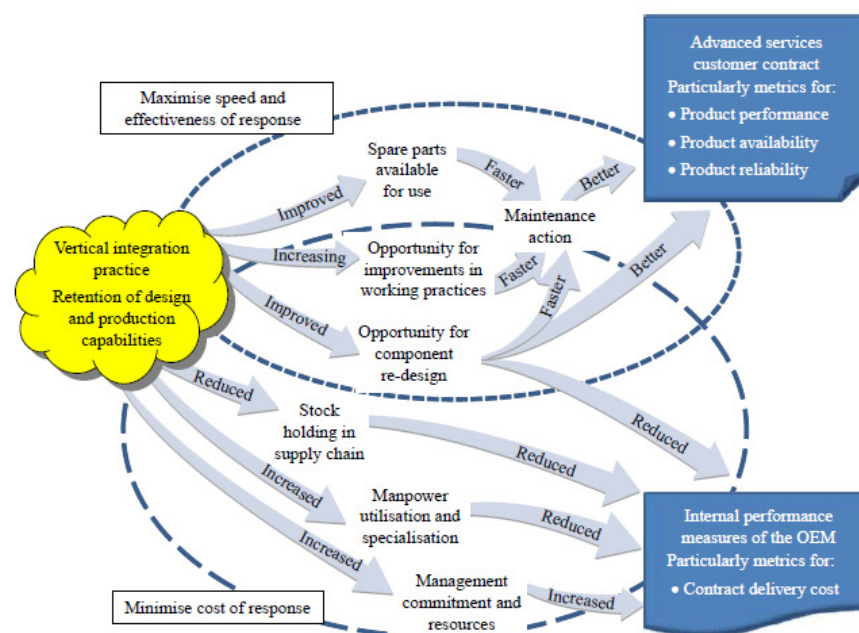


Figure 3. Illustrating the relationship between the vertical integration practice and business pressures for advanced service contracts

## **Risks and Challenges of Servitization**

As presented earlier there are several factors speaking for servitization business model that can offer high potential new value for a company. However, implementation of servitization is a complex effort and withholds several challenges if not managed and/or implemented properly.

### *Service paradox*

It is acknowledged that poorly implemented servitization may result in a decline in overall firm performance and even expose the company in a risk of bankruptcy (Benedettini et al. 2015, 946). In literature this phenomenon is called as 'service paradox' (Kastalli, Van Looy, & Neely 2013, 101). In literature the concept of 'Service paradox' is used to represent the outcome of the situation where company invests heavily on implementation of servitization with an expectation to gain higher profits and increased revenue. Investments will lead to increased service offerings and higher costs, but on the contrary does not generate the expected higher returns (Gebauer, Fleisch, & Friendli 2005; Neely 2008; Benedettini et al. 2015, 947).

### *Trade-offs between product and services*

Porter (1996, 68) defines trade-offs as "more of one thing necessitates less of another". Observing trade-offs in a servitized environment, according to Kastalli, Van Looy & Neely (2013, 111), trade-offs can cause fear and tension between the ones responsible of product revenues and the ones responsible of service revenues. Trade-offs normally takes place in case where services sales start to "cannibalize" the revenue from conventional product offering for example through increase product-life spans through services (ibid., 111). Hence, this may lead to a temptation to give away services in order to secure more profitable product sales, or vice versa. However, according to the findings by Kastalli and Van Looy (2013, 24) products sales and service sales are not excluding one another, on the contrary both activities can display a complementary, mutually reinforcing relationship as well as a substitute

one another. Also, according to the findings by Baines et al. (2011, 950), the companies that have achieved sustained successful delivery of an advanced services contract were the ones that had retain a tail of design and production capabilities. Hence, companies having both at least some level of production capability (and design) and service combined, were the ones able to deliver the customer best capability and availability most successfully. However, one must remember that the sustained success is not dependable only on having manufacturing and service but rather it is a sum of overall critical factors in the performance of the entire service delivery system.

The complexity of servitization business model set challenges for the implementation ranging from lack of attention from top management, deficiencies in organizational design and information technology, the lack of an appropriate culture, to insufficient capabilities for service management (Visnjic Kastalli and Van Looy 2013, 5).

### *Pricing*

Due to the complex nature of the servitization, pricing is something what difficult and possess the company on great deal challenges as they lack of experience with pricing services and assess the high-level risks associated with service agreements (Parida et al. 2014, 49).

### *Contracting*

As mentioned earlier going into relationship of servitization often requires heavy investments by the supplier, hence the contracts need to be sufficiently long for the manufacturer to recoup the investments it is making (Baines and Euchner 2014, 14). Contracting can be somewhat difficult as the environment operated in can vary a lot. Contracts can be more traditional cost-based or fixed-price contracts or they can be more performance-based in nature based on more product reliability and degree of customer involvement (Visnjic Kastalli and Van Looy 2013, 6).

## 2.3 Business model

Understanding what business model is and what it is not and what it is used for is not always clear as the concept of business model seems to cause confusion even among scholars and practitioners where business model is often confused with strategy and with other similar sound terms, such as economic model and revenue model (DaSilva & Trkman 2013, 5). Although by definition both concept appear to be same they have a different aim. According to DaSilva and Trkman (2013, 5) “strategy reflects what a company aims to become, while business models describe what a company is at a given time”. Understanding the business model is elementary important to the managers that design the path the enterprise is about to follow. Osterwalder & Pigneur (2010, 14.) defines business model as following: “A business model describes the rationale of how an organization creates, delivers, and captures value”. More extensively, Smith, Binns & Tushman (2010, 450) explains business model as a design through which an organization converts a given set of strategic choices – about markets, customers, value propositions – into value, and uses a particular organizational architecture of people competencies, processes, culture and measurement systems – in order to create and capture this value.

Business models are not to be taken for granted and assume one model fit for one company would fit for all. Heavy investments can be input on a business model, yet it may lead to a loss of value creation and unsatisfied outcome due to lack of understanding and misuse (DaSilva & Trkman 2013, 3). Chosen model to proceed with requires full understanding how the model works and also understanding the qualities of it, for what purposes it is designed for (Baden-Fuller & Morgan 2010, 163). Casadesus-Masanell & Ricart (2010, 1) argue that there is seen a development in the area of business model over the past few decades and that the companies have learned to analyze their competitive environment, define their position, develop competitive and corporate advantages and understand better how to sustain advantage against challenges and threats.

Choosing a model only by its attractiveness and proven success stories in some other business environment or company is not sufficient. The core stands of the business

model needs to be investigated, manipulated and/or if possible experimented (ibid., 163; DaSilva & Trkman 2013, 3).

To be successful and to be able meet the changes and challenges over-time in competitive environment, the design of the business model must be *purposeful*, meaning it must be in-line with the shape and design both organizational activities and the linkages to customers, partners or vendors (Activity System perspective of business Model Design) (Zott & Amit 2010, 218). They define Activity System perspective as “where a company has systematic and holistic thinking approach towards its activities when designing its business model, instead of concentrating on isolated, individual choices” (ibid., 223). According to the findings by Parida et al. (2014, 48), being able to design attractive product service business model depends largely on understanding customer’s challenges and communicating a value proposition that meets customer needs. Hence, this sort of systematic and holistic approach suits well with in to the concept of servitization, where company is about to develop its business model from product offering to product-service offering. Also, in order to be able to develop its service offerings the company must be agile enough to develop new capabilities so that they can better market, sell, deliver, and profit from the services, and meanwhile they must recognize the new requirements on existing functions such as R&D, design and production (Gebauer et al. 2012, 123).

As it is discussed in previous chapters the globalization and global rivalry and deregulation has created a new market environment, a more transparent environment, where customer have more choices to choose from (Teece 2010, 172). In order to stay competitive in this new environment companies must be able to develop and innovate their business models in a way that they are able meet these external challenges and possible threats and compete differently (Casadesus-Masanell & Ricart 2010, 195). From the perspective of services value propositions or offered services, Lusch, Vargo & O’Brien (2007, 9) highlights the importance of service *innovations*, stating that in dynamic environment it is unrealistic for a firm to remain static. The emphasis is on the words ‘innovative’ and ‘differently’, especially the pressure by the Eastern companies with low cost offerings and product imitations is forcing the Western companies to be innovative and find new ways of



providing new and different products and services to create value for their customer and also capture value.

In literature the *Servitization* is presented as a business model of operational and organizational transformation, or in other words as an evolution where a company change their existing operation from selling goods to selling an integrated combination of goods and services combined through which company can create service offerings that would go beyond their traditional core product offerings of plain goods or products (Bustinza et al. 2015, 53; Benedettini et al. 2015, 947). Not only servitization is used to describe the transformation and a development from product manufacturing towards service offerings it also is used to describe the transformation of adopting new technology and a widespread organizational transformation, with development of new processes, routines and capabilities (Baines 2015; Parida et al. 2014).

Tukker (2004) defines that product-service system business models can be classified by eight different types of product-service systems (Smith et al. 2012, 244):

- A. *Product –oriented services*, where the ownership of the “material product” is considered as transferred to the customer and a service arrangement is provided to “ensure the utility” of the artefact over given period
  1. Product related (Spare parts, Maintenance and repair)
  2. Advice and consultancy
- B. *Use-oriented services*, where ownership of the “material product” is retained by the service provider who sells the “function” of the product to the customer, such as leasing of office equipment
  3. Product lease
  4. Product renting/ sharing
  5. Product pooling

C. *Result-oriented services*, where the service provider sells results rather than “functions”

6. Activity management
7. Pay per service unit
8. Functional result

Baines et al. (2009, 499), finds Tukker’s (2004) approach unsatisfactory and argues that it is more useful in terms of organizational positioning, focusing on the features and examples of the offering (hence, more strategic approach) rather than focusing on the intrinsic values (cost, quality, time) (hence, business model approach) and it does not create any value for organization of seeking to configure their wider production and support service operations.

Servitization business model is seen as an opportunity especially for western companies that are in constant competitions with the low cost eastern economics. Western manufacturers are seen to lose their competitiveness both in local and global competition, and especially against eastern manufactures due to higher costs, especially labor costs, innovation cycles shrinking, growing number of imitators and due to fact that it made easy for companies to transfer their production operations to these low-cost countries (Neely 2008a, 3; Baines, 2011; Kastalli, Van Looy, and Neely, 2013). Baines & Lightfoot (2013, 118) argue that factor leading to successful delivery of an advanced services contract can be divided into *Operational factors* (Note, author does not use term Operational factors) and *Contextual factors* that goes beyond the scope of operations that impact the organization’s success in the delivery of advanced services.

*Operational factors:*

- *Facilities*, that are co-located and distributed throughout customer's operations
- *Vertically integrated*, to ensure control over responsiveness and continuous improvement
- *Remote asset monitoring*, to inform and advance actions on maintenance, repair, and use
- *Measures of outcomes*, aligned to individual customers, and broad demonstration of value
- *Front-office staff*, who are flexible, service-centric, authentic, technically adept and resilient
- *Proactive and customer integrated processes*, to manage the condition, use and location of assets

*Contextual factors:*

- *Product design features*, advanced services can only go some way to accommodating poor product designs. For instance, should a product continually fail in service because it is simply unsuited to an application, then the burden on the manufacturer can eventually mean that the contract is not viable.
- *Characteristics of customer*, what is the capability of a customer to use the product (or equipment) as specified in the contract.
- *Characteristics of application*, with power-by-the-hour, for instance, contracts are negotiated for aircrafts according to the routes they use. Should a customer fail to adhere to these it may be penalized: if it persists then relationships begin to break down and eventually the contract can become unworkable.

- *Characteristics of offering*, in much the same way that a product might be poorly suited to an application, an advanced service offering can be inappropriate for customer's needs. No matter how well the manufacturer fulfils the capabilities specified, these are simply insufficient or too expensive.

## 2.4 Theoretical framework

In this chapter the existing theoretical frameworks of servitization are presented and compared. Each of these prior researches or theories observe the phenomenon from different aspects and together provide a holistic picture of the phenomenon of servitization but as such does not answer the research question asked in this research. New theoretic approach, a theoretical framework is needed. These three prior researches and theories set the basis for the theoretical framework that will be created to support the empirical research. These prior researches and theories done on the phenomenon of servitization and the theoretical framework for his thesis are presented in more detail below.

As demonstrated in the earlier chapters, being able to renew and being innovative is considered to be a recipe for being able to achieve a sustained competitive advantage. The servitization business model is considered to be one way of striving towards sustained competitiveness. However, one must realize that servitization, as any business model, is not an automatic solution for achieving competitive advantage. Servitization as a business model is a complex entity and requires a full understanding of its characteristics. As presented earlier, the implementation of servitization has many benefits, and it is seen to bring an additional and stable revenue. However, it is not seen to bring as much profit as traditional product sales. Looking from another perspective, a wrongly implemented servitization process, without full understanding of its elements, can lead to a 'service paradox', where heavy investments in the process do not provide the return that was planned. Hence, in the worst case scenario, this can even lead to a bankruptcy.

In order to fully understand the nature of servitization, one must understand all the elements and/or factors that are recognized to lead a successful delivery of an advanced service contract. Even though it is relevant to understand the whole chain of the processes of servitization, the focal point of this thesis lies on the very end of this process. This thesis mainly studied and observed a successful delivery of an advanced service contract. The chain of the servitization processes is described in more detail below.

As already mentioned before, in literature servitization is presented as a business model of operational and organizational transformation, where a company changes their existing operation from selling goods to selling an integrated combination of goods and services, through which the company can create service offerings that would go beyond their traditional core product offerings of plain goods or products (Bustinza, Bigdeli, Baines & Elliot 2015, 53; Benedettini et al. 2015, 947).

Many existing theoretical frameworks support this approach and serve the purpose of a company that is just on the edge of deciding whether to widen its product offerings with service offerings or whether it should stay merely as a product manufacturer. From the thesis perspective and from the perspective of a company that is having some sort service offerings in place, the current theoretical frameworks may stay rather superficial.

Starting from the very basis of servitization, the first one introduced is the theoretical framework designed by Vladimirova, Evans, Martinez and Kingston (2011) and called "The conceptual transformation model". The model is presented in Figure 4 below. This model very thoroughly describes all the aspects and challenges that an organization may encounter on its journey towards servitization. The model explains and demonstrates which elements a company must focus their attention to in order to transform themselves towards servitization.

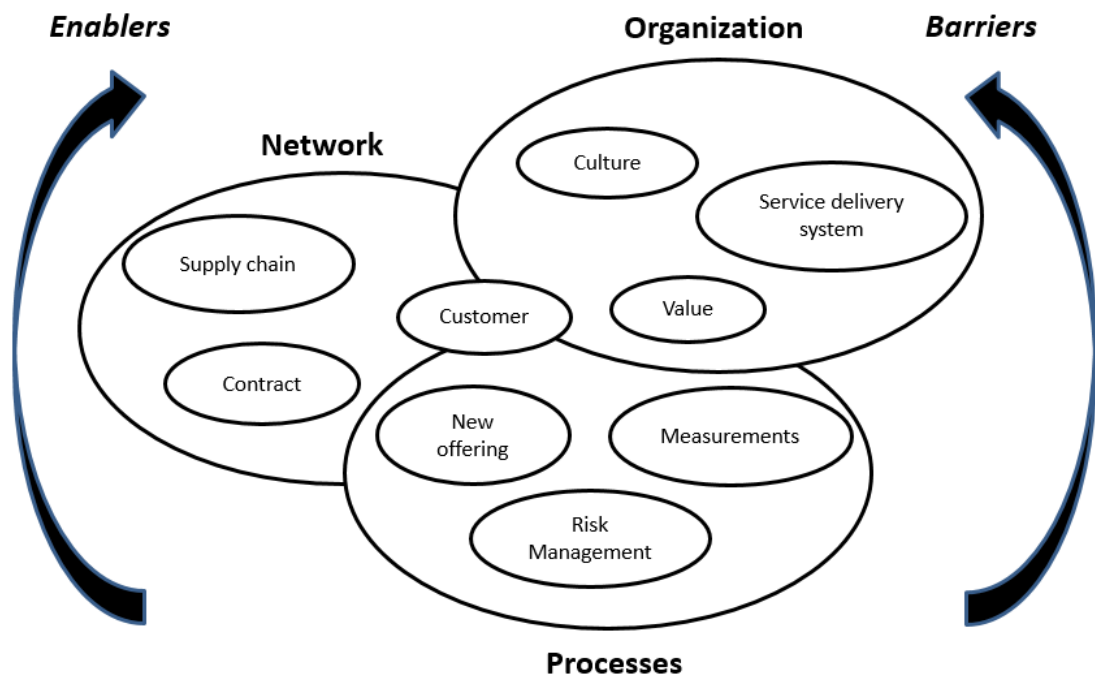


Figure 4. Transformation model for servitization

Now when it is defined what it takes from a company to transform their operations more toward servitization one can move forward in observing the holistic approach towards servitization. Second is introduced the theoretical approach towards servitization designed by Avlonitis, Frandsen, Hsuan and Karlsson (2014, 5). Their approach does not take a stand on the aspect of what is required from a company from the process, network or organizational point of view. They present a more practical approach towards servitization by analyzing and determining “what we do”, “what are the challenges”, “what is our aim”, “what we are able to offer”, “what does it cost”, “what are risks”, “how far are we willing to go” and “how to implement servitization”.

Table 3. Approach towards servitization

	<b>What need to be taken in consideration before entering towards servitization</b>	<b>Analysis/Measures/Actions</b>
1	The first step is to analyze what developments around the company may influence our competitive situation. We can see these as challenges we have to respond to.	<ul style="list-style-type: none"> <li>• Global challenges</li> </ul>
2	We then consider how we can compete in this environment. Delivering high quality products and being reliable are some complementary factors in addition to offering a good price.	<ul style="list-style-type: none"> <li>• Operations strategy</li> </ul>
3	Now we think of servitization. What can be offered in addition to the product? From repair and maintenance to operating the product or even selling the function or performance of the product rather than only the product.	<ul style="list-style-type: none"> <li>• Servitization of manufacturing</li> <li>• Extending your value proposition</li> </ul>
4	With an idea of how far we want to go we think creatively of what services to offer. Some may be to just support the product with installation and training of staff while we may also develop our business with partnership and involvement in the customer's processes.	<ul style="list-style-type: none"> <li>• Strategic considerations for servitization</li> <li>• Moving from product manufacturer to service provider</li> </ul>
5	Now, when we know what we want to do, the issue is to clarify the service as a product, and agree on it with the customer.	<ul style="list-style-type: none"> <li>• Contracting and potential risks</li> </ul>
6	In making the offer, the service relation has some implications on how we calculate costs. The price is not just based on sales, but on long-term commitments, long product life cycles and total costs for the users.	<ul style="list-style-type: none"> <li>• Calculate costs</li> </ul>
	<b>What need to be taken in consideration before implementing servitization</b>	<b>Analysis/Measures</b>
7	What is it that customers may potentially want and why will they be interested in buying the service together with the product? We consider the customers' decision to do activities or to buy them from us.	<ul style="list-style-type: none"> <li>• Perspectives on servitization</li> </ul>
8	Adding services to the activities of a company with a manufacturing history and culture is not that straightforward. There are several issues to address, including organizational developments. Of course, we must know what we want to do and how far we want to go. There is also a mindset to influence, capabilities to develop and a need to align the organization and the strategy.	<ul style="list-style-type: none"> <li>• The servitization paradox</li> <li>• Challenges to servitization</li> </ul>

Although the two approaches towards servitization introduced above, the *Transformation model for servitization* by Vladimirova et al. (2011, 25) and the *Approach towards servitization* by Avlonitis et al. (2014, 5), provide a fairly extensive approach towards servitization, but, at the same time, they remain to stay rather superficial from the perspective of advanced services and especially of the contracting of advanced services.

The theoretical model of “critical factors in the performance of the service delivery system” by Baines and Lightfoot (2013), presented in Figure 5 below goes further in the process by explaining the requirements of a successful implementation of servitization, and, furthermore, is a more practical and detailed approach. This is a framework model that can be considered extremely useful for companies that have already achieved an advanced contract with their customer and wish to keep the contract. In other words, this is a model that describes what elements need to be taken under consideration in order to sustain a successful delivery of an advanced services contract.

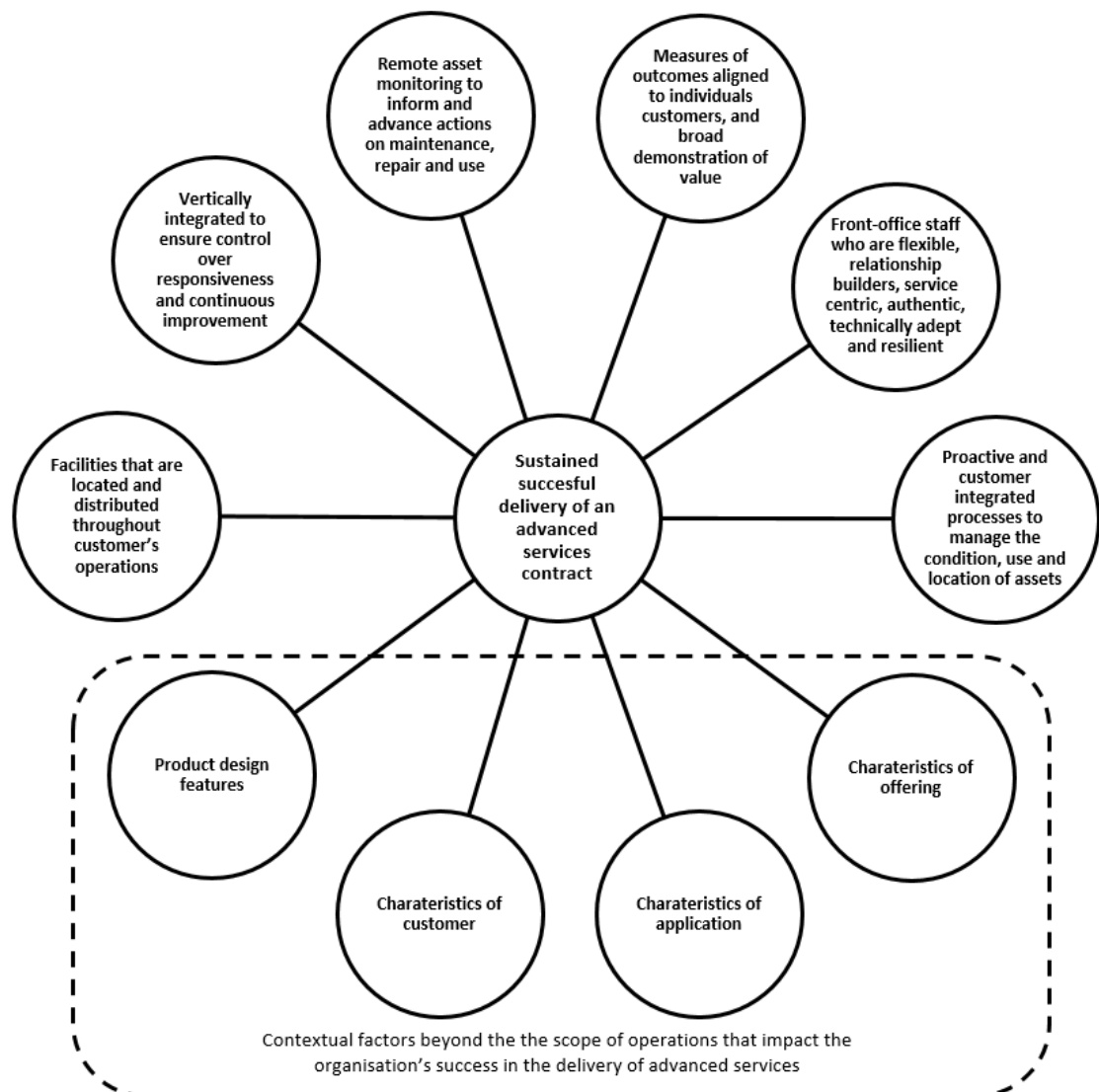


Figure 5. Critical factors in the performance of the service delivery systems



Each of the theoretical frameworks presented above provides a solid ground on each stage of the servitization process, whether it is planning and assessing of the company's capabilities of moving towards servitization or the implementation of servitization or sustaining the advanced services contract of servitization. However, even though all the models and approaches presented above provide an extensive and thorough explanatory approach towards servitization, it can be argued that there is a gap within the process. They are designed for a specific stage of servitization, but they are too general descriptions for practitioners and managers to apply in a real business environment and they do not provide a detailed approach for the delivery of an advanced services contract examined in this study. The aim of this study was to provide a holistic, and, yet, a more detailed and a checklist-type of an assessment model for contract evaluation. However, one must remember and understand that each customer is individual and unique with individual and unique sets of demands, expectations, operations and cultures of their own. This sets limits for the expected outcome and it is not to be expected nor argued that the offered model would suit to all environments, industries and customers. The aim was to provide a checklist-type of an assessment list that the practitioners and managers could apply and modify to suit their purposes and environment.

Given the above, the following theoretical approach was created for this thesis in order to help to find the key elements of servitization contracting in the empirical study. This theoretical framework is illustrated below in Figure 6.

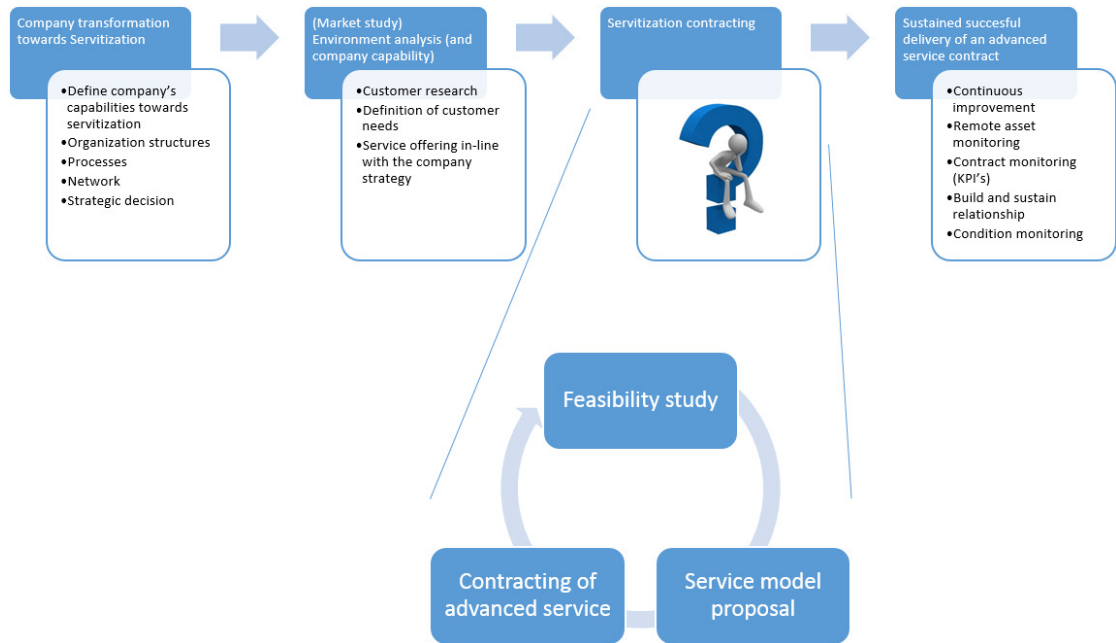


Figure 6. Theoretical framework of the research

The theoretical framework presented above in Figure 6 is designed to fill the gap in existing literature of servitization by providing an essential elements in order to gain a systematic, sustained and successful delivery of advanced services contract. The theoretical framework also operates as a basis for the empirical study. Each of the elements presented in the theoretical framework, *Feasibility study*, *Service model proposal* and *Contracting of advanced service*, operate also as the themes in the interviews will be conducted in the empirical study. The theoretical framework also helps the author to define and set limitation to possible internal material the case company already have on the subject.

### 3 Methodology

#### 3.1 Research approach / strategy

The choice of methodology to be used in the research should reflect an 'overall research strategy' as the methodology chosen shapes *which* methods are used and *how* the methods are used (Silverman 2005, 109-110). The methodology to be used in research can roughly be classified into qualitative or quantitative and a very overall generalization of the methodologies goes as following: *Quantitative research* deals with numbers and the relationship between them and *Qualitative research* covers all other research (Kananen 2011, 37). However, as it is pointed out by Kananen (*ibid.*, 37) the mere definition whether research is qualitative or quantitative is not enough. The classification of the research has to be based on logic and understanding the phenomenon to be studied. Going bit further on segregating and understanding the definitions between qualitative and quantitative research, according to Corbin & Strauss (2008, 12-13) the quantitative methods are based on statistics, more rigid and structured format, whereas the qualitative research allows researchers to get at the inner experience of participants, to determine how meanings are formed through and in culture, and to discover rather than test variables. According to Kananen (2013, 32) qualitative research does not aim for generalization like quantitative research does. The purpose of the qualitative research is to describe the phenomenon and it aims for more in-depth understanding of a phenomenon and give the phenomenon a reasonable interpretation (*ibid.*, 32).

In this research is studied the phenomenon of servitization and more precisely the research concentrates on the contracting of the servitization where the aim is to find the relevant elements of the servitization contracting. The aim is also to increase the awareness and understanding of these key elements and the linkages and logic behind them in order to gain systematic, sustained and successful delivery of an advanced services contract. The outcome conducted through the empirical research in itself is not sufficient and does not alone support the increase of understanding of the phenomenon been studied. The empirical data collected in this research does not withhold any numerical or statistical outcome through which could be created

any generalization on the phenomenon studied, hence the empirical data outcome is not quantitative by its nature so therefore the methodology used in the research cannot be quantitative by its nature. According to Kananen (2011, 36): *Qualitative research is applicable when a new phenomenon needs to be understood: What this is all about.* In order to transform the outcome of the empirical data collected in this research, into understanding and knowledge, more interpretative and descriptive approaches towards analysis of the results are needed to answer the research question, hence the research is qualitative by its nature.

The purpose of this research is to design and create a structured and logical model for the case company that it can use for its future advanced services contracts. The design research and case study research are different methodologies. The interest of case study research lies on understanding the phenomenon to be studied, its scope and features, through experiment, a survey and history of the case study (Yin 2014, 15-24), whereas according to Kananen (2011, 12) in design research the main interest lies on the theory and empiria, where the design research is seen as a bridge between the worlds of the theory and empiria to understand the phenomenon or to solve a problem and the means of the theory is to conceptualize the empiria. Wang and Hannifin (2005, 6) define design-based research as a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually sensitive design principles and theories. Barab and Squire (2004, 2) define design-based research as not as an one approach but more of as an series of approaches, with the intent of producing new theories, artifacts, and practices that account for and potentially impact learning and teaching in naturalistic settings. It is also highlighted that the participants in the research are not treated as “subjects” or assigned to treatments, instead there is collaboration between researchers and participants both in the design and even analysis (ibid., 3; Wang and Hannafin, 2006, 6).

Given above, design-based research is seen to suit perfectly for this research as the outcome of the research is built upon according to the existing theories and earlier researches done on the phenomenon (*theory*), the input of personal empirical

experience and know-how along with the co-workers working with the phenomenon (*empirical and social collaboration*). Also the purpose of the research is to provide systematic model to approach advanced services contract(s) (*goal setting and implementation in real-life settings*). Further on, this research is all about development work and change of existing sales process to another more complex sales process, hence design research (Kananen 2013, 50).

The author works closely with the servitization activities within the case company. This aspect gives the author in-depth knowledge on the daily activities related to servitization and advanced contracts. The author can use his own experience from the field of servitization, in other words the author brings his own empirical experience and know-how on the subject along the research, hence empiria. The research exploits the existing literature and researches done on the field of servitization. The research also exploits as a benchmark an already existing and ongoing advanced services contract that the case company has with one of its customers.

According to Kananen (2013, 21) design research is close to development work that is being conducted in organizations in order to improve its operations, or in other words development objectives. Objectives in working life for design research may include, for example:

- processes, activities
- products
- services
- situations

In this research the aim is to design and create a structured and logical model for the advanced services contracts process. In respect to this statement the development objectives of this research are the case company's processes, activities and services,

hence features that are seen to relate to design research through development (see above).

What need to be taken care of to apply the methodology properly? The researcher needs to understand, define or set and command of the development object, research process and participation (Kananen 2013, 50). According to Wand and Hannifin (2006, 15) design-based research implementation need to be both purposeful and systemic.

### 3.2 Research context

To respect the wishes of the case company neither specific name of the company nor the name of its customer will be revealed in this research. The assignor company will only be referred to as case company or simply as supplier and its customer as the case company's customer or simply as the customer. Also the person participating to this research through e.g. interviews will remain anonymous and they will be referred to as interviewee(s) or respondent(s).

The case company of this research is part of a big industrial corporation that consists of five different divisions, where each division has their own unique technological solutions for diversified industries. The corporation is listed in the London stock exchange.

The division the case company discussed in this thesis belongs to one of these five divisions. They provide high-end technological solutions to process industries such as Oil & Gas, Pulp & Paper, Mining, Pharmaceutical and Food & Beverage. The main focus and strategy of the case company lies with the sales and services. Being a part of a larger globally operating corporation the company is able to provide solutions and services manufactured by any other site of the corporation. This is referred to as cross selling. The case company is located in Finland. According to the definition by the Statistics Finland (2016, October 25) the case company can be classified as a Small and Medium-sized enterprise (SME) having fewer than 250 employees, and have either an annual turnover not exceeding EUR 50 million (EUR 40 million before 2003),

or an annual balance-sheet total not exceeding EUR 43 million (EUR 27 million before 2003).

### 3.3 Data collection

The primary data in the empirical study was collected through a semi-structured interviews and case company internal materials related to the research subject. These two sources of data, interviews and company internal material are intended to supplement one another.

With *primary data* is referred to data collected by researchers themselves by interviewing and observing and by asking the participants to write (e.g. diaries, stories), draw, or present in some other way (e.g. drama) (Eriksson & Kovalainen 2008, 77). With guided or semi-structured interview is meant an approach where there is a pre-prepared outline of topics, issues, or themes to follow. As the definition of “semi-structured” indicates the approach is somewhat a systematic meaning there is some amount of pre-planning taken in place, yet the wording or order of questions in semi-structured interview can vary, making the tone of interview fairly conversational and informal (ibid., 82, Kananen 2011, 82).

The outline structure and the questions of the interview was based on beforehand carefully selected themes. The themes then again consisted of smaller things such as factors/elements. According to Kananen (2011, 54) the themes and the environment they are connected to and the factors/elements they consists of and dependencies and processes between them should cover the phenomenon as well as possible. The themes carefully selected for the interview were based on the theoretical framework presented in the Chapter 2.4. (See Figure 6).

The themes chosen for the interview were following:

1. Feasibility study
2. Service model proposal
3. Contracting of advanced services

The interview questions are presented in Appendix 1.

According to Tuomi & Sarajärvi (2009, 85), the size of the data is something should not be considered as primary criteria when evaluating student thesis but must not forget to pay attention to it.

The selection of the persons interviewed was based on the point of view of the phenomenon, in other words the criteria of the selection of persons chosen for the interview was as they were seen to be either involved in (working directly with the phenomenon) or affected by it (Kananen 2011, 52). The person chosen for the interview was rather easy as the total number of people working at the case company was rather small and out of this small bundle of people only two person had significant and previous engagement considering the phenomenon service contracting. These two persons were interviewed for this research. According to Kananen (2011, 53) the number of interviewees depends on the research material and the research problem.

The case company internal material collected for this thesis are considered confidential and therefore they are not presented directly in this thesis. The internal material collected consisted of Power-Point presentations that the case company uses as for training material for servitization.



### 3.4 Data analysis

According to Eriksson & Kovalainen (2008, 148), data analysis is the process of bringing some order to the empirical data, organizing it into patterns, local categories, and basic descriptive units.

The empirical data was collected through interviews and case company internal material. The interviews were recorded with a mobile phone. Recording of interviews is seen as good way of conducting the interview as the researcher can concentrate solely on the interview instead of making detailed notes in between and/or during the questions (Kananen, 2011, 56). The interviews were carried out in Finnish as this was the native language of the interviewees and the interviewer. The recorded data were then afterwards transcribed to a Word document as accurately as possible. According to Kananen (2011, 57), the most accurate transcript includes such elements as gestures, tones of voice and pauses, marked by using special notations to describe the situation as accurately and authentically as possible. For this research it was not seen relevant to observe or transcript gestures, tones of voice and/or pauses as they were not seen to bring any additional value. The main interest on a transcript was only on the phrases the interviewees said and not how it was said. The transcript took place on the same day or latest on the next day so that the interviews was in a fresh memory. Also doing the transcript of the interview quickly after interview helped the researcher to analyze the event and the data briefly in order fine tune the questions and approach for the next interview. According to Corbin & Strauss (2008, 163), the coding of the data should begin soon after first interview or observation/video is completed as the first data serve as foundation for further data collection and analysis.

The process of data analysis of this research was following the content analysis procedure introduced by Tuomi & Sarajärvi (2009, 109). The process of the data analysis is presented below in Figure 7.

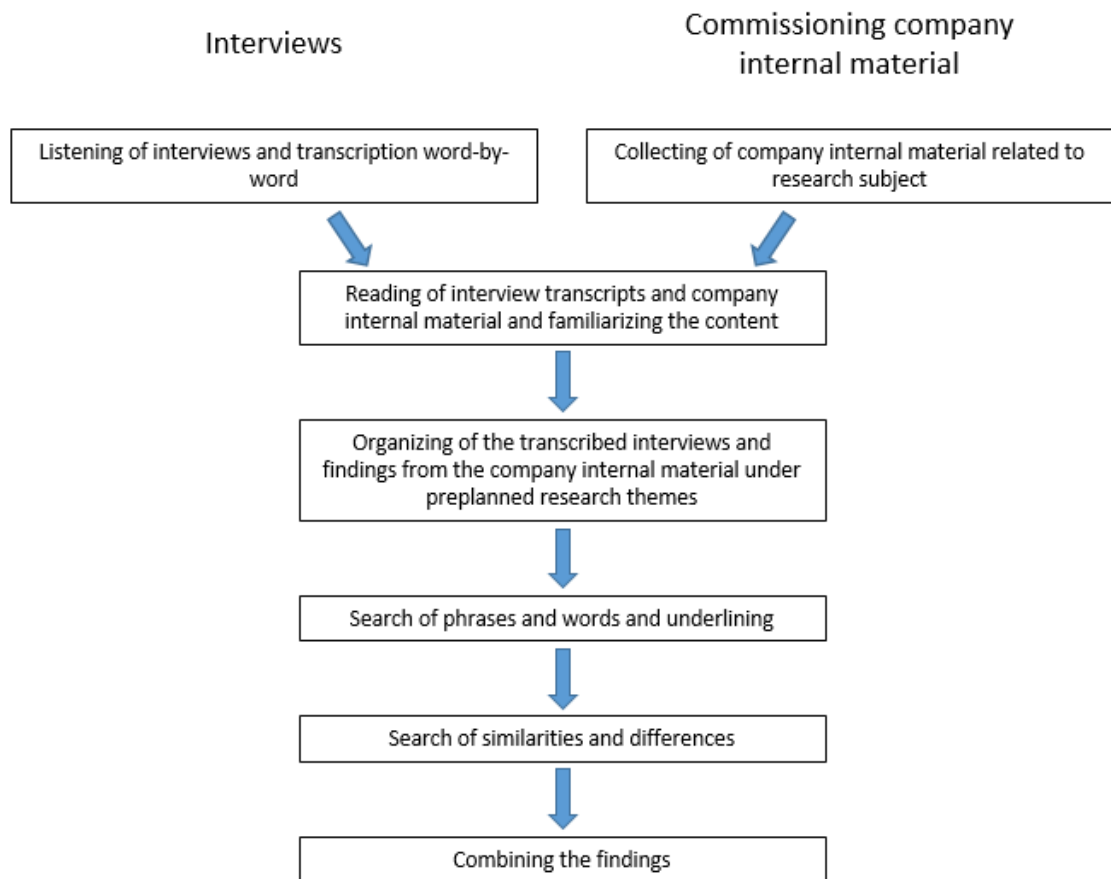


Figure 7. Data analysis process

The recorded interviews were listened and at the same time they were transcribed word by word to a Word document. Simultaneously the case company internal material relevant to the research subject was collected. The empirical research composed total of two and half hours recorded data which then again were converted to around of twenty pages of transcribed text. The case company internal material consisted total of three Power-Point presentations relevant to the research subject. Each of the case company internal material were used in a company as training material and it was meant for employees working in the area of servitization and as for the marketing material for the customers'. Each of the internal material had a different perspective of approach towards advanced services.

Once the transcripts were ready the researcher read through the transcribed materials and the case company internal materials over and over again. This way the

researcher got familiar on the content what was discussed during the interviews and what was already written in an internal materials. As going through the transcript the researcher found areas of interest which were taken into consideration in an initial interview and though this new set of even more detailed questions could be raised.

After getting more familiar with both of the data collected, the transcripts of interviews and internal material were organized under pre-planned themes. As the interviews or the empirical data gathering were made as thematic interview, the pre-defined themes were already well organized in transcript and they were easy to chop smaller entities of observation.

Once the transcripts and the content of internal materials were organized under the themes the researcher started to search and underlie for phrases and words that were considered relevant for the research.

As the relevant phrases words were identified from the transcripts and from the internal material, the researcher started to find out similarities and also differences from them.

The outcome of the interviews and findings from the internal material were combined and presented as a results.

### 3.5 Verification of the results

One of the challenges the qualitative researcher confronts is how to assure the readers of your research its scientific nature, its quality and trustworthiness (Eriksson & Kovalainen 2008, 290). The verification of *reliability*, *validity* and *quality* is more difficult in qualitative research (social sciences) than in quantitative research (natural sciences) to which the measures of reliability and validity was originally developed (Kananen 2008, 66). Objects in natural sciences (quantitative) do not think or feel or suddenly act in an unexpected way, whereas in social sciences (qualitative) the objects, human beings, does not always act in systematic and rational way and randomness is a rule rather than exception (ibid., 66).

According to Eriksson & Kovalainen (2008, 203) the question of reliability is related to the establishment of a degree of consistency in research in the sense that another researcher can replicate your study and come up with similar findings. With validity is referred to whether the thesis answers the questions it is intended to answer (Kananen 2011, 66). The simplest way of ensuring reliability/validity is to have research material read and interpreted by a person involved in the research (ibid., 68).

Steps were taken in order to ensure the reliability and validity of this research. To make sure the outcome of this research is reliable only people possessing first-hand experience on the phenomenon of servitization and that are actively working with the phenomenon were selected for the interview. People working remotely, operating only by hearsay or only work with phenomenon indirectly were excluded out from the scope of interviews. This was done to ensure and to avoid that the answers were not based on second-hand information nor speculation but a solid fact. The case company internal material exploited in this research is in use throughout the whole corporation and is generated by the authority within the corporation that monitors and is responsible of the support of servitization activities. To ensure validity of this research, the research was read and interpreted by the supervisor of the assignor company. This was done to ensure that the research truly answers the question(s) it was intended to answer and met the criteria what was promised to the assignor company. Given this, the author is confident this research can be seen to meet criteria of reliability, meaning that another researcher can replicate the study and come up with similar findings and validity, meaning the thesis answers the questions it is intended to answer.

## **4 Results**

In this chapter is presented the results got through the empirical research conducted in this research. The main goal of this chapter is to provide explicit answers to the research question set for this research:

**“What elements are considered essential for a systematic, sustained and successful delivery of an advanced services contract?”**

Based on the research question presented above the main focus of the results lies on presenting or better yet listing the actual key elements that were found through the analysis of empirical research material. The mere listing of the key elements were not seen to be adequate enough for the reader to make conclusion and linkages between the key elements within the process of advanced services contracting. While the research being qualitative by its nature, the approach and analysis of the results, the key elements and their linkage towards *systematic, sustained and successful delivery of an advanced services contract* are described and interpret in text fairly extensively. To be able to create a more holistic view to this chapter it is important for the reader to understand that each chapter acts as a continuum for the next chapter.

As the results presented in this chapter are extensive it was seen to necessary to do a synthesis of the results in order to help the reader to get a more holistic picture on the results, the key elements and the whole process of advanced services contracting. The synthesis of the results of this research is presented at the end of this chapter.

#### 4.1 Feasibility study

*The whole process starts from the feasibility study (Interviewee 2.).*

*In the feasibility study it is not only of finding out their suitability of their installed product base but it is important to know and understood the customer and their strategy what is important to them (Interviewee 1.).*

Feasibility study is referred to a process where is evaluated the customers current and historic state of performance and cost profile. The evidence provided by the feasibility study on customers current and historic state of performance and cost

profile helps the supplier to justify and to determine is the advanced services a suitable model to proceed with the customer.

Feasibility is performed by the supplier on the data provided by customer on its performance and financial details. In feasibility study process the aim is to collect as much of “raw” data of the customer performance, installed base and cost profile. With raw data is referred to a data got from the customer ERP system (Enterprise Resource Planning) or any other source of customer data source that is not filtered, manipulated or processed in any way. According to the respondents when the data provided by the customer is “raw” or “pure” so to say and not being processed, filtered or manipulated in any way, the supplier can rely on the data provided and be sure it does not contain any hidden agenda that could distort the actual truth leading to falsified outcome of analysis. Supplier performs a data analysis themselves and make conclusions of their own. Depending on the scale of customers business and its level of performance there can a massive amount of data available. Going through three or more years’ worth of data is a massive task to cope.

Normally when heading to advanced services the supplier already knows the customer and its business at least in some level as they might have had some previous interaction with the customer example some commercial and/or maintenance agreement such as price lists, spare parts and equipment maintenance, hence transactional. However, for the advanced services just knowing the basic of the customer is not enough. Feasibility study helps the supplier to understand and have a more in-depth understanding of the customers’ performance and business and helps the supplier to justify and determine the customers’ needs better. According to the respondents, instead of going blindfolded towards advanced services contract, it is vital for the success of the advanced services contract the supplier to:

- To accurately understand and define the Totals Cost of Ownership (Further on TCO)
- To understand the historic and current level of performance of customer equipment

- To be able to identify, quantify and model the potential for improvement
- To quantify the potential cost savings
- To be able to propose correct service program to meet the customer's needs

Heading towards advanced service contract without a thorough understanding of all of these elements presented above supplier exposes itself on too much of a risk of failing with the advanced services contract. It makes no sense for the supplier to proceed with the advanced services contract with the customer without a profound understanding of customer's performance and cost profile as then the success of the contract would be based on mere luck. All these elements presented above and that set the very basis of the feasibility study can be defined throughout the feasibility study.

Given above, following key elements under the theme of *Feasibility study* were identified throughout of the empirical research:

- Data Capture and,
- Data Analysis

These elements involved in the feasibility study and the results of these elements in feasibility study process gained through empirical study are presented in more detailed in the following Chapters 4.1.1 and 4.1.3.

#### 4.1.1 Data Capture

*Data Capture* literally refers of capturing as much raw data from the customer operations as possible. According to the findings in empirical research following key elements were identified throughout of the empirical research to fall under data capture:

- Installed Base
- Inventory
- Equipment History
- Financial details (Costs)

### ***Installed base***

*Installed base* data capture refers to listing of all equipment, products and spare parts the customer has in their stock and currently in use at their processes. It is important to limit the listing of installed base only to the equipment, products and spare parts that are in the scope of an advanced services contract. The customer may have a vast collection of different products and/or equipment performing different tasks at their processes, some of which have nothing to do with the scope of the advanced services contract and are not in the interest or in the area of expertise of the service provider. In the early phases of the feasibility study, it is important to agree together with the customer which of the equipment, products and spare parts are taken within the scope of the contract and rule out the rest. The feasibility study is done only for the equipment, products and spares that fall into the scope of the advanced services contract, performing a feasibility study on all the rest of the installed base outside the scope does not bring any added value for the supplier. Once the installed base list is mutually agreed with the customer, that list of installed base operates as the very basis of the feasibility study.

At the stage of defining the list of installed base, it is also equally important to find out and list all Bill of Materials (further on BOM) on all equipment. The BOM is defined and lists all the materials the equipment is made of. BOM supplements the actual list of installed base the customer provides. It may be and most likely is that the customer's data base (ERP system) of installed base does not recognize or withhold the information equipment BOM's as it is not considered important for the customer as they most likely do not repair the equipment by themselves but buy the repair and maintenance service from the equipment supplier as they might not have



the resources nor expertise to repair them by themselves. The customer might have some very basic equipment BOM lists available for ordering spare parts for easy repairs that they can do by themselves. From the service provider perspective it is vital to have equipment BOM's in place as they need to refurbish the equipment and be able to order the spare parts that they need to refurbish the equipment instead of buying always a new one.

Having the BOM list available also helps the supplier to identify whether some spare parts are used in multiple different equipment's. This provides supplier important information when analyzing and making suggestions on e.g. the cost of inventory, bad actors and reliability in general. These elements and the findings of them are presented in more detail in next chapters.

Essential and required information for Installed Base analysis:

- List of all equipment, products and spares that are in a scope agreement
- Rule out the ones that are not in the scope
- List of Bill of Materials (BOM)

### ***Inventory***

*Inventory* refers to the process where the stock the customer currently has, either in stock or in use, is determined or calculated by the supplier throughout physical inventory.

The list of equipment, products and spare parts, defined in the installed base Chapter 4.2.1, operates the very basis of the stock inventory. As can be imagined, depending on the scale of the customer and its performance and the criticality of the equipment, the list of different articles (equipment's and spare parts) and the quantity of them held in the customer stock can be anything ranging from few hundreds of articles to several thousand of articles and depending on the criticality of the equipment from quantity of few pieces of spare parts to hundreds of pieces. Every nut and bolt, whether being small or big article, all must be located and checked by the supplier. It

is not enough only to trust the inventory list provided by the customer. By physically going through the whole stock that is in a scope of contract, checking the articles one by one supplier can get confirmation that the goods in stock are what they are said to be.

Inventory can be seen to serve three purposes: *article identification*, *validity of the stock* and *accuracy of stock*.

*Article identification.* By going through the stock physically the supplier can get clearer picture on the articles what they are and who is the manufacturer, hence article identification. At the same time while doing the check it is important to update the provided list by making sure that vendor identification number and vendor description matches with the inventory list provided by the customer.

*Validity.* In inventory also checking the validity of the stock is important. By validity is referred to that the equipment and spare parts are still valid for use and not come obsolete. Over the years goods in stock may have expired or the application is changed to a newer models the stock has become invalid, hence these can be considered as obsolete stock. These items are important to exclude from the analysis and not taken into account. The findings of obsolete goods is important to go through with the customer and find an agreement how handle them. Obsolete stock can have negative impact on what comes to advanced services. In advanced services, normally the supplier redeems the stock from the customer while it takes control of the total cost of ownership on the customer's installed base, the supplier does not want to redeem anything that it has no use for as it would lead to unnecessary capital.

*Accuracy.* Also when performing physical inventory on customer stock supplier gets confirmation that the quantities of equipment's and spare parts are what they are said to be, hence accuracy of the stock. This way the supplier can be sure that when the time comes of redeeming the stock supplier can be sure they do not pay on stock that does not exist nor they do not get by accident more equipment or spare parts than of which they been paid off. The same scenario applies when observed from the customer perspective.

Essential and required information for Inventory data capture:

- Determine the identification of the articles (Vendor, vendor ID and vendor description)
- Determine the validity of the stock
- Determine the accuracy of the stock
- Exclude all the materials that are obsolete or invalid
- Determine the stock value

### ***Equipment history***

*Equipment history* data capture purpose is to gain detailed information on every transaction that each equipment's have had during the period of observation. Equipment history provides valuable data when analyzed the equipment reliability (failure modes) and repair costs. These analysis are presented more in detailed in Chapter 4.3.

In equipment history is important to define and set the period of equipment history to be observed. Within that period it is important to trace the equipment that has failed, define the date when it was taken off for repair, to define the reason why it was taken for repair and possibly what the material costs were when it was repaired.

How long of a period of data is needed on equipment history? According to the respondents three previous years' worth of data of equipment history is something to be aim at. Less than three years of equipment history is considered insufficient as the expected lifetime, the time the equipment is expected to run without failure, of equipment is typically somewhere between one and two year, hence a trend of equipment reliability cannot be drawn with shorter period of time of observation. This depends of course on the demands the equipment is facing, how well the equipment suits for the customer process and customer is using the equipment, external factors. On the other hand more than three years of data is welcomed but

by experience of data analysis more than five years of data is not considered to bring any additional value to the analysis of reliability. In general, one must understand that this limitation of three years is observed only from the perspective of case company business surroundings and therefore three years of equipment history data may differ in other business surrounding where other type of equipment is used or the condition where they are used differs.

Normally the most of the equipment history can be traced through work orders input into the ERP. If the ERP customer is using is sophisticated enough and it is properly used the work order withholds all the relevant data such as the equipment that was being repaired, date when the work order (repair) was raised, what spare parts were needed to use for repair, what were the material (spare parts) costs, how long it took to repair and why the it needed to be repaired. Usually in ERP, again if sophisticated enough and properly used by the operator, there exists a linkage between these elements so they can be traced and the data can be manipulated in excel to do further analysis, hence what the supplier is needed to know.

According to respondents one must be critical and cautious on what comes to equipment history the customer provides, as there can be room for interpretation. The content and the quality of the data on a work order is greatly dependable on the ERP, how the system allows the data to be input but also on the person that inputs the data, whether he/she input all the relevant data on the work order. Inadequate or false equipment history will lead to false analysis outcome which can cause a severe financial risk for the supplier.

Through equipment history can be analyzed how many times each singular equipment has failed in a given time period or in other words how often it has broken down and needed to be repaired. Not only it is important to know the frequency of equipment failures but it is vital to find out what spare parts are needed each time to be purchased for the repair. Through this information a pattern of failure mode or a forecast of failure can be created. Tools to be used for failure analysis is presented later on in more detailed in Chapter 4.3.2.

Essential and required information for Equipment history data capture:

- At least three (3) years of equipment history needed
- Work orders (Equipment, Date raised, Materials needed, Material costs, Repair time and reason for repair)

### **Costs**

*Costs* data capture refers on collecting all the costs relevant the customer performance creates. Costs withholds attributes such as the value of the stock (inventory), the costs the customer is spending on refurbishment of its equipment. Capturing the costs that are generated through the customer performance provides the supplier evidence how much the supplier have to invest when implementing the contract of advanced services and also to estimate what are the operational costs of the contract.

Not only is it important to know what is the total number of equipment is at the customer, it is also important to know what the total cost value of the installed base is and how much are the costs of performance annually. In advance services the supplier is considered to be taken holistic ownership of the customers installed base which also includes the total costs ownership. By taking a holistic ownership of the customer installed base and total cost ownership is referred to redemption of customer installed base and the costs that are needed to maintain that installed base, in other words the costs that are generated through repairs of equipment. In order the supplier to be efficiently be able to maintain customers installed base, it is logical that the supplier redeems the existing stock from the customer. Redeeming the stock can be huge investment for the supplier, hence it has a major impact on the outcome of the contract. By experience of the case company on similar servitization contracts within the group, the investments of redeeming the customer stock has varied between 500 000 Euros to 2 500 000 Euros. One must acknowledge the value of stock redemption differs by each customer as no different customers installed base are identical.

As mentioned the costs also refers to the costs that are generated when the customer has refurbished its equipment. The data must traceable so that the costs can be allocated to a certain product, meaning what it has cost for the customer to refurbished one of its equipment, what spare parts is needed to repair the equipment and what is the price of those spare parts. The list of installed base, list of Bill of Materials and equipment history presented in previous chapters plays a critical role in this, as through them the costs generated through customer performance can be determined with high precision.

Essential and required information for financial details data capture:

- Determine the total stock value redemption
- Determine the costs of refurbishment
- Determine the costs of investment
- Vendor
- Purchase price

Given this costs analysis has significant input on the contract proposal, in other the monetary value terms of the contract that is proposed to the customer. Knowing the costs of installed base and the costs of refurbishment is vital for the supplier and for the customer but is not enough. Knowing the costs only reveals the current state of customer performance and its cost profile. In the spirit of advanced services where the aim is to improve the customer reliability by the action of the supplier, the supplier must be able to demonstrate where the costs generate from, how the process can be improved and forecast the potential savings. The tools for this are presented in the next chapter.

#### 4.1.2 Data Analysis

**Data analysis** refers to process where the raw data captured from the customer ERP system or other sources are analyzed and shaped onto a more readable form.

According to the respondents the most commonly used data analysis tools are:

- MTBR (Mean Time Between Repair)
- Bad Actor

Above was presented what is required of data capture in feasibility study and briefly presented their linkage to other elements in a feasibility study, such as to data analysis. In this chapter is presented the results and findings of what sort of analysis tools are applied by supplier when the performance and cost profile is assessed.

#### ***Mean Time Between Repair (MTBR)***

*Mean Time Between Repair – analysis (further on MTBR)* refers to reliability of the total installed base. With reliability is referred to how well the equipment has been working in a customer process. The less the equipment have had breakdowns the more reliable the equipment is and vice versa.

*MTBR is the most important Key Performance Indicator (KPI) to assess the level of customer performance and to measure the success of the actions of improvements jointly agreed and done together with the customer (Interviewee 2.)*

MTBR measures what is the failure frequency of the equipment. MTBR is illustrated below in Figure 8.

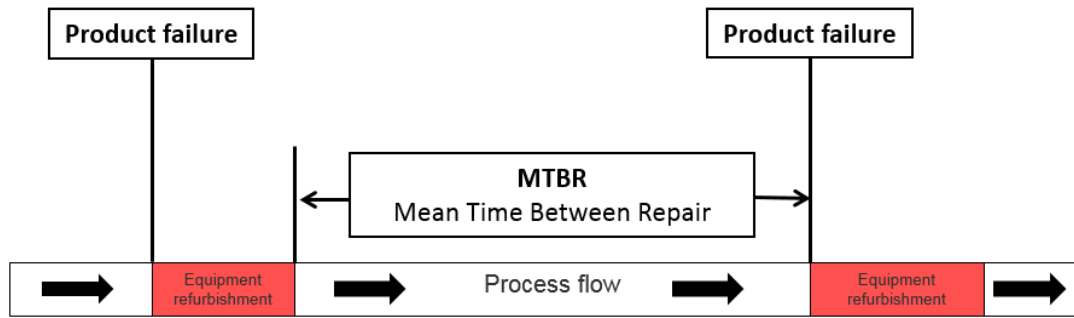


Figure 8. MTBR

MTBR (reliability) can be calculated simply by dividing the total number of equipment by the total number of failures taken in place in one year and multiplied by 12 months. MTBR (Reliability) calculation is illustrated in Figure 9 below.

$$\frac{\text{Number of Equipment}}{\text{Annual Number of Repairs}} \times 12 = \text{MTBR (Months)}$$

Figure 9. Calculation of Mean Time Between Repair (Reliability)

The higher the MTBR number is the more reliable is the customer process, hence the less product failures at the customer process.

From the perspective of the customer, MTBR offers valuable information of its process and costs saving the customer gains through advanced services. The less



there exists product failures at the customer process the less there is process down-time, hence the less down time the less there are costs.

From the supplier perspective, MTBR provides valuable information when assessing the costs for the whole period of advanced services contract. Through the MTBR supplier can forecast the annual costs that the repairs will generate annually, assuming the failure frequency and costs of the components are accurately known, hence how well the supplier succeeded to capture right data in the beginning of the process.

As demonstrated above MTBR analysis tool is used to analyze the state of reliability but also it is a good tool to set a desired level or target where the MTBR will be developed. This is demonstrated in more detailed in Chapters 4.2.2 and 4.2.3.

Depending on the type of agreement, whether it is a fixed fee based or the fee of maintenance is charged after each repair, the development of MTBR has different outcome and can be somewhat a questionable in the eyes of the customer. The effects of MTBR on the type of agreement is presented in more detailed in Chapter 4.3.1.

### ***Bad Actors***

*Bad Actor* analysis refers of identifying the most “bad acting” equipment from the bundle of the customers installed base. With bad acting equipment is literally meant the equipment that has the most failures and/or generate the greatest costs.

According to the interviewees Bad Actor analysis is the most critical tool to help the supplier to gain the best outcome of the development of MTBR and also to cut costs.

As already mentioned bad actors can be observed from two perspective:

- Equipment having high frequency of failure, in other words, equipment that breaks down most often, and/or

- Equipment that generate the greatest costs when they breakdown

According to the respondents, these two factors are not excluding one another but to be observed together. This is supported by statement of interviewee:

*The bad actors with the most failures are not always the ones that generate the greatest costs (Interviewee 2.)*

Whether it is decided to pay the more attention of developing the ones that fails the most often but does not create that much of a cost or the ones that fails seldom but generate the highest costs, depends on the mutual agreement of supplier and customer which actions are seen to serve most for the common goal of development. Decision must be made together as either party has interest of their own and expertise and knowledge of their own, supplier has the best expertise on their equipment and not the customer processes and vice versa. By mutual agreement to which bad actors to pay most of the attention serves both party interest. Supplier performs the analysis of bad actors and together they set proper corrective actions. Generally speaking, whether it is the ones failing most frequently or the ones that fails seldom but generates high costs, by concentrating either one factor will bring the best result. These two approaches “*Bad Actors by Failure Frequency*” and “*Bad Actors by Total Cost*” are illustrated below in Figure 10 and in Figure 11.

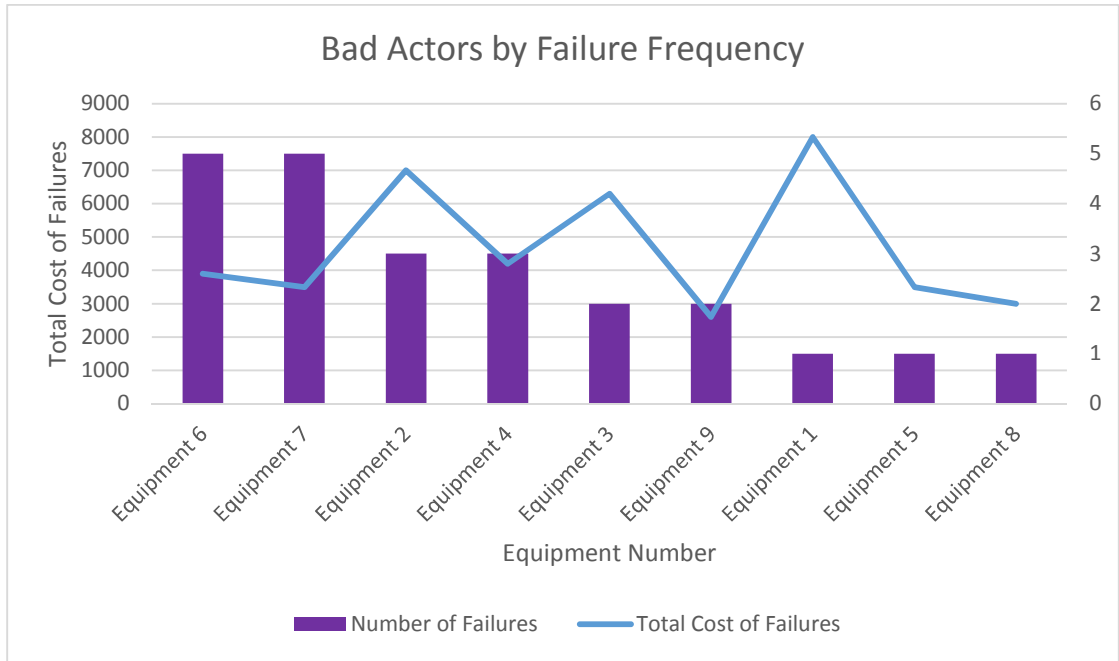


Figure 10. Bad Actors - Analysis by Failure Frequency

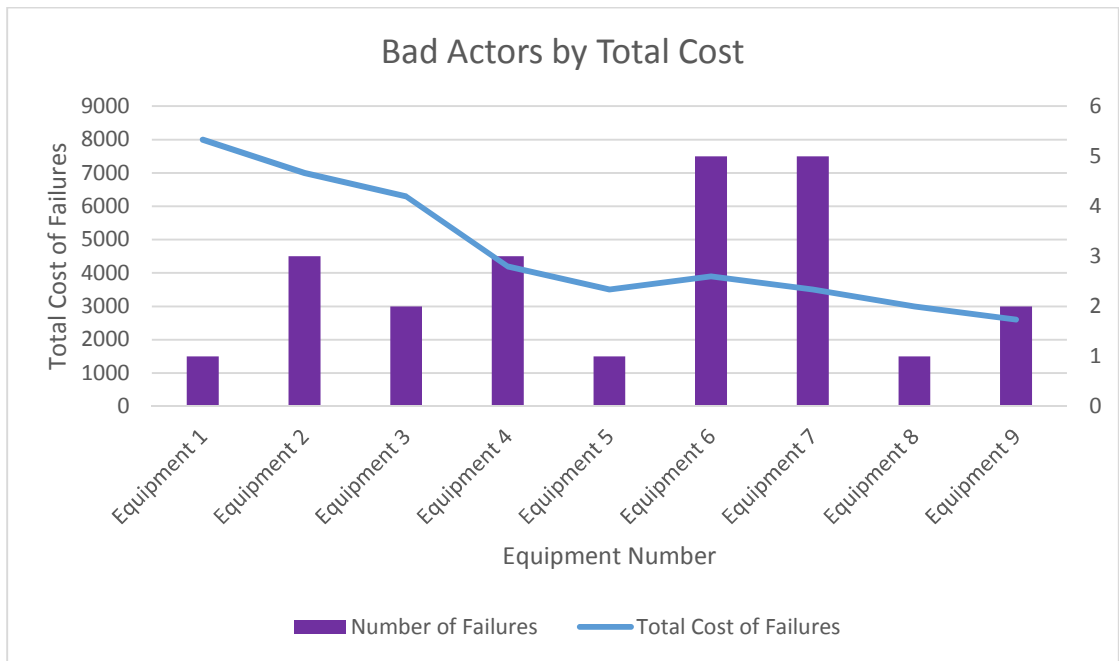


Figure 11. Bad Actors – Analysis by Total Cost

**Essential and required information for Bad Actor - analysis:**

- Define the Bad Actors by Failure Frequency
- Define the Bad Actors by Total Cost
- Choose together with the customer which Bad Actors are paid most attention

## 4.2 Service model proposal

In this chapter is introduced the results found on the service model proposal. As indicated already in the headline of the chapter, with service model proposal is referred to a systematic approach where the supplier proposes the service model to be used for or to proceed with the advanced services contract. Service model that is proposed to proceed with is not based on any random selection of variances of models but a definite outcome of the results gained through the feasibility study.

Following key elements under the theme of *Service model proposal* were identified throughout of the empirical research:

- Service model selection
- Current state
- MTBR increase proposal

The elements and the result of these elements are described and interpreted in more detailed in the following chapters.

### 4.2.1 Service model selection

Once all the relevant data is collected and analyzed the supplier can start to assess the service model they are about to propose to the customer. As mentioned already

the purpose of the feasibility study is to analyze the performance and the cost profile of the customer. With this information the supplier and the customer can evaluate and make a decision whether advanced services model is something that fits to both customer and supplier and is in-line with their strategy. One must acknowledge that the outcome of the feasibility may not always favor of going into towards advanced services. The evidence received from the data capture and analysis may reveal that the advanced services is not suitable for the customer. If the evidence shows that the advanced services is not the right model to proceed the supplier suggest an alternative model to proceed with.

Service models can roughly be segregated from simple commercial agreements (Transactional) to more complex reliability service programs (Advanced Services). Service models are presented below in Figure 12.

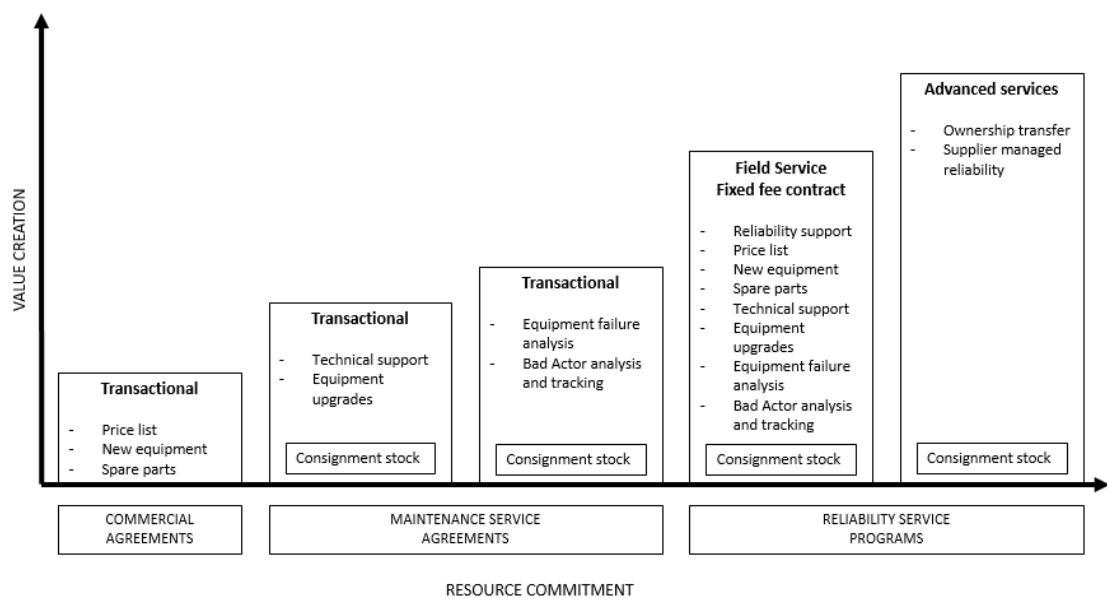


Figure 12. Value creation through services

The main emphasis in commercial agreements are in price-lists and selling spare parts, whereas the more are headed towards in reliability service programs (advance services) the main emphasis is on a total cost ownership, supplier managed reliability and partnership. In between these two extreme ends there are variations, where in each step some more services are added, hence the more services are added the more value is created for the customer. Also, as the value increases by each step of going towards advanced services, the more committed the supplier is to customers business.

#### 4.2.2 Current state

With current state is not only referred to what is the customer current level of performance and cost profile but also onto the historical state. When reached to a state of proposal it is important to show the outcome of the feasibility study how does the customer performance (number of equipment failures) and cost profile (Total costs of repairs) look like. According to respondents this is a good way to show the customer the uncertainty of the maintenance. Below in Figure 13 is illustrated what the current state could look like.

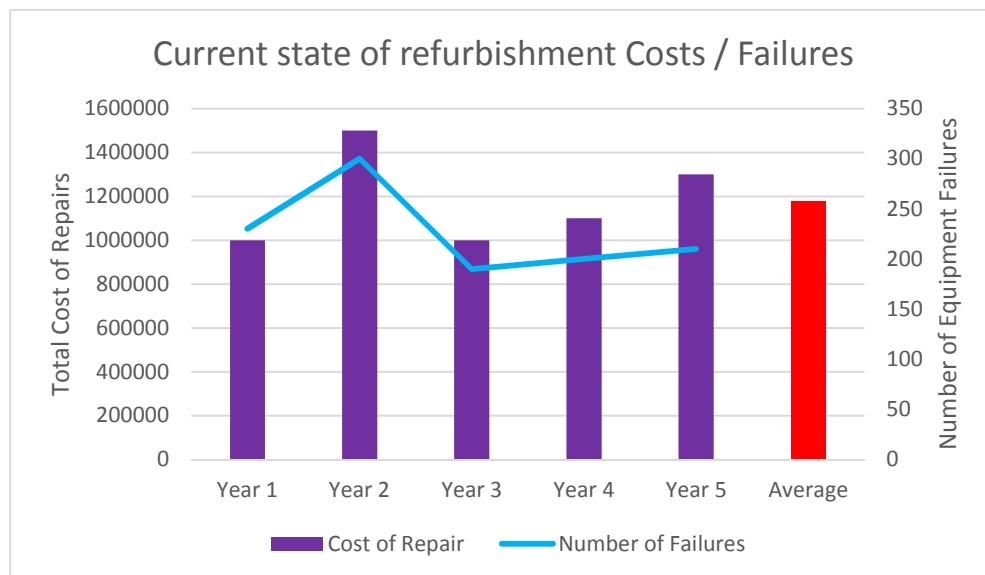


Figure 13. Current state analysis

As can be seen from the Figure 13 above, the costs varies between the years of observation and it is difficult for the customer to assess the costs needed to input annually for repairs. Also the number of failures fluctuates quite significantly.

#### 4.2.3 MTBR increase proposal

According to the evidence provided by the feasibility study, supplier is able to create a proposal of increasing the MTBR, hence lower the number of equipment failure. The proposal of MTBR increase is not based on mere empty sales speech but onto a carefully chosen list of actions of improvements on how the target will be reached.

In the case of case company where the type of agreement of advanced services is based on fixed fee, meaning the fee the supplier get every months is fixed no matter how many failures the occur in a month, the MTBR increase proposal works as a driver for the supplier as it wishes to get as much of profit out of the contract as possible throughout having as much as equipment as possible. As the supplier drivers to a minimum level of equipment failure also the customer can feel safe that the

supplier is truly working for to increase the MTBR. The benefit the customer gains from the increased level of MTBR is more reliable process, hence less down time. The less the customer experiences process down time the more the customer saves money.

Below in Figure 14 is illustrated the MTBR increase proposal.

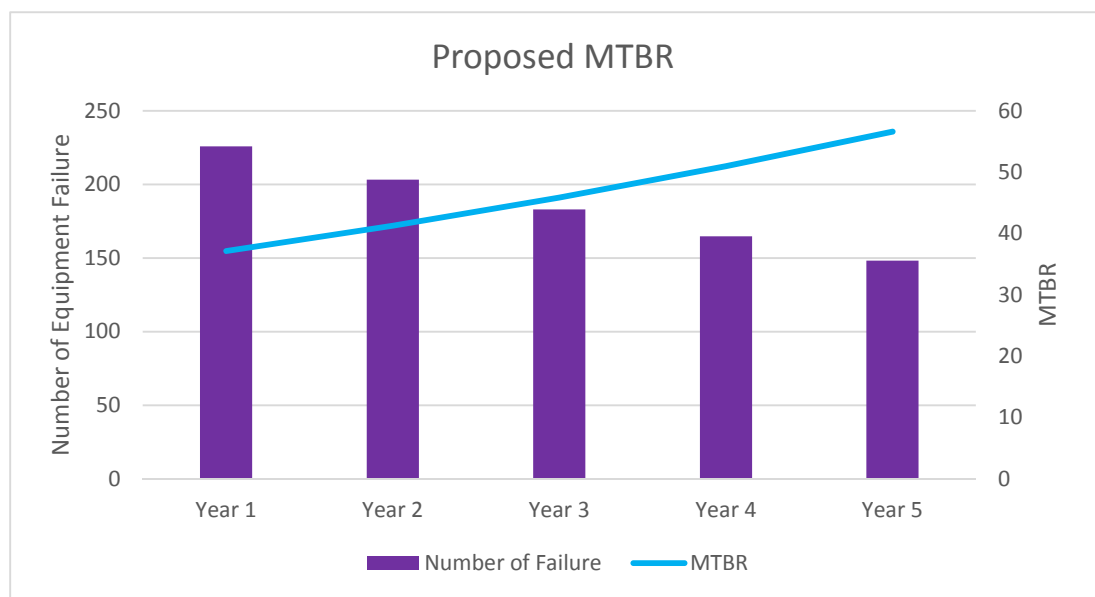


Figure 14. MTBR Increase Proposal

The more the supplier promises to improve the MTBR the more attractive the advanced service is to the customer, hence by actions done by the supplier in order to increase the MTBR the customer will save money and the more attractive the service becomes in the eyes of the customer.



### 4.3 Contracting of advanced services

Once the supplier has completed the feasibility study and has a full understanding on customer performance and cost profile (Total Cost of Ownership) and is able to make proposal of what kind of advanced service model to proceed with the customer the process can move forward of preparing and proposing the actual contract of advanced services. In here with proposal is referred to the agreement and the terms of the agreement to be proposed to customer based on the findings and outcomes on the feasibility. One must understand that normally proposal is something could be imagined to be at the very beginning of the process. This is true, proposal of course works also as initial input what is presented to the customer at the very beginning when starting the negotiations as a demonstration of the program. However, in this context with contract proposal is referred to a proposal which outcome is based on the data capture and analysis and which will be generated after the feasibility study is completed.

Following key elements under the theme of *Contracting of advanced services* were identified throughout of the empirical research:

- Type of agreement
- Features of agreement

These elements are presented in more detailed in the following chapters.

#### 4.3.1 Type of Agreement

According to the findings of empirical study *Type of agreement* withholds elements such as the *duration of the contract* and *fee of the contract*. According to respondents the typical period of contract what is aimed and proposed at is five (5) years, or more. Five years is seen as adequate duration for one contract term as anything less than five years is risky. Considering the complexity and the scale that

the servitization model withholds, taking ownership of customer installed base, learn the culture of working and people at the customer, learn customer processes to be able to make suggestions of improvements and actually deliver developments, proposal of five years contract is not oversized.

*On a first year we start up the operation and start acting according to steps what is agreed with the customer. On a second year the operation should be fully up and running and we would be able to demonstrate to the customer the operational developments, create savings. On a third year the trend should be visible, meaning are we heading to the agreed and right direction. In this sense the five years is a good time constraint as we are able to exploit the resources and time allocated to the project, deepen the relationship with the customer and truly launch the process of development and achieve the development targets set for the project (Interviewee 1.).*

In some cases there can be contracts with duration of 3+2 years or 3+3 years if it looks like that the direction after three years is correct it automatically continues to the next three years. These shorter period of contracts however may end up becoming too costly when covering the risks.

Depending on the type of agreement, whether it is a fixed fee based or the fee of maintenance is charged after each repair, the development of MTBR has different outcome and can be somewhat a questionable in the eyes of the customer. In a fixed type of agreement the better the MTBR can be developed the more profitable the contract outcome will be for the supplier. In another scenario if the fee of maintenance is charged after each repair, transactional base, and there is no fixed fee contract in place the outcome can be somewhat questionable in the eyes of the customer.

Essential and required information for the element of *Type of agreement*:

- Contract duration  $\geq$  five (5) years
- Fixed fee contract

#### 4.3.2 Features of Agreement

*Features of agreement* refers to different sort of service offerings the advanced services contract withholds. These features are Front office support, *Inventory optimization*, *Equipment failure analysis*, *Root Cause Analysis (RCA) for Bad Actors*, *Structured reporting and review procedures*, and *training programs*.

Front office support means the representatives of the suppliers (Service engineers) are physically present at the customer site. They are the first contact to the supplier and they are there to support customer in any equipment, contract related matter.

*Inventory optimization* is a feature where supplier evaluates the level of inventory and may make suggestions of improvements to reach optimum stock level. Both parties, the supplier and the customer may have their own interest on what is the optimum level. As supplier owns the stock the supplier may be tempted to downsize the stocks as much as possible, whereas the customer wishes to have as much of equipment and spare parts on stock just to be safe. Inventory optimization is something either party can do decisions by their own without hearing the counterparty. Inventory optimization is something to be done with mutual agreement.

*Equipment failure analysis* is done for every failed equipment. In equipment failure analysis is defined what are reasons led to failure, what spare parts were need to refurbish the equipment. As each equipment failure is done and recorded a trend of failure can be drawn.

*Root Cause Analysis (Further on RCA) for Bad Actors*, often in when equipment fails or breaks down a mere equipment failure analysis is not sufficient. This is the case especially with the bad actors. As presented earlier, bad actors are the ones that fail

the most often and/or they create the highest costs of repair. When contract is fixed fee by its type, meaning the supplier gets a fixed fee no matter how many failures there exists, one or one hundred, supplier is keen to go to the very source of problem to avoid failures. Going to the source means the failure is tracked all the to the customer process if have to. Doing RCA on to the bad actors helps the supplier that the equipment will not fail so often, hence higher margins on monthly fee. From the customer perspective this also help the customer to improve their processes and find the cause of problem that they might not have find or even realized to be existing before.

*Structured reporting and review procedures* is where supplier provides reporting of relevant Key Performance Indicators (Further on KPI) concerning on the performance and actions of developments. The content of the reports withhold KPI's such as for example *Top 10 bad actors and actions to them, Number of failures, Cost of repairs, Priority of improvement activities and Training needs*. The progress of KPI's and actions of improvements/developments are monitored and gone through in a monthly, quarterly and annual reviews together with the customer. Not only reporting and review procedures are set up for the sake of reporting and monitoring but also it is a good way of building the relationship further. By reporting the current state of performance and actions taken for to improve the customer process and performance customer can be sure they get their money worth.

*Training programs*, refers to the training the supplier offers to the customer employees concerning on the equipment they sell and repair to the customer. This includes the principles how they work and how they should be maintained but also how they can be repaired.

Essential and required information for the element of *Features of the agreement*:

- Front office support
- Inventory optimization
- Equipment failure analysis

- Root Cause Analysis (RCA) for Bad Actors
- Structured reporting and review procedures
- Training programs

#### 4.4 Synthesis of the results

As defined in the beginning of this chapter the results presented in this chapter are extensive and it was seen to necessary to do a synthesis of the results in order to help the reader to get a more holistic picture on the results, the key elements and the whole process of advanced services contracting.

The results of the empirical research were presented in accordance to the themes introduced in the theoretical framework in Chapter 2.4. The themes and the key elements within them can be seen as a continuum to a next one creating a holistic approach towards a process of advanced services contract. Given by the results presented above a following synthesis of the results can be drawn.

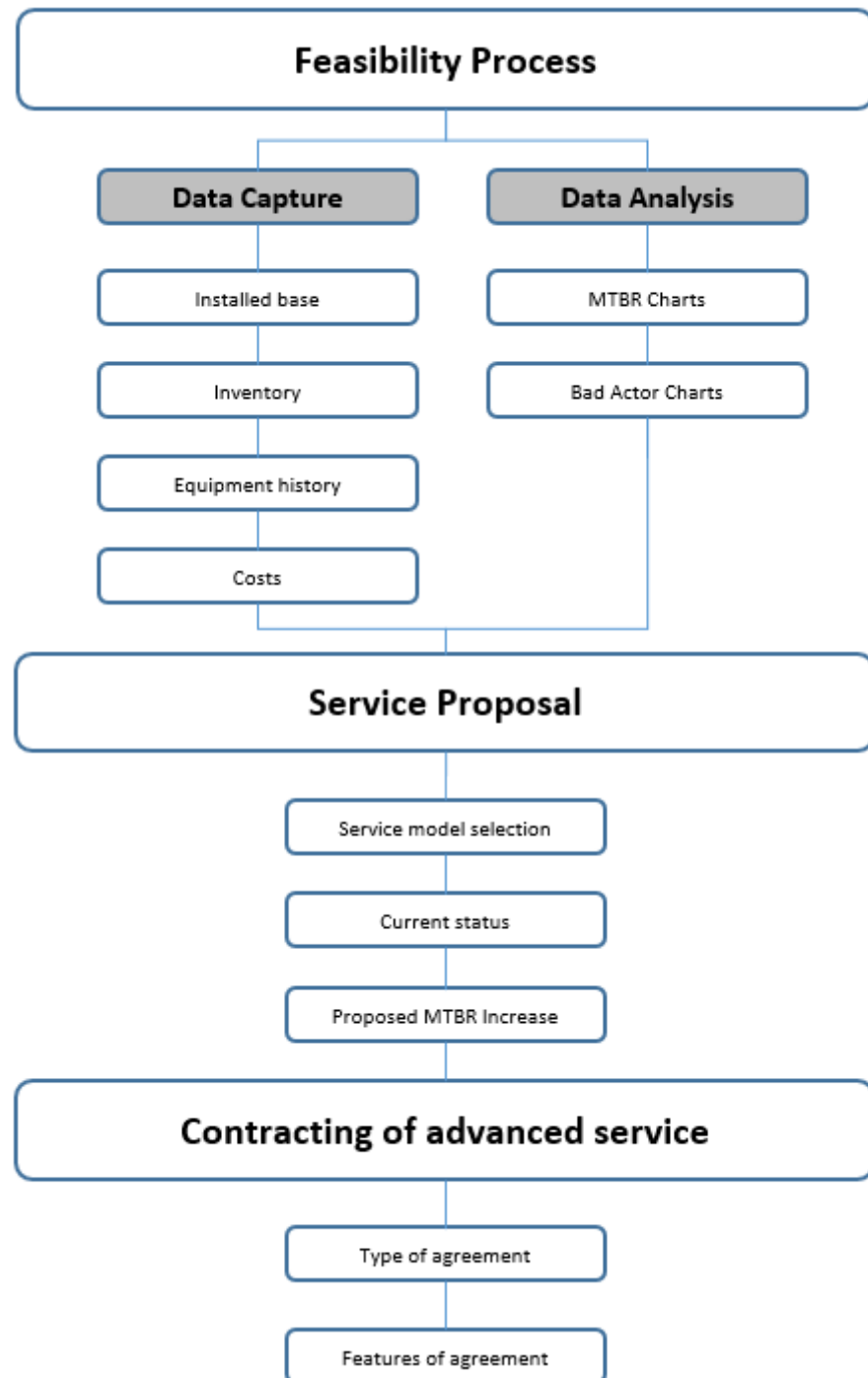


Figure 15. Model of key elements in advanced services contracting

The results of this research presented here and in the previous chapters are analyzed more in the discussion chapter below.

## 5 Discussion

### 5.1 Answers to the research questions

In this chapter is analyzed the validity of this thesis, hence whether the thesis answers the questions it is intended to answer (Kananen 2011, 66).

This study examined the phenomenon of servitization and especially the contracting of advanced services within the servitization. The aim of the research was to identify elements considered to be essential for systematic, sustained and successful delivery of an advanced services contract. Based on the elements identified a model of approach could be created. An empirical research was conducted to find these elements. The empirical research consisted of interviews and case company internal material related to advanced services. The interviews were based on beforehand chosen themes that were created based on to the initial assumption set in Chapter 1.3:

*“In order to gain successful delivery of advanced service contract the company must understand and be able to exploit the key elements that is affecting to it.”*

Followed by the assumption, a research question was set for the research:

**“What elements are considered essential for a systematic, sustained and successful delivery of an advanced services contract?”**

Given above, the main emphasis on presenting the results lies on the words *Elements, Systematic, Sustained and Successful*.

#### *Elements*

First the answers are observed from elements perspective of which the contracting process consist of. Each of the elements presented in the theoretical framework were traced through via interviews and case company internal material. The elements were opened up and analyzed thoroughly. With the help empirical research

primary material all the element relevant for the process were managed to allocate. The author is confident that all the elements seen essential for the delivery of advanced services contract were allocated. The elements the author claims to lead for a systematic, sustained and successful delivery of an advanced services contract are illustrated in Figure 15.

### *Systematic*

Secondly followed by the elements the answers to the research question are observed from the *systematic* point of view of the contract. In the results the cause and effect or in other words the linkage between the key elements were established. The process of advanced service delivery starts with a feasibility study. By the definite information got through the feasibility study the supplier is able to evaluate the customer level of performance and cost profile. Once the data and data analysis of the customer level of performance and cost profile is known, the supplier is then able to create a proposal of advanced service model for the customer. As the feasibility is based on actual and accurate data received from the customer live business environment and performance. Hence the results explicitly shows that the approach of delivery of advanced services contract can be considered being *systematic*.

### *Sustained*

Thirdly the answers are analyzed from the perspective of sustainability of the contract. What makes the delivery of advanced services contract sustained is the continuous monitoring of customer performance through *Bad actors* (see Figure 10) and actions taken against these *Bad actors*. *Bad actors* has a direct linkage to MTBR (see Figure 14). The better the “Bad actors” can be identified through by understanding the customer performance and cost profile, hence by through feasibility study, and the better these failures can be get rid of by a systematic approach eventually leads to better MTBR, hence *sustained*.



### *Successful*

Last but not least the answers are observed through the successfulness of the contract. There is no sense for the supplier to sign an advanced services contract if the customer level of performance and the cost profile is not known. Heading towards advanced services contract without a better knowledge can lead to service paradox (see page 26). With successful delivery of advance services contract the same logic can be applied as with sustained. The better the “Bad actors” can be identified through by understanding the customer performance and cost profile, hence by through feasibility study, the better these failures can be addressed to eventually leading to better MTBR, hence *sustained*. From the perspective of successful and especially when monitoring through fixed contract, the less there exists failures the more money the supplier can gain through contract, hence results explicitly shows that the approach lead to *successful* delivery of advanced services contract.

The research suggests that a model of approach towards advanced services contract presented in a research consisting of key elements such as *Feasibility study*, *Service model proposal* and *Contracting of advanced services*, and on various sub-elements of them, results a systematic and sustained approach towards successful delivery of advanced services contract. Given above, this research can be considered being valid, or in other word the thesis answers the questions it is intended to answer (Kananen 2011, 66).

## 5.2 Managerial implications

This research provides managers a systematic and logical approach towards advanced services contract. The research has identified all the necessary key elements required for successful delivery of advanced services contract (see Figure 15). Not only the research has identified the relevant key elements it also has identified the linkages between them.

The research is not limited or exclusively intended for the purposes service provider but also for the managers at the customer end as well that are buying the service. In order to carry out advanced services successfully, performing advanced services requires a very close co-operation between the supplier and the customer. The co-operation in advanced services is highly transparent where both parties must open their books and reveal their “secrets” so to say in order to gain the targets set for the contract.

One must acknowledge that each case of advanced services are unique and specially designed to fit the purposes of customer demands and environment. Given this the results of this research must be understood accordingly.

### 5.3 Theoretical contribution

As already introduced in the earlier chapters, in literature servitization is used to describe and often presented as a transformation of a manufacturing company business model to offer combination of goods and services together rather than goods alone. In this light the existing literature and the earlier theoretical frameworks or better yet approaches dealing with the phenomenon of servitization was not seen to fit that well for this research as where the aim of the research was to identify the elements essential for systematic, sustained and successful delivery of advanced services contract. In other words the earlier approaches were observing the phenomenon of servitization from bigger perspective whereas the aim of this research was to concentrate on the phenomenon of advanced services contracting within the servitization, hence a much smaller concept within the vast and complex environment of servitization. As the earlier theoretical frameworks could not be applied as such a new theoretical framework was created for the research by the author. In a creation of new theoretical framework for the thesis, the author used his own empirical work experience from the field of servitization but also earlier approaches towards servitization was used to support the new framework. Even though the earlier approaches were not fit to answer research question set for the

thesis as such the earlier approaches withheld useful elements and interpretation that could be linked to the new theoretical framework.

The empirical research was conducted based on the new theoretical framework developed for the research. The findings and the results received through the empirical research clearly suggested that a model of approach towards advanced services contract presented in a research consisting of key elements such as Feasibility study, Service model proposal and Contracting of advanced services, and on various sub-elements of them, results a systematic and sustained approach towards successful delivery of advanced services contract.

Given above, the research can be seen to bring contribution to the existing literature of the phenomenon of servitization throughout by introducing a new theoretical framework developed for the phenomenon of contracting of advanced services that is supported with the findings and results received through the empirical research based on the beforehand mentioned new theoretical framework.

#### 5.4 Limitations, reliability and validity of the research

In many researches is mentioned the limitation of accessing to interviewees or data. This was not the case in this research. All persons that were requested and addressed to join to the interview did not hesitated to join. Also all material the author asked for the purposes of this research was provided immediately.

As one limitation could be considered the very limited number of two interviewees. The author however does not consider this as a significant limitation as the outcome and the results of the interviews were surprisingly similar. One must also acknowledge that the number of employees within the case company was not large and out of that small bundle of people only the ones selected for the interview were seen to have right experience and know how on the subject that was studied.

One obvious limitation of this study is that the research is missing the actual contribution of customer aspect. Even though customer point of view is taken under

consideration in various themes in the study one cannot deny all the reasoning's and interpretations presented in the research are generated from the opinions and insight of interviewees and the company materials.

The author acknowledges and admits his own expertise in the area of preparing and conducting research interview as one limitation. Although the author felt comfortable in the interview situation the outcome of the interview leaves room for improvement.

Another limitation worth to consider is that the observation of this limits to only one company and only one actual advanced services contract is used as a benchmark in this research. Although there were many other similar advanced services contracts existing and ongoing within the corporation, accessing to them were considered to be somewhat a sensitive. While being sensitive by nature the outcome of information were considered to be remaining in general level and that way they were not seeing to bring any additional value for the research that was not already got from the case company.

The verification of reliability, validity and quality is extremely important in scientific research (Kananen 2008, 66). Both of the sources, the interviews and the company material used in the research can be considered as being reliable. The people interviewed for the research both work closely with advanced services and with the contracting related to advanced services and also the company internal material related to advanced services is recognized and approved among the corporation.

The simplest way of ensuring reliability/validity is to have research material read and interpreted by a person involved in the research (Kananen 2008, 68). This was the case in this research. The research was handed to the representative of the case company that also operated as supervisor for the research for to be evaluated whether the findings are in-line with the research question and with the targets set for the research.

Another aspect of reliability is the consistency and repeatability of the measurements and research results, in other words if the research is repeated, the results will be the same (Kananen 2008, 66). Given that another researches would

conduct a same or similar research for the same case company on the contracting of advanced services, the author argues the findings would be at least similar if not the same.

Could the findings be reproduced in another settings, in different company that practices advanced services in different environment, is another thing. As tempting it would feel to say yes, the author cannot prove unless tested.

## 5.5 Recommendations for future research

Coming back to the earlier statement that even though servitization has roots going back as far as 1960's, servitization has received fairly little attention among literature and not until the recent past couple of decades the phenomenon of servitization has become more known and gained stronger foothold among the scholars and the manufacturing industry operations. Despite there appears new articles concerning on the environment of servitization, the concept of servitization is a vast entity and there is plenty of opportunities for future researches.

As this is the first research done on the phenomenon of advanced services contracting in servitization leaves this room for further researches and developments on the subject.

As this research was limited to only one company that has practiced advanced services for few years now, it would be interesting to study whether the result found in this research would be applicable in another company practicing advanced services.

Also as all of the earlier studies, this study included, has observed the phenomenon mainly from the supplier perspective. It would be interesting of studying the concept of advanced services contracting more thoroughly from the customer perspective.

What also would be interesting to study is the relations of gaining new opportunities of sales by having the advanced services in place that would not be recognized without of having advanced services contract in place.

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## Appendices

### Appendix 1. Interview questions

#### **Theme 1. Feasibility study**

1. According to your view and experience please describe the purpose of customer feasibility study and why it is important when observing the holistic approach of servitization contracting?
2. What elements does the feasibility withhold?
3. Does performing feasibility study withhold any risks?
4. How do you see the feasibility study is seen to affect to other elements of the Servitization Contract processes and the total outcome and success of the contract?

#### **Theme 2. Financial model**

5. Describe how the financial model presentation is proceed?
6. What type of financial models there exists and what is the typical model?
7. What are the critical elements within the financial model itself?
8. On what elements the financial model is based on?
9. How the financial model is justified?
10. How do you see the financial model is seen to affect to other elements of the Servitization Contract processes and the total outcome and success of the contract?

**Theme 3. Service model proposal/offering**

11. From the perspective of advanced service offering how is it defined to which customers the service model is offered to? Does there exist some certain limits/criteria's?
12. What would be the reasonable duration of the contract and why?
13. How do you see the service model proposal is seen to affect to other elements of the Servitization Contract processes and the total outcome and success of the contract?

**Theme 4. Service contract negotiation with customer**

14. Is there any typical duration what the contract negotiations normally takes?
15. What is your experience how the customer is prepared on the contract negotiations?
16. How do you see the service contract negotiation with customer is seen to affect to other elements of the Servitization Contract processes and the total outcome and success of the contract?

**Theme 5. Contract implementation**

17. How is the people and responsibilities organized in servitization contract?
18. What could be the risks in the contract implementation?
19. How do you see the contract implementation is seen to affect to other elements of the Servitization Contract processes and the total outcome and success of the contract?

## Appendix 2. List of the persons interviewed

To respect the wishes of the assignor company and the interviewees the interviewees are presented as anonymous.

Interviewee 1.	Business Development Manager	20.1.2017
Interviewee 2.	Regional Sales Manager	1.2.2017