A Framework to Identify and Analyze Resources and Capabilities Required for Service Offerings

Master's thesis in the Master Degree Program Quality and Operations Management

LINNÉA HEMDAL
EMMA ZETTERHOLM

A Framework to Identify and Analyze Resources and Capabilities Required for Service Offerings

Linnéa Hemdal & Emma Zetterholm

Master of Science Thesis in the Master Degree Program Quality and Operations Management
Report No. E2014:050

ABSTRACT

Today an increasing number of companies are moving from offering pure products to also include services in their offerings. This is a trend that can be seen across almost all industries. When offering services there is a need for greater customization, which requires new resources and capabilities within a firm. Different service types require different resources and capabilities, and the connections between service types and resources and capabilities are thus an interesting subject to investigate. In this thesis service types refers to different types of service offerings targeting different customer needs. The purpose of this thesis is to investigate and identify which resources and capabilities that are required when offering new service types. The purpose is also to develop a framework to be used to map required resources and capabilities for different service types.

Six service types have been identified, and important resources and capabilities required for these service types are identified through an empirical study based on internal and external interviews as well as a benchmarking. The six identified service types are: Process Analysis, Process Improvements, Planning Tools, Logistics and Distribution Management, Waste Management and Education and Training.

A conceptual framework based on previous research is developed, consisting of both service classification and groups of resources and capabilities. The service classifications are divided into product-oriented services and process-oriented services. Resources are divided into the following subgroups; physical capital resources, human capital resources and organizational capital resources. Capabilities are divided into operational capabilities and dynamic capabilities.

The identified resources and capabilities for each service type are mapped in the framework, and similarities, clusters and connections between the required resources and capabilities are identified. The most important resources and capabilities common to most service types are: understanding of customer processes; the mix of domain specific knowledge and other expertise; the ability to integrate systems from suppliers, partners and customers; and the available knowledge within the company. Based on the analysis an extended conceptual framework is created, in which an additional subgroup of capabilities is added, namely systems integration capabilities.

Keywords: service types, service classifications, resources, capabilities, dynamic capabilities, process analysis, process improvements, planning tools, logistics and distribution management, waste management, education and training, service offerings.

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

1 INTRODUCTION

This chapter aims at introducing the thesis and its context. The background, including theoretical framing and a short description of the case company, is presented along with the purpose and the research questions for this thesis.

1.1 BACKGROUND

The term "servitization" was first introduced by Vandermerwe and Rada (1988) in their paper *"Servitization of Business: Adding Value by Adding Services"*. The authors describe the trend, undertaken by an increasing number of corporations in almost all industries, to move from offering pure products to also include services in the offering. Gebauer et al (2005) also highlight the trend of moving into the service business, in order for companies to stay competitive on a more demanding market. By offering bundles, defined as a composition of products, services and know-how, the value of the offer increases and the company is believed to strengthen its competitive edge (Vandermerwe & Rada 1988; Mathieu 2001b). Vandermerwe and Rada (1988) suggest that the movement towards servitization of business has gone through three stages. From the beginning the general view was that companies operated in either goods *or* services. The transition to the second stage occurred when more advanced technology became available and companies began to realize they could benefit from offering both goods *and* services. The third stage happened when companies began to offer goods and services together with knowledge, support and self-service, to increase value for the customer.

The service approaches taken by manufacturing firms can be classified in different ways. Mathieu (2001b) has specified the service content into the following categories: services supporting the product (SSP) and services supporting the client (SSC). SSP are services supporting the supplier's product at customer site, e.g. to ensure proper functioning of the product. SSC on the other hand, are services to support and enhance the processes, actions and strategies of the customer. Another classification found in literature, similar to the classification by Mathieu (2001b), is product-oriented services versus process-oriented services (Kowalkowski et al 2011). *Product-oriented services* are offered in connection to a product, while *process-oriented services* are offered to support customers' business performance.

A business portfolio is the collection of products, services, and solutions offered by a company to its customers (Hedley 1977). When moving towards a more service-oriented business a manufacturing company is forced to reconsider some of their organizational characteristics to be able to create more service-centered business portfolios (Vandermerwe & Rada 1988). The need for a change in organizational characteristics was pointed out already in 1988 by Vandermerwe and Rada, and since then several papers have addressed the obstacles and challenges experienced by manufacturing firms striving towards a more service-oriented business (Baines et al 2009; Martinez et al 2010; Gebauer et al 2010a; Gremyr et al

2010; Gebauer & Fleisch 2007; Visnjic Kastalli & Van Looy 2013; Oliva & Kallenberg 2003; Mathieu 2001b). If not addressing the challenges connected to the change towards a more service oriented business properly it may lead to a decline in performance, and not an increase in value as expected (Gebauer et al 2005). This phenomenon is often referred to as the "service paradox" (Gebauer et al 2005). The service paradox occurs when "substantial investment in extending the service business leads to increased service offerings a higher costs, but does not generate the expected correspondingly higher returns" (Gebauer et al 2005 p. 14). To succeed with service business development the implementation must be managed properly and the company must identify ways to overcome the service paradox (Visnjic Kastalli & Van Looy 2013).

Martinez et al (2010) have identified five categories of challenges that organizations need to consider if wanting to become more service oriented; embedded product-service culture, delivery of integrated offering, internal processes and capabilities, strategic alignment, and supplier relationships. Another obstacle mentioned by Mathieu (2001b) is the difficulty in creating a shared understanding throughout the organization of what services to offer. The organization also has to make sure it has all the skills required to be able to deliver the service, which is also supported by Baines et al (2009), Gremyr et al (2010) and Visnjic Kastalli & Van Looy (2013). An organization must possess the resources and capabilities needed to be able to offer the services. Resources are the assets controlled by the company, and capabilities are the integrating mechanisms that determine how the resources are used (Kowalkowski & Kindström 2012).

Oliva and Kallenberg (2003) state that one of the challenges when a company starts the journey towards providing more services is the disbelief in internal competences. According to Kindström and Kowalkowski (2014), it is important to identify a proposed target position for a company striving towards a more service-oriented business. This will lead to insights in what resources and capabilities that are needed internally in order to succeed with the transition.

Different types of services require different resources and capabilities. The connections between service types, and resources and capabilities, are not as explored in the literature as each of them is individually. In this thesis service types refers to different types of service offerings targeting different customer needs. Oliva and Kallenberg (2003) believe that organizational attributes, i.e. firm resources and capabilities, are important when entering new service market and consider this to be a promising area for future research. The resources and capabilities connected to different service types are thus an interesting subject to further investigate.

1.2 CASE COMPANY

The case company has a long tradition of providing medical products to the healthcare sector. Due to increasing commoditization on the market and the need for differentiation between suppliers, the company has started a journey towards implementing solutions and services as

part of their offer in addition to their products. Adding services to the business portfolio, and thereby extending their value chain, is assumed to be beneficial for the company and to improve value created for the customers. The company has identified six possible new service types that they want to investigate further, but to be able to succeed with this there is a need for an understanding of what capabilities and resources that is required to be able to offer these services. The identified service types are: *Process Analysis, Process Improvements, Planning Tools, Logistics and Distribution Management, Waste Management,* and *Education and Training.*

1.3 PURPOSE

The purpose of this thesis is to investigate and identify which resources and capabilities that are required when offering new service types. The purpose is also to develop a framework to be used to map required resources and capabilities for different types of service offerings. The purpose will be addressed through a case study in collaboration with the case company's service division.

1.3.1 RESEARCH QUESTIONS

To be able to fulfill the purpose of this thesis, the aim is to answer the following research questions:

RQ1: What is required in form of resources and capabilities to be able to offer the six identified service types?

RQ2: How can the connections between service types and resources and capabilities be analyzed?

1.4 DELIMITATIONS

To ensure the depth of the findings from this study, some delimitations are made. The study will not cover service development, but rather which resources and capabilities that are required to produce and deliver these services. The thesis will be limited to only cover a single case study of the six service types identified by the case company; the thesis is thus limited to services offered to the healthcare sector. Out of Martinez et al (2010) five categories of challenges the thesis will focus on embedded product-service culture and internal processes and capabilities. These challenges are considered most relevant since the case company is in the beginning of its service transition, and since these challenges are connected to the purpose of the thesis. Due to the fact that the case company currently is in the early stages of the servitization process, the thesis will not cover the process of how to acquire the needed resources and capabilities.

1.5 STRUCTURE OF THE REPORT

Below the structure of the report is outlined, see *figure 1*. Following this introduction, the methodology describes the methods used when performing the research. The theoretical framework presents literature findings and ends up with a conceptual framework. The empirical findings summarize the empirical study conducted within each of the six service types. The theoretical framework is then connected with the empirical findings in the analysis and results, which ends with an extended version of the conceptual framework. Lastly, the findings are discussed and the conclusions are presented.

- Introduction
- Methodology
- Theoretical Framework
  - Conceptual Framework
- Empirical Findings
- Analysis
- Discussion
- Conclusions
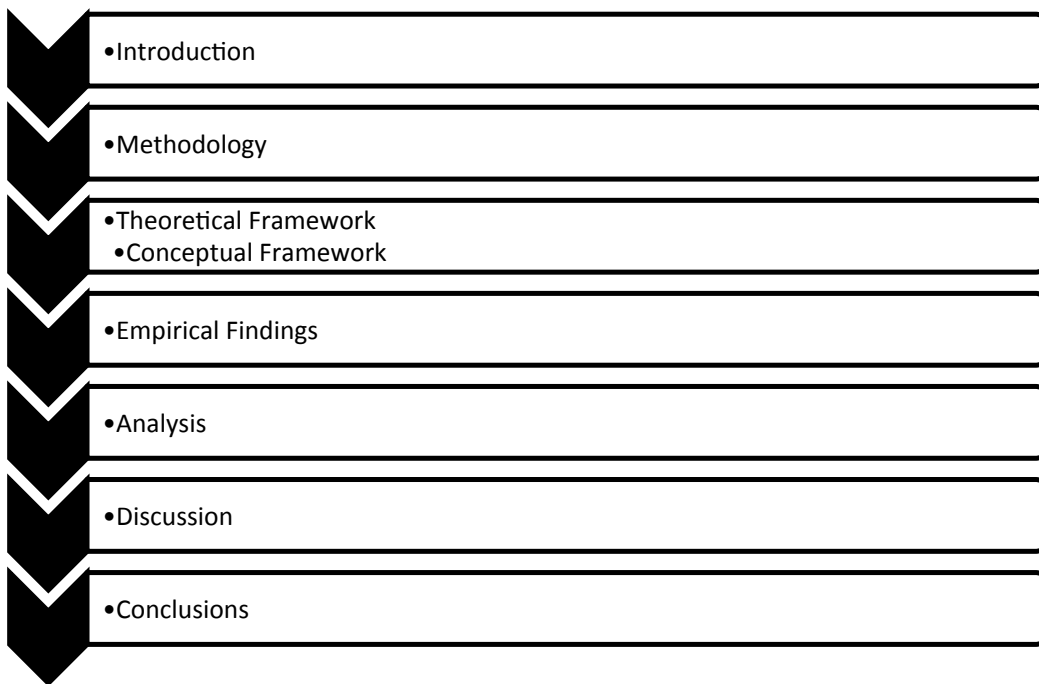
Figure 1. The structure of the report.

2   METHOD

In this chapter the research strategy and approach are presented together with an explanation of the research process. Further, the data collection methods are presented, which is followed by an explanation of the data analysis. Finally the trustworthiness and ethical considerations of the study are discussed.

2.1   RESEARCH STRATEGY

A research strategy is according to Bryman and Bell (2011 p. 26) "a general orientation to the conduct of business research", and is often divided into qualitative and quantitative research. A quantitative research method can be described as a method that uses measures and quantification of data (Bryman & Bell 2011). The ontological orientation, i.e. the view on social entities, of the quantitative strategy can be described with objectivism, which means that social entities are considered as objective and non-influenced by other actors. The view within quantitative research is that business research can be conducted in the same way as natural science, and the focus is testing of theory (Bryman & Bell 2011). Bryman and Bell (2011) state that in a qualitative research the social reality is considered as always changing and the connections between people within organizations affect the social reality, which is called constructionism. The view in this way of conducting research is that methods used in natural science is unsuitable, since there is a need for an understanding of peoples actions when conducting research in a social context (Bryman & Bell 2011). The goal within qualitative research is to study a phenomenon or a situation with flexibility to be able to identify and describe as much diversity and variation as possible (Kumar 2011).

The purpose of this thesis is to investigate and identify which resources and capabilities that are required when offering new service types. There is therefore a need for an understanding of the social context that these services are offered in, and an understanding of the connections between stakeholders in the value chain. Since the study aims to generate contribution to existing theory and not to test existing theory a qualitative research strategy was chosen. In a qualitative research the focus is on describing a situation in words, instead of analyzing numbers as in a quantitative research (Bryman & Bell 2011).

2.2   RESEARCH APPROACH AND DESIGN

Bryman and Bell (2011) make a distinction between a deductive and an inductive research approach. The research approach is a way to describe the relationship between theory and research when conducting a study. A deductive approach consists of the statement of a hypothesis based on earlier theory, data collection, findings and thereafter confirmation or rejection of the hypothesis (Bryman & Bell 2011). This is often referred to as testing of theory, and is usually the approach when conducting quantitative research. An inductive research approach is focused on the generation of theory, and is often used in qualitative research strategies. With an inductive research approach, conclusions are drawn from observations and interviews in social contexts (Bryman & Bell 2011). Bryman and Bell (2011) state that the

inductive approach can be iterative, and a combination of earlier theory and new data findings. The authors highlight the fact that there are difficulties in separating deductive and inductive approaches totally, and that they can be viewed as tendencies. Another view on the connection between theory and research is the abductive research approach. The abductive approach means that the gathering of literature, empirical findings and analysis is made iteratively, and is closer linked to an inductive research approach than a deductive one (Dubois & Gadde 2002). Dubois and Gadde (2002) call this way of conducting research as systematic combining, and according to the authors this are suitable when developing theory. An important part in systematic combining is the development and refinement of a framework, which has influences both from literature findings and empirical findings (Dubois & Gadde 2002).

In this study an abductive approach was used, and theoretical findings in combination with the empirical study supported the evolvement and development of a conceptual framework. A literature study was first made to give a basic understanding of the investigated areas, and after this part the empirical study started. More literature was gathered when findings in the empirical study showed new opportunities, and the analysis was an on-going process during this time to be able to identify patterns in the collected data and draw conclusions. In *figure 2*, a visualization of the systematic combining used in this thesis is shown.
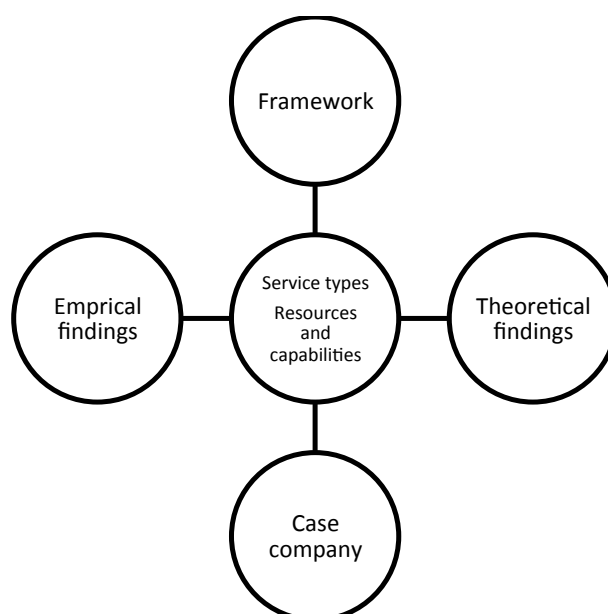
Figure 2. Systematic combining. Visualization of the systematic combining used in this master thesis (inspired by Dubois and Gadde 2002).

The research design used in this thesis is a case study. According to Bryman and Bell (2011), a case study is defined as a specific study and analysis of a single case. The case in this thesis is the six identified service types and to investigate the resources and capabilities needed when offering these types of services. In this thesis an idiographic approach has been used, which means that the researchers want to clarify the unique features from the specific case

(Bryman & Bell 2011). To be able to generalize the findings from a case study to another context there is a need for thick descriptions and a rich amount of data (Bryman & Bell 2011). Therefore multiple sources of data have been used, which will be further described in the coming chapters.

2.3 RESEARCH PROCESS

When using systematic combining the theoretical investigation runs in parallel with the empirical fieldwork (Dubois & Gadde 2002). The researchers will thus not be able to identify all relevant literature from the beginning, since new areas of interest will emerge during the process (Dubois & Gadde 2002). From the beginning the focus of this thesis was mainly on organizational structure, and what type of structure that is required in a service organization. The focus was also on how the structure differs between a manufacturing company and a more service-oriented company, and which changes that are needed when moving from offering products to solutions. Relevant books and articles connected to the servitization concept, different service classifications, and organizational structure were therefore studied in order to get a deeper understanding of the subject.

When the case company had identified the six different service types, the aim of the study changed slightly. There was an interest to investigate which resources and capabilities that were needed in order to be able to offer these types of services. It was therefore decided to focus on different resources and capabilities, and not only on organizational structure, which can be considered as a part of a firm's capabilities. When the main problem was defined, literature on resources and capabilities were included as well. Thereafter the empirical investigation began, starting with the internal interviews to collect insights and suggestions on how to proceed.

After the initial literature study, it was decided to create a conceptual framework including both service classifications and resources and capabilities. The purpose with the framework is to illustrate which resources and capabilities that are needed in the six defined service types. The aim is to be able to use the framework in further evaluations of new service types and to serve as a decision support when making strategic decisions regarding service offerings.

2.4 DATA COLLECTION

The data collection consisted of two major parts: a literature study and an empirical study. These two parts provide a base for analyzing and answering the research question and to fulfill the purpose of the study. The empirical study included both internal and external information. Data can be divided into primary data and secondary data (Eriksson & Wiedersheim-Paul 2008). Primary data are data that are collected only in the purpose of the study. Secondary data are not written in the purpose of the study, but is yet of importance for the study.

2.4.1 LITERATURE STUDY

From the beginning the focus in the literature study was mainly on organizational structure, the servitization concept, and which service classifications that can be found in the literature. As the project proceeded the studied literature included books and articles about resources and capabilities as well, and how to identify what is required from an organization wanting to offer stand-alone services. Since the case company is operating within the healthcare sector, literature including information about this sector was studied later in the process as well. This information was included to gain a deeper understanding of distinctive characteristics present in healthcare organizations, which affects the business environment of the case company. These characteristics are assumed to influence the approach a supplier should use towards a customer in the healthcare sector, and were thus an important subject to consider.

Both books and scientific articles have been used, which were found from searching in the Chalmers Library Database and Google Scholar. Recommendations of useful literature were also given by our supervisor at Chalmers and by other researchers within the studied fields. Dissertations from researchers at Chalmers have also been a source of information and have provided further references. When searching for articles and books key words such as *servitization, service classifications, service definition, resources and capabilities, service trends within healthcare* and *the healthcare organization* were used. The articles are from the journals *Journal of Service Management, Industrial Marketing Management, Managing Service Quality, Harvard Business Review* and *Journal of Business & Industrial Marketing,* to name a few.

Snowball sampling is when a reference leads to additional references (Bryman & Bell 2011). This method was frequently used during the literature study, and a majority of the articles were found using snowball sampling. When reading an interesting article, future work referencing back to this article were looked up as well. The theoretical framework is thus a combination of different authors' view on the treated subjects.

2.4.2 EMPIRICAL STUDY

The empirical study included a study of the case company and its service division, as well as an external study consisting of interviews and benchmarking. To increase the ability to interpret the findings, triangulation has been used (Thurmond 2001). Triangulation is when at least two types of sources or methods are used to collect empirical data (Thurmond 2001). Interviews, external benchmarking and documentation have been used for triangulation in this study. The purpose with using multiple methods to collect empirical data was to strengthen the credibility and to collect information regarding the different service types, but seen from different perspectives. Yin (2013) state that method triangulation enhance the validity of a research. The empirical study provided both primary and secondary data.

2.4.2.1 INTERVIEWS
The purpose with the internal interviews was mainly to gather existing ideas within the case company. These interviews were set up by the case company, since they knew who possessed

knowledge within the areas of interest. At these interviews, current initiatives in the service areas and ideas of how to proceed were discussed. The internal interviews were mainly semi-structured. This is a more open way of interviewing, compared to structured interviews, and the interviewer has guidelines to follow during the interview to gather qualitative information (Bryman & Bell 2011). The internal interview guide used in this thesis can be found in *Appendix A*. The internal interviews lasted between 30 minutes to one hour, and for most of these interviews the supervisors at the case company were present as well. The researchers were leading the interviews, but the supervisors were providing input and asking questions.

The purpose with the external interviews was to gather information about the different service types to identify required resources and capabilities. The interviews were held with people that were considered to possess knowledge of the healthcare sector, and that had experiences from the different service types connected to hospitals. Two of the external interviews were semi-structured, see guide in *Appendix A*. The rest were mainly discussions, and only a few questions were prepared beforehand, e.g. *What are your experiences within your field of expertise?* and *Which resources and capabilities do you believe are necessary if wanting to succeed with offering services within this field?* This type of interview is by Bryman and Bell (2011) described as unstructured, and has characteristics similar to a conversation. These interviews lasted between 20 minutes and one and a half hour. The total number of interviews conducted was 18, ten internal and eight external, see *table 1*.

Table 1. Interview table. A presentation of interviewees, service type(s) covered in each interview, and type of interview.

INTERNAL INTERVIEWS		
Position	*Service type(s) covered*	*Type of interview*
Local Quality Manager	Waste management	Telephone
Local Clinical Trainer	Education and training	Telephone
Local Clinical Trainer	Education and training	Telephone
Director Global Logistics	Logistics and distribution management	Personal
Global Marketing Manager	Process analysis and process improvement, Education and training, Planning tools	Personal
Local Service Manager	Waste management, Planning tools	Telephone
Local Logistic and IT-manager	Waste management	Telephone
Operations Development Manager	Logistics and distribution management	Personal
Concept Designer	Planning tools	Personal
Concept Designer	Overall	Personal

EXTERNAL INTERVIEWS		
Position	*Service type(s) covered*	*Type of interview*
Ph.D. Student, Technology management and economics	Planning tools	Personal
Quality Strategist at hospital	Process analysis and process improvement	Personal
Quality Strategist at hospital	Process analysis and process improvement	Personal
Director and Senior lecturer	Process analysis and process improvement	Personal
Senior lecturer	Process analysis and process improvement	Personal
Managing Director	Process analysis and process improvement	Telephone
Environmental Coordinator	Waste management	Telephone
Manager of Operations at a hospital	Process analysis and process improvements, Planning tools, Logistics and distribution management	Telephone

All interviews, except two, were recorded to be able to transcribe the interviews later. Bryman and Bell (2011) enhances recording as a way of verifying that the persons being interviewed are interpreted in the right way. The recording allowed the interviewers to focus more on the person being interviewed, and not worrying about missing important information while taking

notes. Snowball sampling was used in the interviews as well, where some of the interviewees suggested additional persons to interview. The empirical study began with the internal interviews, and the internal interviewees provided contacts with for example customers and partners. The interviews provided primary data.

2.4.2.2 BENCHMARKING

Since the case company is in the beginning of the journey towards extending its service offering, and thereby do not has sufficient knowledge internally, there was a need for empirical data from external sources. Therefore, an important part of the empirical study was the external investigation including customers and other companies operating within the different service types. The benchmarking is providing the study with secondary data.

The secondary data has been collected through an investigation of what other companies are providing in this area. By searching on the web and looking at company websites information about what kind of services the companies offer, how they offer the services, and what knowledge they possess internally were collected. Suggestions of what companies to select for investigation were discussed during the external and internal interviews. The selection of companies within *process analysis* and *implementation* were chosen with the purpose to illustrate a mix of large and important actors within their field, and smaller actors present on a particular market. The selection of companies within *planning tools*, *logistics and distribution management* and *waste management* were based on guidance from internal and external interviews, since they had knowledge about the areas and contributed with information about important actors. In *education and training,* two companies connected to product-oriented education and training, and two companies connected to process-oriented education and training, were chosen to get a balanced mix of different types of education and training. The total number of companies investigated was 23.

2.4.2.3 DOCUMENTATION

The empirical study included an analysis of internal documents provided by the service division at the case company. These documents contributed to an understanding of the current service offerings, and previous initiatives taken to improve these offerings. The documents also provided an overview of customer needs regarding services and solutions collected by the case company.

2.5 DATA ANALYSIS METHOD

The analysis of qualitative data is often an iterative process where data collection and analysis are performed simultaneously (Bryman & Bell 2011). One way of analyzing qualitative data described by Bryman and Bell (2011) is grounded theory. In this way of analyzing, theory, data and analysis are closely linked. By using coding, constant comparison, and explore relationships between categories the goal is that the analysis will culminate in formal theory (Bryman & Bell 2011). The analysis in this thesis was influenced by this method, and the analysis process aimed at identifying resources and capabilities, and trying to map them into the theoretical framework. The analysis process began with analyzing and classifying the

different service types into one of the service classifications in the framework. All interviews were transcribed, expect the ones that were not recorded, to be able to summarize the findings. The information from the benchmarking was structured into different categories, e.g. type of services offered, enhanced strengths and company size. Similarities in the findings regarding resources and capabilities from the interviews, benchmarking and documentation were then identified and analyzed according to literature. Thereafter the findings were classified into either resources or capabilities, and further divided into the subgroups of the framework. Clusters and similarities of the needed resources and capabilities regarding the different service types were then possible to identify.

2.6 TRUSTWORTHINESS

To ensure the quality of a research, the terms reliability and validity are often discussed (Bryman & Bell 2011). Maxwell (1992) states that quantitative researchers have raised critique towards the lack of standard means to assure the validity in qualitative research. The terms validity and reliability are not always applicable in qualitative research, but Bryman and Bell (2011) presents alternative criteria that can evaluate the quality of a qualitative research. These criteria are: credibility, confimability, transferability, and dependability. According to Bryman and Bell (2011) the *credibility* of the study refers to how believable the findings of the study are. To be able to ensure this, multiple data collection methods were used in this thesis, and together with literature findings conclusions were drawn. This way of ensuring credibility is called triangulation (Bryman & Bell 2011). To further ensure the trustworthiness the interviews were recorded, to be able to validate the findings later on in the process. This is enhanced by Bryman and Bell (2011) as a way to ensure that the research is not influenced by the researchers own impressions and values. It also makes it possible to listen to what people say several times, to get a greater understanding. The recording were also used to enhance the *confirmability*, since listening to the interviews again made it easier for the researchers to have an objective perception of what was said during interviews. To ensure the *transferability*, that the findings can be applicable in other social settings as well (Bryman & Bell 2011), the empirical study aimed at describing the circumstances of the service types as deeply as possible. Since the study is qualitative, it might be difficult to ensure that the findings are repeatable (Bryman & Bell 2011). This is referred to as *dependability*. To ensure the dependability of the study, the meetings with supervisors from both Chalmers and the case company have served as an evaluation of the research process and can been seen as a form of auditing, which increases the dependability according to Bryman and Bell (2011).

The generalization of a business research is sometimes questioned, since studied phenomenon and social contexts cannot be representative for a whole population (Bryman & Bell 2011). Yin (2013) presents a concept called analytical generalization and describes it as the "extraction of a more abstract level of ideas from a set of case study findings − ideas that nevertheless can pertain to newer situations other than the case(s) in the original case study." (Yin 2013, p. 325). Creating a framework possible to use for future evaluations of service offerings is a way to ensure the analytical generalization.

2.7 ETHICAL CONSIDERATIONS

When conducting a study, it is important to consider the ethical issues that can arise as a consequence. Bryman & Bell (2011) highlights lack of informed consent and deception as two areas to consider regarding ethical behavior when performing a research. They state that it is important that persons are being informed on what the research is about in a correct way. This thesis used interviewing as one of the data collection methods, and the persons being interviewed were informed about what the thesis purpose is and how the information will be used later. The persons being interviewed are anonymous in the thesis to maintain the confidentiality. When performing the interviews, the persons were asked if they approved that the interview were being recorded, and they were also informed that the recording was to be listened to only by the researchers.

3 THEORETICAL FRAMEWORK

This chapter presents the theoretical framework. It begins with a definition of what a service is and how different services can be classified, which is followed by an explanation of the term servitization. Further, resources and capabilities are explained. Organizational characteristics of the healthcare sector and service trends within this sector are described as well. The chapter ends with a proposed conceptual framework, which will serve as a frame for the empirical findings.

3.1 SERVICE DEFINITION

Unique characteristics of a service are its intangibility and inseparability (Mohr et al 2010). A service is intangible, since it cannot be physically present or examined prior to the buying decision. Inseparability refers to the fact that a service is produced and consumed at the same time, and therefore the quality may vary per occasion. The value-adding activity occurs when the service is being used and consumed (Gremyr et al 2012). Other characteristics of a service are that it is not standardized and often customized (Bowen et al 1989). This creates demands on the organization delivering the service. A service organization often has a "back room" and a "front office" (Bowen et al 1989). The front office includes actions visible to the customer, while the back room is where the actions supporting the front office are performed.

3.1.1 CLASSIFICATIONS OF SERVICES

One classification of services is the distinction between product-oriented services and process-oriented services. For manufacturing firms, an obvious extension into services is to provide services connected to the manufactured products of the company. This type of services is called product-oriented services, and is typically a type of after-sale service (Kowalkowski et al 2011). A more complex service offering is services that serve to support the customers' business performance, and these services are called process-oriented services (Kowalkowski et al 2011). Oliva and Kallenberg (2003) support this view, and they also highlight two specific challenges when providing this type of service; the need for human resources and management capabilities suitable for a service infrastructure, and a network to work with a new distribution channel and new contact points in the customers' organization. Oliva and Kallenberg (2003) divide product-oriented services into two subgroups; *basic installed base services* and *maintenance services*. Process-oriented services are divided into the following two subgroups: *professional services* and *operational services* (Oliva & Kallenberg 2003). See *table 2* for classifications of the subgroups.

Table 2. Product-oriented and process-oriented services. The subgroups of product-oriented and process-oriented services (Oliva & Kallenberg 2003), IB = installed base.

PRODUCT-ORIENTED SERVICES		PROCESS-ORIENTED SERVICES	
Basic IB services	*Maintenance services*	*Professional services*	*Operational services*
Documentation Transport to client Installation/commissioning Product-oriented training Hot line/helpdesk Inspection/diagnosis Repairs/spare parts Product updates/upgrades Refurbishing Recycling/machine brokering	Preventive maintenance Condition monitoring Spare parts management Full maintenance contracts	Process-oriented engineering Process-oriented R&D Spare parts management Process-oriented training Business-oriented training Process-oriented consulting Business-oriented consulting	Managing maintenance function Managing operations

Mathieu (2001b) also makes a distinction between services connected to the suppliers' products, or to the customers' processes. The author claims that the service orientation in companies has shifted focus, and it is not just enough for companies to offer maintenance services since customers are expecting more and more advanced services (Mathieu 2001b). Mathieu's (2001b) classification distinguishes between a service supporting the product (SSP) and a service supporting the client (SSC). With SSC, the focus lies on how the service support and enhance the processes, actions and strategies of the customer. The author also claims that this type of service implies an on-going contact with the customer, and that the delivery of the service is an on-going process. When offering a SSC, the intensity of the relationship to the customer and the level of customization is greater compared to a SSP. According to Mathieu (2001b), important skills to develop and hold when offering SSC are customization and relationship management. When offering SSC the relationship with the customer is more intense, and more people are often involved in the relationship. It is also important to have high commitment-trust between the service provider and the customer. Another skill that is required by the service provider is clear communication. Clear communication is important to be able to communicate the value proposition of the service to the customers, and to have a shared understanding of the offering within the supplying company (Mathieu 2001b).

Another important action when moving towards providing more solutions within a company is the shift from a transaction-based to a relationship-based business model (Oliva & Kallenberg 2003; Martinez et al 2010). *Transaction-based services* are a one-time transaction, while *relationship-based services* require a more long-term relationship between the service provider and the customer (Malleret 2006). Malleret (2006) claims that a relationship-based service makes the customer more dependent on the service provider, and gives the opportunity for the service provider to gain insight in the customers' activities to be able to understand new needs.

In *table 2*, basic installed base services and professional services are transaction-based services, while maintenance services and operational services are relationship-based services (Oliva & Kallenberg 2003). Oliva and Kallenberg (2003) highlight that when the interactions with the customers changes from transaction-based to relationship-based, the pricing of the services shift. It goes from payment whenever the service is used, to pay a fixed price and

give the responsibility and risk to the provider of the services (Oliva & Kallenberg 2003). In relationship-based marketing which is connected to relationship-based services, the price is not as important for the customer due to a more trusting relationship between the parties (Echeverri & Edvardsson 2002).

3.1.2 THE ROLE OF THE SERVICE PROVIDER

Gebauer et al (2010b) have in a study, consisting of several European manufacturing companies, identified four different service strategies adopted by these companies. The study highlights the requirements from an organizational perspective in order to successfully implement these service strategies. The different strategies explored are: aftersales service providers, customer support service providers, outsourcing partners and development partners. An *after-sales service provider* is offering services after the product is sold to prevent product breakdown. Examples of such services are repair services, product-oriented training and help desks. *Customer support service providers* are offering more advanced services, such as service-level agreements on maintenance. These services are however still offered within the after-sales phase. According to Gebauer et al (2010b, p 201) an *outsourcing partner* is "reconfiguring the responsibilities within the value chain through offering operational services in order to take over the operating risk and full responsibility for the customer's operating processes". The strategic goal of a *development partner* is "co-producing R&D services within the pre-sales phase in order to possess a unique and hard-to-imitate competency position" (Gebauer et al 2010b, p. 201).

In this thesis the two latter strategies, outsourcing partner and development partner, are considered of importance since the case company has identified services that fit into these strategies. These strategies focus on how to support the *customer* rather than the *product* (Mathieu 2001b).

In *table 3,* factors important to consider when adopting the different service strategies discussed by Gebauer et al (2010b) is summarized. The factors concern the following areas: corporate culture, human resource management, and organizational structures. The factors within the areas are: *Service orientation of corporate values, service orientation of employees' behavior, service orientation of personnel recruitment, service orientation of personnel training, service orientation of personnel assessment/compensation, organizational distinctiveness between product and service businesses*, and *proximity to customers of the service organization*.

Table 3. Factors connected to service strategy. An explanation of the factors within each area that are of various importance when adopting the different service strategies (Gebauer et al 2010b).

	FACTORS
Corporate culture	***Service orientation of corporate values*** Service employees understand the marketing opportunities of services Service employees are aware of the financial potential of services Service employees recognize the strategic opportunities of services Service employees consider services as the main part of value creation ***Service orientation of employees' behaviour*** The concerns of the customers are of high importance for the employees The employees actively take the role of trusted advisers for the customer Service employees act as reliable trouble-shooters for customers Service employees enable an outstanding customer performance
Human resource management	***Service orientation of personnel recruitment*** Ability to find employees for service-related activities Service competence and the abilities in face-to-face contacts with customers are decisive criteria for recruitment The readiness for service provision of newly recruited employees is required ***Service orientation of personnel training*** Employees are trained carefully for the interactions with customers Technical competencies are ensured through on-the-job training Behavioural competencies are trained continuously Personnel development includes also communication skills ***Service orientation of personnel assessment/compensation*** The service performance of employees is recorded and evaluated systematically Outstanding service performance is rewarded in the context of compensation, for example, through bonuses Service organization uses specific service-related performance outcomes Service organization uses service-oriented measurement and rewards systems
Organizational structures	***Organizational distinctiveness between product and service businesses*** Service business is separated from the product business Service organization runs with its own profit-and-loss responsibility Product and service business essentially share resources with each other ***Proximity to customers of the service organization*** Within the market organization, it is known who is responsible for services Regarding services, customers can easily find a capable contact person Service employees are highly empowered to react to customer concerns

To succeed with an outsourcing partner strategy a separate service division is needed and the organization must be present at customer locations (Gebauer et al 2010b). Looking at *table 3,* in order to succeed with an outsourcing partner strategy a *high* service orientation is important within all factors, except the factors in the area of human resource management. In this area a medium level of service orientation is most efficient. If wanting to adopt a development partner strategy, other factors are of more importance, and the actions taken to become an outsourcing partner can be counterproductive if trying to adopt a development partner strategy (Gebauer et al 2010b). Within the development partner strategy there is a need for a *high* service orientation within all factors except *Organizational distinctiveness between product and service businesses*, see *table 3* (Gebauer et al 2010b).

3.2 THE SERVITIZATION CONCEPT

Vandermerwe and Rada (1988) coined the term servitization in 1988, which described the trend, undertaken by an increasing number of corporations in almost all industries, to move from offering pure products to also include services in their offers. Martinez et al (2010 pp. 450-451) defined servitization as "the strategic innovation of an organization's capabilities

and processes to shift from selling products to selling an integrated product and service offering that delivers value in use". Servitization has changed the competitive environment and has created new conditions for competition between companies (Vandermerwe & Rada 1988). Today companies are not only competing with firms from the same industry, but with companies across industries. A company is no longer defined as either a manufacturer or a service provider, but often as a mix of both (Mathieu 2001a).

The transition of becoming a service provider do not happen over a day, the journey involves challenges and requires new ways of looking at the business (Brax 2005). It is often necessary to develop or acquire additional capabilities and resources to be able to deliver the new offer, e.g. different technical, communication and management skills (Baines et al 2009; Gremyr et al 2010; Visnjic Kastalli & Van Looy 2013). Servitization can be seen as a transformation process to becoming more service-oriented (Martinez et al 2010). The further a company has reached in this process, the deeper the relationship between the supplier and the customer is (Martinez et al 2010). When the level of servitization is low, the interaction-points with the customers are limited. The product is in focus and possible services are offered in connection to the product. In the other end of the spectrum, the product and the services are co-developed and the offer is more about total solutions, which besides services connected to products also can include stand-alone services (Martinez et al 2010). Oliva and Kallenberg (2003) also state that the last step in developing service capabilities is to take over the end-users operation.

As mentioned in the background, Martinez et al (2010) have identified five categories of challenges when going through the transformation process mentioned above. The two challenges relevant for this thesis are: embedded product-service culture and internal processes and capabilities. For a manufacturing firm it is important to embrace an embedded product-service culture to be able to answer to customer needs, which can be challenging if a strong product-focused internal culture exists (Martinez et al 2010). The second challenge highlights the need for new internal processes and capabilities, to be able to compete on new service markets (Martinez et al 2010). In a study published by Vinnova (2013), different challenges when a company is offering services are mentioned as well. These challenges include; the users role as co-creator of the service, the changes in demand and capacity, the scalability of the service, the quality and customer satisfaction, marketing and protection of services. A solution to these challenges is by some manufacturers considered to be an outsourcing of their service offerings (Visnjic Kastalli & Van Looy 2013). However, this might be a risky approach, since customer relationships are put in the hands of a third party (Visnjic Kastalli & Van Looy 2013).

3.3 RESOURCES AND CAPABILITIES

In order to reach its strategic goals a company must learn how to manage its resources in an efficient way. Looking at a firm's strategy from a resource-based view, it is suggested that a company will gain competitive advantages if it has resources and capabilities that are difficult to imitate (Ellis 2011; Barney 1991; Neu & Brown 2005). Hutt and Speh (2010) have divided a company's strategic resources into three categories; core competences, strategic assets, and

core processes. *Core competences* are the knowledge, technology and tools generally offered to create value for the customer and to fulfill their needs. It is crucial for the company to identify the customers' perception of what the firm's core competences are. This can then be used when promoting the service offering to the customer. *Strategic assets* are more hands-on, and include patents, brand name, and the existing customer base. A company can gain new businesses if they manage to find different ways to use these assets. One real life example is Apple, who went from offering only computers, to adding music players and phones to their business portfolio. *Core processes* are the method and practices used by the company to transform capabilities and resources into something value creating.

According to Collis and Montgomery (2008), competitive advantage can be achieved by having the capability to fulfill the customers' needs better or cheaper than the competitors. The authors also state that intangible resources, such as technology and organizational culture and structure, are the most valuable resources. The organizational structure should clearly demonstrate which employees are responsible for the different activities included in the service offering (Echeverri & Edvardsson 2002).

3.3.1 THE CONNECTION BETWEEN RESOURCES AND CAPABILITIES

There are several definitions of resources and capabilities found in literature. Resources have been defined as the assets that are controlled by a company, both physical and abstract assets (Kowalkowski & Kindström 2012; Amit & Shoemaker 1993). Barney (1991) defines firm resources as the collection of all assets, capabilities, organizational processes, firm attributes, information and knowledge that a company holds. He further classifies resources into physical capital resources, human capital resources and organizational capital resources. *Physical capital resources* include the firm's geographical location and what resources it possesses in terms of equipment, plants and technology. *Human capital resources* are the competence, knowledge and training of the individual employees within the firm. *Organizational capital resources* include the informal relationship between different groups within the organization, but also between the organization and its customers and other stakeholders. The formal reporting structure and planning within the firm are also examples of organizational capital resources. Depending on situation, these resources will either prevent or facilitate the implementation of a desired strategy.

There is a difference between resources and capabilities. Jiang (2014 p. 30) explains the difference as "resources are the assets endowments a firm has accumulated while capabilities are the glue that binds these assets together and enables them to be advantageously deployed". Capabilities are thus connected to how the company's assets are used, and are what integrate different resources. See illustration in *figure 3*. According to Kowalkowski and Kindström (2012), a company striving to offer services need to develop new capabilities, and be able to change the existing ones. These capabilities will help a company perform better and adjust to an ever-changing environment.
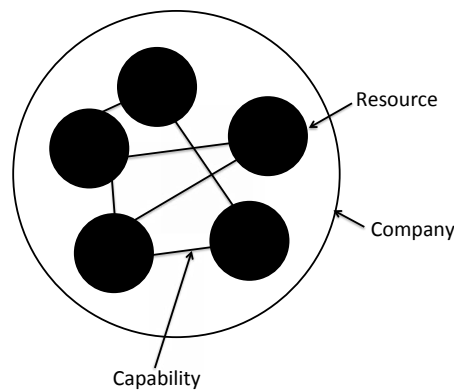
Figure 3. Resources and capabilities. A visualization of the connection between resources and capabilities within a company.

As mentioned before a company can gain competitive advantage by holding non-imitable resources. However, just holding the resources are not enough; it is the combination of different resources that results in core capabilities, which brings the competitive advantage (Neu & Brown 2005). Kindström and Kowalkowski (2014) agree that it is not enough to hold the resources to get a competitive advantage, but that "resources are productive assets a firm can use, while capabilities is what the firm can do" (Kindström & Kowalkowski 2014). Theodosiou et al (2012) claim that capabilities are not imitable, not visibly observable, difficult to quantify and brings organizational assets together.

3.3.2 OPERATIONAL AND DYNAMIC CAPABILITIES

Capabilities are in the literature divided into operational and dynamic capabilities. Helfat and Peteraf (2003 p. 999) state that "an operational capability generally involves performing an activity, such as manufacturing a particular product, using a collection of routines to execute and coordinate the variety of tasks required to perform the activity". Dynamic capabilities can be defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al 1997 p. 516). In a constantly changing environment with increasing demands from stakeholders, dynamic capabilities will generate value by recombining resources and create new strategies (Wiengarten & Pagell 2012). Since services by nature are intangible, produced and delivered at the same time and highly customized, dynamic capabilities seem to be strong assets towards achieving competitive advantage. Dynamic capabilities can be divided into three subgroups: capabilities aiming to sense new opportunities, capabilities aiming to seize new opportunities, and capabilities aiming to reconfigure existing resources. These capabilities will make it possible to make changes according to new opportunities (Teece 2007).

Kowalkowski and Kindström (2012) mean that capabilities can be hard to identify due to their abstract characteristics, but mention four attributes that are important for a capability to create competitive advantage. These attributes are: valuable, rare, imperfectly imitable and organizationally aligned. The authors agree on Teece's (2007) grouping of dynamic capabilities into three subgroups, but name them: identifying capabilities, realizing

capabilities and transforming capabilities. These dynamic capabilities will help a company to structure their internal resources and operational capabilities to cope with the changing environment and to sustain the competitive advantage (Kowalkowski & Kindström 2012).

Identifying capabilities – involve market sensing and the understanding of internal and external networks, as well as deep knowledge about customers and their needs. The source for information comes from the company's entire network and can be e.g. customers, pure service-organizations, distributors and system-integrators. To be able to identify new opportunities within the service business, roles, resources and processes must be specifically adapted to service offerings. The roles and the responsibility for interactions with the customers, partners and suppliers must be clearly defined.

Realizing capabilities – aim for an understanding of the customers' organization and processes by actively interacting with the customers. These capabilities increase the interaction and contact-points with the customers. A realizing capability includes understanding, visualizing and suggest value adding offers to the customer. Realizing capabilities also include value-based pricing models for services, and the ability to understand and communicate the value created by the service.

Transforming capabilities – aim to change the existing resources within an organization according to the environment, and to balance the organizational structure based on both products and services. These capabilities include having a separate service division, and new partners in form of outside service organizations. It is also a need for incentive mechanisms adapted to the sales of services.

The classifications of both resources and capabilities used in this thesis are shown in *figure 4.*
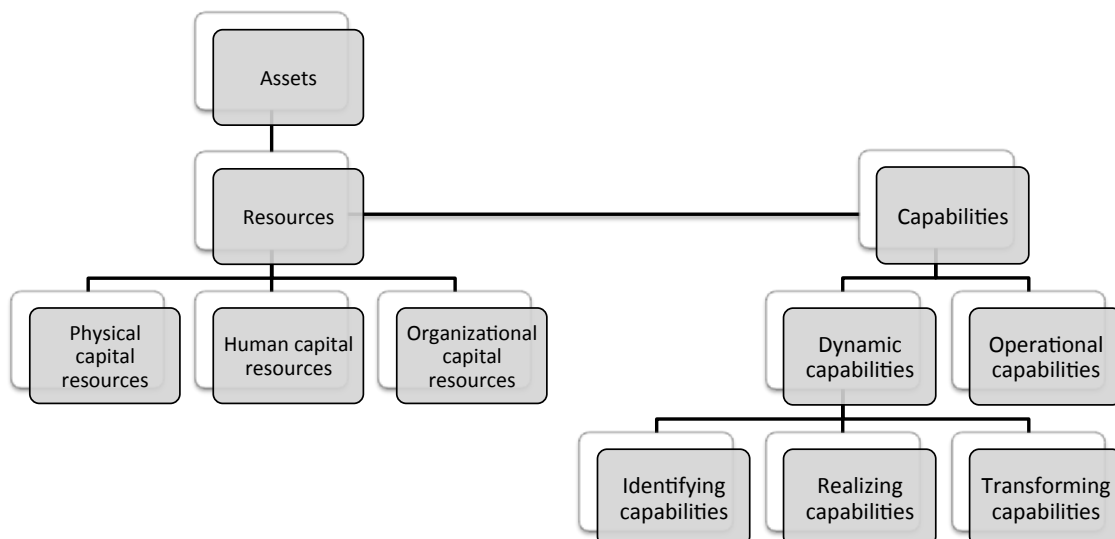

Figure 4. The classification of resources and capabilities (Barney 1991; Helfat & Peteraf 2003; Kowalkowski & Kindström 2012).

3.3.3 Important Capabilities Connected to Services

Firms aiming to provide integrated solutions and not product or services in isolation have to develop certain new capabilities. Brady et al (2005) have identified an important category of capabilities that these firms must adopt: systems integration capabilities. *Systems integration capabilities* are the ability to integrate, and also design, systems consisting of hardware, software and services coming from the own company, external partners and customers. This can be challenging since companies must accept the fact that to be able to offer customer-centric solutions, they sometimes have to involve competitors' products in their offer, at the expense of their own products (Brady et al 2005).

In the study by Vinnova (2013) six capabilities that are crucial when offering services are presented: the capability to identify user needs and to be able to communicate this capability, the capability to show the value created in the service process for the customer, the capability to break and re-pack resources, the capability to cooperate with other parties in the network, the capability to increase scalability for the services, and the capability for continuous improvements in the organization to be able to adapt the organization to changing demands.

Kindström and Kowalkowski (2009) have developed a framework for the development of offerings, where they mention similar capabilities as the study by Vinnova (2013). The framework includes market sensing, development, sales and delivery of services. Since the scope of this study mainly aims at identifying resources and capabilities in the sale and delivery of a service, the latter two are of most interest. Customers are involved in all stages of this framework, and their involvement is an import aspect of the development and delivery of services. The authors state that an important capability to have in the sales stage is the ability to show the value of the service and to make sales personnel educated in communicating this value (Kindström & Kowalkowski 2009). One of the companies in the research of Kindström and Kowalkowski (2009) used "service champions" as a tool to increase the knowledge in the organization, which helped local organizations to understand the value created. It is important that front-line employees who have contact with customers possess knowledge about customers' operations. In Storbacka's (2011) solution business model framework he identifies important capabilities and management practices when striving to offer solutions to customers, which includes phases similar to Kindström and Kowalkowski's (2009) framework. Within the sales phase, Storbacka has identified three major categories of capabilities. These are: value quantification, solution configuration and infrastructure support. Storbacka (2011, p. 705) states "the key issues in this phase are to quantify the value of the solution with the customer (and price the solution accordingly) and to configure solutions in such a way that they are deliverable (which requires solution configuration tools)".

In the delivery stage, it is important to show the value created by the service to customers (Kindström & Kowalkowski 2009). Some companies use meetings with customers during the delivery-phase to create an understanding for the value created. When offering services, the delivery time is often long, and it is therefore important to build a trusting and committed

relationship with the customer. It is important to be able to sense opportunities in the delivery stage, since it often is during this stage and together with the customer new service innovation appears (Kindström & Kowalkowski 2009). Kindström and Kowalkowski (2009) also claim that a new infrastructure is needed when delivering services, which often is resource-intensive compared to delivering products. The authors also claim that it is important that the right competences are present locally to be able to deliver the service, which might be achieved by using a third part to help with the delivery of the services. According to Storbacka (2011) important capability categories within the deliver stage are: value verification, solution delivery and human resource management. Storbacka (2011, p. 706) claims that in this phase "Important activities are value verification for both the provider and the customer, and integration with the customer's process in order to support the creation of value-in-use". See *table 4* for important capabilities within the different phases.

Table 4. Important capabilities when selling and delivering solutions (Extract from Storbacka 2011).

	CAPABILITIES
Sell solution	***Value quantification*** Customer specific value proposition are linked to customers' business concerns. The dialog with the customers' decision makers covers critical business issues and the financial value associated with them. The same tools for quantifying customer value are used across the firm. ***Solution configuration*** There are systematic value based pricing discipline for solutions. ***Infrastructure support*** A CRM system supporting solution sale is in active use across the organization. Solution delivery is managed in the ERP (Enterprise Resource Planning) system.
Deliver solution	***Value verification*** The value created to the customer is regularly verified. References of solution delivery projects are shared through a case repository. New solutions (created for specific customers) are documented in such a way that they can be sold to other customers. ***Solution delivery*** Network partners' roles are clearly defined in contract models and templates. The interface and communication is clearly defined. Solution are developed in order to support the customers' long-term value creation. ***Human resources management*** There are defined skill profiles for all the roles that relate to solution sales. Competencies needed in solution business have been identified. Staff are provided with training in consultative and value selling.

As mentioned before, a development partner strategy includes an interesting partnership with intended service customers (Gebauer et al 2010b). When a service is developed in cooperation with the customer, the customer is considered as a resource, since they will provide the company with knowledge and information about their needs (Echeverri & Edvardsson 2002). Capabilities identified by Gebauer et al (2008) for a firm operating as a development partner are; the co-producing with customers, understanding of customer processes, a learning relationship that evolves over time, and the recruitment of engineers (both technical graduates and managing engineers from for example consultancy firms) with excellent behavioral competences. The authors also enhance trainee positions as a useful way to be able to provide the engineers with the right technical skills from the beginning. A trainee program should teach new employees how to develop the right communication skills and learn how to keep a trusting relationship with customers, which are important capabilities when offering services (Gebauer et al 2008). A summary of important capabilities and resources mentioned in this chapter is shown in *figure 5*.

Resources and capabilities

References	Clearly demonstrate which employees who are responsible for service activities	Infrastructure support; Roles, resources and processes must be adopted to service offerings	Increased contact-points with customers	Separate service unit	New positions and new service partners	New incentive mechanism adaptive to services	Identify user needs and be able to communicate this capability; understanding of customer processes	Show value created in the service process for the customer	Break and re-pack resources	Increase scalability for the services	Customer involvement	Value-based pricing models	Sense new opportunities in the delivery stage of services	Recruitment of engineers
Echeverri & Edvardsson (2002)	×	×												
Kowalkowski & Kindström (2012)		×	×	×	×			×						
Teece et al (1997)		×							×					
Vinnova (2012)				×	×		×	×		×				
Kindström & Kowalkowski (2009)		×	×		×		×	×		×	×	×		
Storbacka (2011)		×		×		×	×	×		×	×			
Gebauer et al (2010b)	×				×		×			×	×			
Gebauer et al (2008)										×				×

Figure 5. A summary of important resources and capabilities found in literature.

.

23

3.4 THE COMPLEXITY OF THE HEALTHCARE SECTOR

Glouberman and Mintzberg (2001) have published a research describing the complexity of the healthcare sector and the organizational complications that exists within this sector. The healthcare sector is known for being difficult to manage, and the authors tried to find an explanation to this by introducing a framework illustrating a healthcare organization as consisting of four separate parts. The authors believe that by raising an awareness of this, the separate parts can be more easily integrated and managed. The four different parts, or "worlds" as Glouberman and Mintzberg (2001) call them, are named the following: cure, care, control and community. The worlds consist of different professions where management is operating in different directions (Glouberman & Mintzberg 2001). The communication between the four worlds are often poor, and different attitudes hampers cooperation. Each world, as explained by Glouberman and Mintzberg (2001), will be presented below, see also *figure 6*.
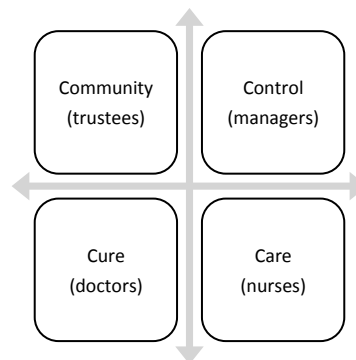
Figure 6. The four worlds within the healthcare organization.

Cure – This world consists of the doctors working at hospitals and clinics. They consider themselves to work for the patients and not the hospital, e.g. a doctor work *in* a hospital, but not necessary *for* the hospital. The time of interaction between the doctors and the patients is often short, but the administration activities connected to each patient are considered time consuming.

Care – Care is what happens after the doctors have "cured" the patients and this world includes the nurses. They meet the patients under longer period of time, and provide more continuous care for the patients. The nurses are highly committed to their workplace and its operations. There is a high distinctiveness made between doctors and nurses, and they are often seen as two separate work units within the hospital. The nurses are often responsible for coordinating the complex workflows in the hospital.

Control – This world includes the managers responsible for the hospital or clinic and who are on top in the administrative hierarchy. They have the formal responsibility and control the resources, such as hospital beds, budget, and jobs. They can indirectly affect the medical process by how they assign resources throughout the organization.

Community – The fourth world is the community, which can be considered to be the board of directors at the hospital. It consists of various players in society, such as hospital owners, political parties and the government. These players believe they can affect how the hospital is run, but in reality few of them will actually have an impact on the daily operations. The strongest influence from community is budget decisions concerning the healthcare sector.

A trend that can be seen within the healthcare sector is that the patient is seen as customer and just not a care receiver (Capire/HCM 2013). This makes the patients more involved in the care, and can be seen as co-producer of the services healthcare provides. The patient can be seen as the "raw material" in the care process (Gustavsson 2013). The changed view of the patient in the care process brings new challenges when improving healthcare and the improvements need to take both the healthcare professionals and the patients into account. When the patient is seen as a customer, it also creates a need for equal power between the patient and the professional (Gustavsson 2013). It is also seen that this type interaction between the patient and the provider of healthcare leads to better use of resources and cost-savings, but an evaluation of the initiatives is often lacking (Capire/HCM 2013).

Another trend that has been identified by several sources is that healthcare organizations consolidate to bigger entities. MacDonald (2013) supports this statement, and claims that this consolidation might lead to an increased demand in services like infrastructure of care coordination and analytics. Becker et al (2013) also claim that more and more hospitals consider cooperation and mergers with larger partners. Also Valentine (2014) claims that the trend of consolidation of healthcare providers will continue in 2014, and that there will be more mergers and acquisitions. The same trend can also be seen in Sweden, where Sahlgrenska University Hospital has become a consolidation of several hospitals in Gothenburg, and the consolidation of Lund University Hospital, Malmö Hospital and Helsingborg Hospital to Skåne University Hospital.

Punke (2013) claims that the number of hospitals outsourcing certain activities is increasing. Traditional areas to outsource are mostly non-core activities such as laundry services, food service and supply chain issues. New areas that can be seen growing in the outsourcing from hospitals is for example IT, data collection and analysis; and care services connected to patient treatment such as emergency departments. The reason for outsourcing is effectiveness and expertise by the vendors of the services (Punke 2013). However, Punke (2013) claims that there are some risks that the hospitals will begin to have the services in-house again. The trend towards consolidation among hospitals might lead to that the hospital systems become so big that the services can be offered in-house again, since they can do it themselves as efficient as the vendors (Punke 2013).

Nicholson et al (2004) have identified a common trend to outsource non-core activities to an external provider, for example the inventory management at hospitals. A positive effect of this is that personnel and resources could be used in other areas within the hospital, instead of inventory management. Nicholson et al (2004) states that a capability that is very important if achieving these benefits is a well functioning IT-system as support. The authors also highlight

that there are difficulties in finding data on distribution of basic items within the hospital to use. Another trend described by Chandra (2008) is to minimize the diversity of providers to healthcare. The author claims that the goal should be to purchase most of product/services from the same vendor. This goal can be seen as a driver for hospitals to invest in supply chain management. Another driver is that a more efficient supply chain frees time for employees within the healthcare organization, which allow them to focus on the core activity, which is to treat patients.

Another trend in healthcare management is value-based healthcare. The focus in value-based healthcare is to deliver care with high quality, but in the most cost-efficient way (Clawson et al 2014). Porter and Teisman (2004) state that earlier the focus within the healthcare sector was to reduce and avoid cost. The focus is now shifting towards the value created within the hospital. The authors claim that the aim with reducing costs have earlier focused on the wrong parts of the healthcare, mostly health plans and employees. Further, they state that the goal should be to increase value, which in this case can be described as the quality in healthcare per dollar expended. Having the right strategies and structures are also important and having special knowledge within hospitals create competition, which is good for the value creation in the whole healthcare sector (Porter & Teisman 2004). Porter and Teisman (2004) also state that the consolidations of hospitals to be able to offer broader services to the patients can therefore hamper the increased value creation, since the authors questions the increase in quality with these kinds of actions. Clawson et al (2014) highlights that all players within the healthcare sector, both care providers and product providers, need to be able to show that their offerings increase the value and outcome. The authors also claim that the healthcare network will be more integrated, and that first-movers in this new market place will be rewarded with for example the best partnerships.

3.4.1 Waste Management within the Healthcare Sector

To be able to focus more on the creation of value for the patients, hospitals are outsourcing non-core activities. Waste management is such a non-core activity, which preferable can be outsourced. Waste management can be divided into different stages: segregation, collection, transport, storage, recycling, and final disposal (Tsakona et al 2007). The biggest problem identified by Tsakona et al (2007) is not enough staff training of how to handle medical waste in the segregation stage. A study by Lee at al (2004) shows that hospitals can decrease their cost for waste management by improving the classification method in the segregation stage for the waste produced in hospitals.

In a hospital in Gothenburg, there are a lot of parties involved in waste management (Saarela 2012). Property owners are responsible for the transportation of waste, and the director of the hospital is responsible for entering contracts with the property owner for waste collection. The operation managers are responsible for the staff at their operation, and that they know how to handle the waste. The different departments are responsible to sort the waste correctly. Another party is responsible for the transportations of waste from the hospital departments to the collection point/waste center. According to the study by Saarela (2012) there are also

different fractions of waste, and at this hospital there are 33 fractions present divided into five different areas. These areas can be removed by different waste removal companies.

3.4.2 EDUCATION AND TRAINING WITHIN THE HEALTHCARE SECTOR

Education and training towards the healthcare sector is another service that can be offered by an external actor. Ward and Wood (2000) have identified a number of barriers to overcome in order to get the most out of education and training provided to hospital staff. This was done through a study of the education and training needed in the care of cancer patients at a hospital in Britain. The result revealed barriers connected to *time*, *accessibility*, *financial issues*, *staff motivation* and *marketing and advertising*, see *table 5*. The authors concluded that it is crucial to overcome these identified barriers in order to improve the quality of the training and thus increase the knowledge among the staff. The barriers must be addressed already in the planning and developing stages of the education and training programs.

Table 5. Barriers and factors connected to education and training.

Time	Difficult to find the time to get enough audience for the training sessions. Could be solved by having one worker from different areas attend the training and then serve as a resource for the rest of the staff within this particular area.
Accessibility	The training must be accessible, and brought closer to where the staff is located. Must be offered locally and preferable at the clinics where the staff are. In the study conducted by Ward and Wood (2000) the staff were requesting more written education, such as updated folders, and e-learning through computer packages.
Financial issues	The courses provided are sometimes too expensive and cannot always be afforded, management do not considered it being worth the money.
Staff motivation	The education must be customized to what type of audience it is aiming at. Not all areas are of relevance for all staff. The motivation among staff increased if the person teaching had practical experience of the area in focus, and also if accreditation was given and contributed to personal and professional development.
Marketing and advertising	Important to clearly explain which type of training will be given and what the benefits from attending the course would give.

The study can be considered to be of relevance for not only those involved in the care of cancer patients, but for training of hospital staff in general (Ward & Wood 2000), and therefore also relevant for this thesis. It can serve as guidance when identifying the capabilities needed to offer this type of service.

3.5 PROPOSED CONCEPTUAL FRAMEWORK

Based on the studied literature a conceptual framework has emerged, see *figure 7*. By combining the two main areas of interest: *service classifications* and *resources and capabilities*, the aim is to be able to map the studied service types identified by the company and find similarities, clusters and connections between the required resources and capabilities. The framework will be developed based on the empirical study and more detailed resources and capabilities connected to the environment the case company exists in will be added. By doing this, the framework will clearly visualize capabilities and resources required within

each service type. The conceptual framework could also serve as a decision support matrix for strategic choices when entering new service markets in the future.

The foundation of the conceptual framework is the service classification product-oriented services and process-oriented services (Kowalkowski et al 2011; Oliva & Kallenberg 2003; Mathieu 2001b). This is further divided into four different kinds of service offerings: basic installed base services, maintenance services, professional services, and operational services, as stated by Oliva and Kallenberg (2003), see *table 2* in chapter *3.1.1 Classifications of Services*. These categorizations seems relevant for this study since it is possible to map the studied service types within these classifications.

In addition to the service classifications, resources and capabilities are listed on the vertical axis. There is a distinction made between resources and capabilities, in accordance to what was stated by Jiang (2014). Both the resources and capabilities are further divided into subgroups based on the classifications made by Barney (1991) and Kowalkowski and Kindström (2012), see *figure 4* in chapter *3.3.2 Operational and Dynamic Capabilities*.

| | | | PRODUCT-ORIENTED SERVICES | | PROCESS-ORIENTED SERVICES | |
			Basic IB Services	Maintenance services	Professional services	Operational services
RESOURCES		*Physical capital resources*				
		Human capital resources				
		Organizational capital resources				
CAPABILITIES		**Operational capabilities**				
	Dynamic capabilities	*Identifying capabilities*				
		Realizing capabilities				
		Transforming capabilities				

Figure 7. Conceptual framework. Influenced by Kowalkowski et al (2011); Oliva and Kallenberg (2003); Mathieu (2001b); Jiang (2014); Barney (1991); Kowalkowski and Kindström (2012).

4 EMPIRICAL FINDINGS

In this chapter the empirical findings are presented. The chapter begins with a short introduction of the case company and its environment, which will have an impact on how services are offered. This information is collected from internal and external interviews as well as documentation. Thereafter empirical findings within each service type are presented. Information on each service type is based on interviews, both internal and external, and from a benchmarking using company websites.

4.1 THE CASE COMPANY AND ITS ENVIRONMENT

According to one of the external interviewees, the healthcare sector can be considered to be a relatively immature market, in the sense that it is a typical "profession-focused" sector. Other sectors with the same characteristics are universities (researchers) and legal professionals. What characterize these sectors and what they have in common is, according to the interviewee, that they have a rather ambivalent relationship to authorities and management. The professionals often have a high degree of autonomy; they set the rules for how to work. The interviewee mentioned that the professionals do not appreciate external persons judging their way of working, and subjects concerning a specific area of expertise should only be discussed by people with the knowledge and qualifications required.

The external interviewee also stated that the healthcare sector is restricted by ethical rules regarding how products and services should be offered. Historically the relationship between doctors and the pharmaceutical industry has been questioned and, according to the interviewee, the benefits given to doctors by pharmaceutical firms were almost considered as bribery. Since then several regulations have been installed, and the interviewee said it is important to be aware of what is allowed to offer in terms of services towards the healthcare sector, in order to maintain credibility. The interviewee suggested that service providers have to be clear on what the purpose with the services is; a way of entering a new market, or a strategy to sell more products. Whatever chosen, it requires clear communication strategies to be convincing.

According to one of the internal interviewees, the case company is now aiming at a more value-based selling approach, which means to highlight the value created for the customer in the selling process. One of the external interviewees suggested that the focus in the promotion of the services should be on what the core knowledge in the case company is, and the service offerings should preferably be connected to this knowledge somehow. According to the case company, customers are requesting closer relationships, and prefer the same salesperson to be responsible for all sales towards the same customer. A need for on-site support has also been identified as a customer request.

4.2 PROCESS ANALYSIS AND PROCESS IMPROVEMENTS

In the context of this thesis, process analysis is a service offered to help improve a particular process at a hospital or a clinic. The processes in focus in this thesis are processes connected to the operating room and the flow of patients that are scheduled for surgery. The data collection includes general process improvements as well, since they can be considered to require similar approaches. The implementation of improvements is closely linked to this subject and therefore integrated in this chapter. In the context of this thesis, implementation refers to a service where support when introducing new tools and process improvements is offered towards healthcare providers.

4.2.1 INTERNAL VIEW ON PROCESS ANALYSIS AND PROCESS IMPROVEMENT

One of the internal interviewees said that it is important to have an understanding of the existing processes when offering process analysis and, in this case, understand how an operating room is organized and run. According to a description given by the interviewee, an operating room at a hospital is run by the nurses, which often stay in the same operating room for a whole day. Which surgeons that are present vary, depending on what type of surgery that is scheduled. The nurses and the surgeons have different managers they report to, and in addition there is a department manager responsible for the operation rooms. The nurses are responsible for the tools handed to the surgeon, and they are the ones responsible for preparing the operating room. Improved efficiency by introducing standardized surgery tools will therefore, according to the interviewee, be beneficial for the nurses, since the process to prepare the operating room will be more efficient. The case company is thus maintaining close communications with the nurses, in order to understand how to improve their work and achieve more efficient preparations. Standardized processes are according to the interviewee strived for, in order to achieve more efficient processes. Another important factor is patient and staff satisfaction, in order to keep a low staff turnover.

The case company has identified an issue highlighted by customers, that employees at hospitals sometimes lack the right training to analyze internal processes. Therefore support within this area is needed. One of the interviewees highlighted one important aspect when offering process analysis as an external provider, and that is to know how to communicate with the customer. Consultants have to find different ways and the right level of detail when addressing management, nurses, and surgeons. According to the case company, the most successful projects are those when top management has been involved. Top management can provide access to necessary and important data, such as information about number of patients in the process and financial numbers, needed in the project. One of the interviewees said that if top management is committed to the project, the commitment among the employees will increase as well. Having a committed workforce at customer site is according to the interviewee a prerequisite to be able to successfully implement process improvements.

Right now there is an on-going pilot project at a hospital in Europe conducted by the case company in collaboration with a consultancy firm. The purpose with the project is to improve a process by implementing lean tools and principles. Both parties consider the collaboration a

great initiative, since the case company provides the customer base, and the consultancy firm knowledge of the lean concept and implementation. A representative from the consultancy firm stated that the challenge is to give a consistent message to the client and appear as a united front. This requires close communications between the companies.

According to one of the interviewees, change management is an issue most hospitals have to deal with today. The staff are considered to have a silo view, and since a healthcare organization has a complex organizational structure, changes can be difficult to establish. The interviewee mentioned that when making process improvements in hospitals, the time saved are not always used in the best way possible. There is therefore a customer need to learn what to do with this time. The interviewee sees this as a business opportunity for the case company, since consultants can provide help in streamlining the processes. In order to understand how to use the freed time, the consultants could spend a day with the nurses, to be able to understand the whole patient flow, and to detect where in the process the time could be used.

4.2.2 EXTERNAL VIEW ON PROCESS ANALYSIS AND PROCESS IMPROVEMENT

One of the external interviewees stated that support from consultants are often accepted and appreciated at management level in a hospital. At operating level on the other hand, help from consultants are, according to the interviewee, not as highly appreciated. Top management are responsible for the decision to involve consultants, but as a consultancy firm it is important to find an appropriate approach towards the employees at operating levels as well. The interviewee said that it is these people the consultants have to involve and get on board. Improvement projects within the healthcare sector require involvement by management, nurses and doctors on site.

When offering different services it is, according to one of the interviewees, of great importance to know whom at the customer's site is responsible for the decision to purchase the service. Requested improvement projects are usually initiated by top management. It is considered important to have their support to be able to proceed with such projects. One of the interviewees mentioned the importance of the ability to show top management the return on investment of the improvement project. The interviewee said that *"it always come down to the cost of the project, and you have to be able to show that the invested money when doing improvements results in decreased costs for the hospital"*. For this, financial data from the customer is needed to be able to show cost savings.

One interviewee stated that management consultants are often considered to be quite expensive and hospitals sometimes prefer to hire students for improvement projects. The interviewee said *"students have new and innovative ways of thinking, while management consultants are often trained to have a particular mind-set and possess certain methods and tools, which might hamper innovative solutions"*. The healthcare sector further relies on the academic world to a great extent, and academic titles are highly valued. Several of the interviewees also mentioned that the healthcare sector is evidence-based, which means it requires evidence in order to trust certain claims. One interviewee gave an example that to

successfully accept an implementation of lean, the employees at a hospital want evidence of previous successful lean initiatives. However, according to another interviewee, critical voices have been raised towards lean used in healthcare and the fact that patients are considered to be profitable or unprofitable. The interviewee stated that the criticism might be a sign of a decline in popularity of the lean concept, or a misunderstanding of the philosophy. According to the interviewee, Six Sigma is another philosophy used to improve processes in healthcare organizations. However, the interviewee said *"to implement Six Sigma requires large investments, since certified Six Sigma Black-belts are needed to be able to fully adopt the tools and methods"*. The interviewee further stated that which concepts and tools that are used to improve processes should not be the main focus. The important aspect is the goal with the improvement, and what the desired outcome is; how you do it is of less importance. It is therefore regarded by the interviewee as unwise to put a label on what you do based on methods and tools. The focus could for example be on offering continuous improvement instead, since there will always be a demand for improvement.

According to a specialist on lean implementations at hospitals, improvements projects at hospitals often fail because of the absence of a visible leadership at the operating level. The interviewee said that it is difficult to control doctors and surgeons since they have high autonomy and a strong internal culture. Symbolic incentives, such as money and medals, were possible solutions mentioned to lower the autonomy. The interviewee said that sufficient knowledge about Queuing Theory and how to identify and handle bottlenecks are missing among doctors and nurses as well. The interviewee stated that process analysis and planning should be conducted by persons who have studied the subjects. Public hospitals are run by politicians, and top management must please the politicians who are elected by the people. There is therefore a risk that the decision makers, i.e. the politicians, are lacking relevant knowledge of process analysis and planning to make the best decisions regarding this.

According to the work process described by one of the interviewees, a process analysis should start with a problem definition, followed by a data collection to be able to map the concerned process through interviews and analyzing data. The data must represent different types of information coming from different sources. The different information can for example include the patients' experience of the services in the studied process, information about number of patients in the process and how accessible the process is. The next steps are to decide performance objectives and find a solution. After the report is created the implementation phase is initiated, and the whole process can be considered to take approximately six months. The work process described by the interviewee is illustrated in *figure 8*.

Figure 8. Suggested work process for process analysis and process improvements.

In the implementation phase, another interviewee claimed that it is important to highlight the transfer of knowledge between a service provider and the customer. Knowledge transfer

requires the ability to adapt approaches used in other industries to the healthcare sector. To achieve knowledge transfer, a mix of academic and medical expertise should be sought for, if the knowledge transfer is concerning academic tools to be used in a medical environment. Knowledge transfer is according to the interviewee an active term, and the generation of knowledge must be present locally, where the knowledge is supposed to be used. This can also be called organizational learning. The interviewee suggested that to provide support with implementation, or organizational learning, the involvement of hospital staff should start already in the solution and improvement stage. Another interviewee also mentioned that it is important that hospital staff are involved in the whole process, from problem definition to implementation, and that external actors are there to provide support.

4.2.3 BENCHMARKING

In *figure 9* seven different consultancy firms that are offering process analysis and improvement services to healthcare organizations is presented. The selection of companies within was chosen with the purpose to illustrate a mix of large and important actors within their field, and smaller actors present on a particular market. The size of the companies is indicated in the table. A short explanation of the type of services offered, important strengths that the companies highlight, employee background and any partners of the companies are presented.

Company	Sirona group	Siemens Healthcare Consulting	Accenture	Canea Consulting Group	Helseplan	Navigant	Delta healthcare consulting group
Size	Small	Medium	Large	Medium	Small	Large	Small
Area	Sweden	Global	Global	Sweden	Nordic	Global	USA
Type of services	Health management, purchasing management, quality of care, management consulting.	Strategy and sustainability, clinical processes, infrastructure, implementation support.	Optimize performance, cut costs, digitalisation of healthcare, efficiency, management consulting, healthcare outsourcing, healthcare consulting, education and IT.	Process analysis, organization management, benchmarking, change management, education, e-health.	Strategy consulting, management consulting and control, patient safety and quality, work flows and processes, production control and improvement, managed care/payer strategies, mergers and acquisitions, cost restructuring/performance improvement.	Physician/hospital alignment, clinical integration, physician-practice management/performance optimization, hospitalist optimization, patient flow management, process improvement, cost accounting, case management.	Staff optimization, schedule
Strengths	Employees extensive experience in healthcare and theory within healthcare economics and methods. Works in close cooperation with customers. Believes in integrated care between multiple actors. Uses a combination of quantitative and qualitative data for analysis.	High international experience in combination with strong local presence. Experiences in health care systems, consultancy and investment banking. Independent, unbiased consulting, do not offer products or systems.	Long experience (30 years). The capabilities are unique since they are holistic. Multiple perspective, always gains a great understanding of customer needs and goals. World-class technology including process analysis and organization efficiency.	Consulting services in close collaboration with the customer. Succeed because employee involvement. Creates commitment and a sense of ownership. Provides services methods and tools especially developed for healthcare.	Teams of people with different competences and experiences which creates most value for the customer. Uses academic based solutions.	Holistic solutions, not just "piecemeal" approach to our industry's challenges. Customized solutions.	Process improvement (patient flow) facilitated with own IT system. Progressive, change-driven philosophy. Think outside the box. Highly customized solutions, every customer is unique.
Employee background	Overall experiences within healthcare.	50% of the consultants have a background within healthcare. Consultants with multiple degrees (MD, PhD). The majority of the consultants have previously worked as physicians, nurses, consultants, controllers, management experts, and health economists in clinics.		Employees have a background and experience from the different service areas. Possesses analytical competence, are able to cooperate and motivate, and are pedagogical. High academic degree, and quality certified.	Previous hospital/operations managers, medical management and controllers, both from consulting business and other businesses.	Leaders and operators (background from both healthcare and other industries), Physicians (leaders and practicing specialists) Clinicians (nurse specialists, nurse executives, nurses, radiologists, administrators, change agents)	Experience in leading process improvement efforts in several areas.
Partners (if applicable)	Works with lawyers and accountants to optimize procurements.					Network of nurses and specialized doctors that are hired if necessary. Collaboration with Stockholm School of Economics for an academic perspective.	

Figure 9. Benchmarking Process Analysis and Process Improvements. A presentation of the benchmarking of seven consultancy firms. When no information could be found, these cells have been left blank. The size of the firms are based on the number of employees: Small (0-19), Medium (20-99), Large (99-).

The table shows that all the companies are offering a wide range of consultancy services, from strategy consulting to IT solutions, in addition to process analysis consulting and process improvements. All companies mention customized solutions and the understanding of customer processes as important strengths. A few of the companies mention cross-functional teams as a strength and the ability to provide holistic solutions. A holistic solution is an end-to-end approach, which includes all aspects, from assessment to strategy and implementation. The companies highlight that their employees have backgrounds within the healthcare industry, as well as backgrounds from other industries. A few of the companies also state that they have employees with a medical education. Two of the smaller companies mention partnerships with lawyers, accountants, nurses, doctors and universities.

4.2.4 RESOURCES AND CAPABILITIES IN A CONSULTANCY FIRM

One of the external interviews was conducted with an employee at an international lean consultancy firm. The consultancy firm offers improvement support within various industries, where the healthcare industry is one. According to the interviewee, a majority of the employees at the consultancy firm have a background of working at Toyota and with lean. The firm is offering deployment of Toyota practices, tools and methods within various industries, including healthcare. The challenge when transferring tools and methods from the manufacturing industry to the healthcare sector is to manage the complexity in this particular field. A hospital involves several streams and patient flows, and a number of patients are coming and leaving every day. In for example the car industry, there is mainly one line and the stream of cars is easy to distinguish. Another challenge mentioned by the interviewee, is the fact that the healthcare industry involves people with various backgrounds and with different priorities.

In order to address these challenges different resources and capabilities are needed. The interviewee mentioned that one important resource is employees who do not have a history of belonging to any of the groups within the healthcare sector. They provide an external view on how to improve the daily operations at the hospital, and do not favor any of the professions present in the hospital. Important capabilities are according to the interviewee to be convincing and to have the right communication skills. As a consultant it is important not to be arrogant and to be able to speak the hospital language, to show that even though you are not from their business, you know their business. The interviewee stated that *patient* and *care* are two words that need to be present in the communication with the customer.

The interviewee said that the consultants from the firm often try to teach the staff the importance of respect and teamwork, which are not always in focus at hospitals. The consultants have a background of managing production areas and have an understanding of different flows and can detect problems in the value streams. According to interviewee the consultancy firm is often hired because their employees lack medical background, and therefore possess an outsider's view of the processes.

The interviewee described a typical improvement project conducted by the firm and highlighted the importance to start by defining the problem, and to understand what the customer want to achieve by implementing lean. The improvement project often starts with a pilot project with clear objectives. Thereafter, people are assigned to a project group, consisting of both consultants and employees, where knowledge is transferred from the consultants to the customer. The optimal goal is to make the employees run the project at the hospital. Consultants are expensive, and the hospital wants the internal team to understand and be autonomous as soon as possible. The pilot project begins with analyzing the problem and gather relevant data to understand the problem. The consultants and employees define an ideal solution together, and thereafter a plan is created to implement the solution and reach the desired state. According to the interviewee, one or two consultants are usually involved in a pilot project, which take approximately 3-4 months. The customer will receive support even after the pilot project is determined.

The interviewee said that to be able to start a project, top management at customer site must request the service, since they are the ones with the financial responsibility. The challenge is to keep them involved and committed and to make them present in the daily operations at the hospital. The interviewee suggested that this could be achieved by first setting up a structure of a management reporting system, and to involve them in the daily operations to understand what is going on. Other key people are according to the interviewee middle management, and at a hospital the head nurse is an important player. The interviewee believed that it is important to create an understanding among the staff that the consultants are not there to judge them, but to help them.

4.2.5 Examples of Improvement Projects Conducted by Consultancy Firms

Below are examples of process improvements done by three different consultancy firms presented. The aim of the projects, and which approaches that were used in each case are explained.

4.2.5.1 Patient safety improvement at a NHS hospital by KM&T

A NHS hospital wanted to improve patient safety by "reducing harm" in the form of unnecessary investigations or tests. To assist in this, the hospital hired KM&T. The consultancy firm began with establishing an internal project team to track all activities within the department under investigation. The team was trained to use different methods aimed to engage the hospital staff and increase their motivation. The team of consultants also completed a stakeholder analysis, identified the voice of the customer, conducted value stream mapping and data analysis of the current situation. At customer site the team of consultants introduced project teams, and each project team had a Project Champion, a Project Leader and members from the area in question. All members were from different levels in the organization. The PDCA-cycle was used to support improvement.

4.2.5.2 Improvement project at a hospital by McKinsey & Company

A regional health system in Europe needed help to integrate services provided to patients after and during hospital discharge, to accelerate the discharge process. The consultancy firm was

therefore hired to improve the discharge process. The project team from the company combined literature search with external interviews of experts to identify best practices regarding hospital discharge available on the market. Interviews with stakeholders, including doctors, nurses and social workers were also held. When seeking a solution the team worked in close collaboration with these stakeholders.

4.2.5.3 IMPROVEMENT PROJECT AT A HOSPITAL BY CANEA CONSULTING GROUP

A research and healthcare organization wanted to achieve more structured and efficient internal routines. They hired Canea Consulting Group to assist in this project. An important capability when conducting the improvement project at customer site was the consultants' thorough understanding of the customer's process. The customer appreciated the fact that the consultants managed to create a complete solution including both strategic and operational practices, combined with clever IT-solutions. The project included education and training in the methods as well, which was highly appreciated by the staff.

4.3 PLANNING TOOLS

In the context of this thesis, planning tools refers to a service offered to facilitate and optimize surgery planning. The planning involves both number of surgeries performed during a certain period of time, and the scheduling of staff and equipment. The empirical study of this service includes methods and tools, as well as IT-tools to support planning.

4.3.1 INTERNAL VIEW ON PLANNING TOOLS

The case company has co-developed a planning tool locally in one country that is connected to the planning in hospitals. This is an application that provides help to organize shifts for nurses within the operating room. The application can be used on both computers and mobile phones by the nurses, and is managed by the operating room manager. This application helps the manager to handle information easier, since it is always updated unlike the boards in the hospitals that are normally used to plan the shifts. The application is mainly supposed to be used by the nursing team, and do not involve other professions' shifts, and the planning of the surgeries are done by other organizations within the hospitals. A company specialized in software systems has developed the application, not especially for an operating room but for organizations working in shifts. The case company cooperates with the software company and is supposed to be the promoters of the application towards the healthcare sector, since they have established interfaces with such customers. This application will be an additional service offered by the case company and customers will not pay extra for the application.

One of the internal interviewees highlighted that the planning of how, and when, to use the operating room is difficult, since the responsible persons often have a medical background, and not a background in planning. The managers and the nurses have a medical expertise, which is their core competence. The case company sees a potential in providing support in non-core areas, such as planning, material flow and logistic services.

According to several interviewees there is a need for better planning in healthcare organizations, and better communication between the different professions within a healthcare organization. A problem shown in connection to planning within healthcare is that there is planning at overall level of how many surgeries that is supposed to be done on a long-term perspective, and there is also planning on day-to-day level. The middle planning is thus missing, and the planning performed is based on present capacity, and not on the demand from patients. This was supported during two of the external interviews, and the problem of planning not done properly is shown at many of the case company's customer sites in Europe. A problem that was highlighted was that in surgery planning, the schedules for the doctors are not coordinated with the schedule for the nurses, and this creates problems in terms of manned operating rooms without any physicians present to perform surgeries. Seven nurses could for example be scheduled to assist surgeries, while only one doctor is available to perform them. At other occasions only three nurses would be scheduled, but with three doctors scheduled to perform surgeries. This creates an uneven utilization of resources.

When doing improvements concerning surgery planning, one interviewee mentioned that one important aspect is that the hospital employees themselves identify problems and define solutions to the problems. An external part can act as a facilitator during discussions with participants from the different professions within the organization. The interviewee also stated that key to the success of planning of surgeries is the understanding of the need for improvements among the hospital employees. Another important capability is to involve champions within the organization, and that the leaders in the organization are committed. This can be achieved by involving them in the work to improve the planning.

Important issues to consider when conducting a project connected to production planning is to enhance the communication within the hospital, to make all professions involved, and that there are established change agents within the organization to lead the change. One interviewee mentioned that if just pushing different tools, the attitudes towards the change might be negative. There is also a need for an external project leader. A receiver at the customer location is also important, so that the improvements are continued after the project leaders are finished. Several of the interviewees also mention the need for top management support from customer location. To be able to make this kind of planning, data from the hospitals are crucial. There is also a potential to use IT-tools within this area, but the problem right now is that many IT-systems exists in hospitals and that they do not support each other.

Other important capabilities that are required for providing this kind of service are knowledge in planning and operations planning, and the ability to highlight problems in the customers' organization. The ability to forecast patient flows is of great importance, which also facilitates the material planning for surgeries and the ability to plan the stock levels. The need for evidence-based findings that support the planning tool was highlighted by several interviewees, and there is also a need for a humble approach to meet the culture that exists

within healthcare organizations. Evidence-based findings refer to the existence of proof that the planning tool has been successful before.

A healthcare background when offering this kind of service could be both positive and negative. One specialist being interviewed claims that resources with medical background could be beneficial to give trustworthiness. Another specialist instead states that the medical background is not important when improving surgery planning; instead it could be a benefit to have a background from another industry. The specialist claims, *"You then have the ability to question what the employees in healthcare organizations see as obvious. The employees within the healthcare organization are focused on curing and caring, and do sometimes not see that it would be more efficient if they planned their work differently"*.

4.3.3 BENCHMARKING

In *table 6*, a presentation of two different planning tools offered to healthcare organizations is given. The selection of these companies is based on guidance given by internal and external interviewees. A short explanation of the services, important characteristics that the companies offering the tools highlight and any partners of the companies are presented.

Table 6. Benchmarking Planning Tools. A presentation of the benchmarking of two companies offering planning tools towards the healthcare sector. When no information could be found, these cells have been left blank.

Name	aTurnos
Type of services	Offers an easy application that can be used online and on mobile phones for shift-workers to plan their shifts. Managed by the department manager at the hospital.
Strengths	• Customize the tool for different customers. • Provides customer help centre.
Partners	Nursing homes, manufacturers of healthcare products.
Name	**Getinge Infection Control**
Type of service	Offers T-DOC, an IT-tool that helps operating theatres to control instruments and improve infection control, while saving money. Also helps to streamline the processes to achieve optimal efficiency.
Strengths	• Have product knowledge within disinfection and sterilization areas. • Give operating theatres actual data that they can use to improve their processes. • Is easily integrated with other information systems in the hospital. • Customized and flexible towards the customers.
Partners	

What can be seen in the tables is that both companies highlight customized solutions in the promotion of their service offerings. Getinge Infection Control also emphasizes the fact that their tool is easily integrated with the customers' own IT-systems. The company also highlights the cost savings that can be achieved by using their tool.

4.4 LOGISTICS AND DISTRIBUTION MANAGEMENT

In the context of this thesis, logistics and distribution management is a service offered to manage and support material flow to, and within, hospitals and clinics. The material flow to the hospitals and clinics refers to the distribution from production sites to customers' docking site. The material flow within hospitals and clinics refers to the distribution of materials from the inventory stockroom to the different departments and operation rooms.

4.4.1 INTERNAL VIEW ON MATERIAL FLOW TO HOSPITALS

Distributors to hospitals play an increasing role in the distribution chain, since hospitals' warehousing capacity is decreasing. The distributors have, according to an interviewee, a large product range and are warehousing several products. However, the interviewee further says that delivering through a distributor involves a risk of losing important customer relationships, since the distributor becomes the one having the customer interface. The customer interface is thus changing from the supplier to the distributor.

One interviewee with insight in the global market says that in the US, the distributors are strong players and have an important role on the healthcare market, but there is a need for a wide product range to be able to deliver these kinds of services. There are also distributors in Sweden who are purchasing products from many manufacturers and then manage the distribution to hospitals. In Sweden the distributors do not have their own product lines, but in the US the distributors are also competing as producers. In the US the sales-persons from the distributors cooperates with the sales-persons from the manufacturer, since they are distributing both own products and other companies' products. The interviewee believes that the strategy of having one distributor of all products is likely to be appreciated by the hospitals, since their warehousing capacity is decreasing and this is a way to minimize stocks. To be able to do this, the interviewee believes that there is a need for partnerships with many players in the industry, but a problem highlighted by the interviewee might be that suppliers do not want to deliver their products through a competitor. An example of a successful partnership is between Nestlé and Cardinal, who have merged the distribution of food and material to hospitals and therefore reached economies of scale.

Customer demands regarding distribution are delivery time and precision, and a need for suppliers to easily see when customers need material. Within the case company, there is a lack of supporting IT-systems to help increase the precision within these areas, and there is also a need for a joint system between suppliers, since the customers cannot have different systems for each supplier.

The case company has special delivery contracts with a few customers, such as delivering to a certain floor, but most deliveries are just to the customers' docking site. A new customer need connected to material flow is the distribution in the end of the value chain, for example deliveries all the way to the operating room. One problem connected to this type of service is the difficulty to know how to charge for this service.

4.4.2 Internal View on Material Flow within Hospitals

A customer need connected to material flow within the hospital is the traceability of material. This was also supported by an external interviewee working at a hospital, who saw the lack of traceability of products as the main issue regarding material flow. To be able to increase the traceability, the interviewee stated that joint IT-systems within the hospital are crucial. A challenge connected to this is how the products are labeled. The IT-system must be able to read all barcodes on the material to be able to keep updated information and be able to trace the product. If all products were labeled with the same type of barcodes, cost savings are possible since the transparency of the system will increase and no products will be lost. The external interviewee suggested that the retail-sector should be studied, since this sector has well developed systems for this. The internal interviewee mentioned that it is common that the products need to be relabeled at the hospital, due to difficulties in reading the labels.

The material flow within a hospital is according to one if the interviewees managed internally, and a few employees are in charge of receiving deliveries, store them, repack and send them up to different departments. To be able to provide services connected to internal material flow there is a need for cost efficient processes that is better than if the hospitals were to do this in-house. One interviewee also mentioned that being present inside the hospital could be a potential way to pick up new ideas on services regarding material flow, and other areas as well.

4.4.3 Benchmarking

Below is a presentation of four different companies offering different material flow services to healthcare organizations, see *table 7*. The selection of companies is based on guidance from internal interviewees. Short explanations of the services, important characteristics that the companies offering the services highlight and any partners of the companies are presented.

Table 7. Benchmarking Logistics and Distribution Management. A presentation of the benchmarking of four logistic companies offering services towards the healthcare sector. When no information could be found, these cells have been left blank.

Name	Medline Industries
Geographical coverage	USA, Global
Type of services	Offer a range of services within supply solutions for surgery. Packing of products to reduce time, lean consultancy to make inventory management more efficient, software for material management etc.
Strengths	• State that they can handle all logistics for a hospital. • Have a broad product range. • Offers other services such as quality improvements, infection prevention and falls management. • Offers a broad range of education material.
Partners	

Name	Cardinal Health
Geographical coverage	USA, Global
Type of services	Offer distribution and inventory management. Offer their services to healthcare organizations, suppliers and manufacturers.
Strengths	• The only distributor having the whole care continuum: acute hospital to laboratory surgery centre, physician office, long-term care and pharmacy settings. • States that they can design solutions no matter the challenge, and offers customized solutions. • For healthcare, states that they can give time and resources "back on your side". • Have a broad range of products, and distribution management and inventory management is just a part of their entire service offering. • Their distribution centres offers 200 000 medical products from 2200 manufacturers. • Nationwide reach of their distribution centres. • Technology intensive distribution. • Have acquired a broad range of companies; automated supply and pharmaceutical dispensing company, hospital pharmacy management company, pharmaceutical packaging company, medical-surgical product manufacturing and distribution company.
Partners	Partnerships with local and national organizations to identify critical issues.

Name	Squadron Medical
Geographical coverage	UK
Type of services	Warehousing, logistics, supplier partnering, service driven, technology, pharma, RFID, eProcurement.
Strengths	• Squadron Medical supports healthcare providers in both the public and private sectors to streamline supply chain operations and costs so that valuable resources can be concentrated on patient care. • Deliver on a same and next day basis to their customers in UK. • Just-in-time solutions. • Consolidate products from over 200 suppliers from large global names to their customers. • Add value to customers, transparently and efficient. • Customer focused is their philosophy, tailored solutions, and have understanding of how their role support customer operations.
Partners	

Name	Mediq Sweden
Geographical coverage	Sweden
Type of services	Hospital logistics, automated warehouse systems, hospital distribution.
Strengths	• Take responsibility for that hospitals are always equipped. • Have a well functioning IT-system and efficient logistics. • Coordination of value streams, distribution, information and administration. • Can distribute material all the way in to the shelves if the customer requests.
Partners	Part of the larger European distribution and logistics company Mediq.

The table shows that all distributors offer a wide range of products from several suppliers. The companies can handle the whole distribution chain, from production site to the shelves. The companies also highlight customized solutions, and the fact they will save time, resources and money for the customers. IT-tools are mentioned as important resources as well.

4.5 WASTE MANAGEMENT

In the context of this thesis, waste management is a service type that includes the segregation, collection, transport, storage, recycling, and final disposal of medical waste. Waste management often includes support in all steps, from segregation to final disposal.

4.5.1 INTERNAL VIEW ON WASTE MANAGEMENT

The case company has identified customer needs connected to waste management, which showed that customers are requesting cost-effective and efficient waste disposal services. The customers are missing a waste service provider that can manage the whole complex chain of waste management. Waste management within hospitals is often regulated by the laws for each country. Most common is that the case company delivers the product, and that the hospitals then have the responsibility for the disposal of the products and the packaging material. According to one of the interviewees the case company needs to pay a fee for the packaging material that they deliver in some countries. Within the hospital, the waste is segregated according different classifications.

The case company's local office in one country offers waste removal for the products that they have delivered to the hospital. They provide the hospital with a container where they can put the waste, and then the case company is responsible for the removal of this container. This kind of waste management is only offered to customers spending a certain amount of money, and is a free service. The company rents a container and outsources the removal of the container to a local waste company. The interviewee said, "*to be able to do this selective waste management and removal, cooperation with healthcare employees is crucial to be able to secure the right classification and sorting of the waste*". The problem is that the hospital does not sort the waste according to which supplier that has delivered the products, and therefore the waste from many suppliers' products is thrown in the container. The interviewee therefore stated that important if offering this kind of service is data to keep track of how many products that are being delivered to hospitals, so they can be charged extra if they throw in waste from other suppliers.

According to one interviewee, capabilities required if offering this kind of service is knowledge about waste management, and the ability to provide customized and localized solutions. Since the case company is delivering material to the customers, they should also have the knowledge about what to do with the waste their products produce.

4.5.2 EXTERNAL VIEW ON WASTE MANAGEMENT

According to an environmental coordinator at a university hospital in Sweden, there are laws and regulations concerning waste management, since the waste can contain chemicals and be hazardous. The departments have the responsibility to move the waste to collection sites, but then the waste removal companies have the responsibility to remove the waste. There are different fractions of waste, and different waste removal companies remove different fractions. Currently, both small and large removal companies are responsible for the removal of waste at the university hospital. When evaluating removal companies for a new procurement, it matters more how the companies fulfill certain criteria than the size of the companies. The environmental coordinator mentioned three areas of importance when evaluating the companies; environmental impact, education offered, and cost. Further the interviewee mentioned important capabilities that waste removal companies are assessed upon; the cars they use, what gasoline they use, if they are eco-driving educated, how educated the employees are, if they provide education about waste to the employees at the hospital, and what fractions they can remove from the hospital.

4.5.3 BENCHMARKING

Below is a presentation of five different companies offering waste management services to healthcare organizations, see *table 8*. The selection of companies is based on guidance from internal and external interviewees. A short explanation of the services, important characteristics that the companies offering the services highlight and any partners of the companies are presented.

Table 8. Benchmarking Waste Management. A presentation of the benchmarking of five companies offering waste removal to the healthcare sector. When no information could be found, these cells have been left blank.

Name	**Renova**
Geographical coverage	Western Sweden
Type of services	Advising and education, collection and transportation of waste, classification of waste, treatment of waste.
Strengths	• Certificates and permits for transportation and waste management. • Customized and environmentally friendly solutions.
Partners	

Name	**Allfrakt AB**
Geographical coverage	Western Sweden
Type of services	Recycling, customized waste management, container rental.
Strengths	• Certificates and permits for transportation and waste management. • Give advise to customers and offer customized solutions.
Partners	Other waste management companies around Sweden to get a nationwide partnership.

Name	**SAICA Natur**
Geographical coverage	Spain, Portugal, France and UK
Type of services	Value of secondary raw material, waste management, special and hazardous waste management, specialized services.
Strengths	• High degree of local coverage. • Knowledge about a broad area of material recycling and efficient waste management processes. • Specialized solutions for customers.
Partners	

Name	**Stena Recycling**
Geographical coverage	Sweden
Type of services	Waste management, construction services, advising services, privacy management, education, rental systems.
Strengths	• Certificates and permits for transportation and waste management. • Offers waste management and recycling to the business community, healthcare sector and municipalities.
Partners	

Name	**Hans Andersson Recycling**
Geographical	Sweden
Type of services	Comprehensive recycling with privacy management, hazardous waste management, certified advisory services for transportation of goods. Offers waste management services for a number of industries, where the healthcare sector is one.
Strengths	• Environmental and quality certificates. • Personal services and provides each customer with a contact person at the company. • The pricing is easy to understand, and the company makes it easy for the customer to know what the waste management costs. • Consolidated transports to reduce number of transportations. • Provides statistics on the customers' waste management.
Partners	

The table shows that four of the studied companies are offering advice and education in addition to waste management. The importance of certificates and permits are highlighted by three of the companies. All companies offer waste management to several industries, not only to the healthcare sector. A strength mentioned by the companies is customized solutions. One of the companies also highlights environmentally friendly solutions as a capability, and another highlights that the pricing is easy to understand and that they provide statistics on the customers' waste management.

4.6 EDUCATION AND TRAINING

In the context of this thesis, education and training is a service offered to companies operating within the healthcare sector and includes all types of training, both connected to products and connected to process improvements. The education and training may have a medical focus, but it can also focus on how to improve management and operation skills.

4.6.1 INTERNAL VIEW ON EDUCATION AND TRAINING

Several interviewees mentioned an important aspect when offering education and training to hospitals and clinics, which is that customers want the education to be used as accreditation when they reregister for their profession license. If the education is to be used for accreditation, one of the interviewees highlighted the need for a reflective piece, to test that the participants have actually learned something during the education. To achieve credibility regarding the offered education it is, according to the internal interviewee, important that the training is not perceived as a sales-pitch. The education provided by the case company today is at the moment free of charge, which might be a risky approach according to the interviewee. The customers will receive education from the case company, but might then decide to buy the products from a competitor.

One of the internal interviewees mentioned that an important competence of persons delivering education and training is professional clinical background. This creates trust and a sense of connection to the customers receiving the education. According to the interviewee, sales personnel should not deliver education, since it might create a feeling that the aim of the education is to increase product sales. To be able to charge for the provided education, the interviewee said that the case company must be able to communicate the value the education will create at customer site.

The product training provided by the case company is highly appreciated by its customers, but according to one of the interviewees the customers are requesting more accessible training and education methods. The hospitals and clinics wish to keep parts of the training internally, but with support from external actors. According to the case company, the customers are requesting training by experienced nurses, but also information and training about managerial and organizational topics, such as leadership and improvement training.

4.6.2 BENCHMARKING

Below is a presentation of five different companies offering education and training to healthcare organizations, see *table 9*. The companies were chosen on the criteria to select two companies offering education and training connected to products (Medline Industries and Dentsply Implants), and two companies and one university offering education and training connected to processes (Helseplan, Institute for Healthcare Improvements and Centre for Healthcare Improvement). A short explanation of the education areas, as well as resources and type of education are presented.

Table 9. Benchmarking Education and Training. A presentation of the benchmarking of five organizations offering education and training towards the healthcare sector. When no information could be found, these cells have been left blank.

Name	Medline Industries
Education areas	Provide education in a number of different areas, such as *communications, dietary/nutrition, infection prevention, materials management* and *wound care.*
Resources/type of education	Featured expert forum (movies with experts talking about different areas, offered for free on the website), magazines (OR connection, Healthy Skin) connected to courses and giving CE credits, product videos with instructions about products (for free on the website), Product instructions about the products (download for free on the website), Webinars (lectures online, some accessible without a login).
Name	Dentsply Implants
Education areas	Provide education in a number of different areas, such as *implant surgery*, *computer assisted implant treatment, laboratory procedures, hygiene* and *business development.*
Resources/type of education	Magazine including e.g. an introduction to the product portfolio and description of case studies done by experts in the field, lectures by specialists, live-surgeries, video demonstrations and hands-on training.
Name	Helseplan
Education areas	Patient safety
Resources/type of education	Three-day course, and e-training. Partnership with the company *Learnways,* who are experts in learning through digital media.
Name	Institute for Healthcare Improvement
Education areas	Provide education in a number of different areas, such as *patient safety, improvement capability, quality cost and value, infection control, person- and family-centered care,* and *leadership.*
Resources/type of education	Conferences, in-person trainings, web-based training, audio and video programs, and online courses.
Name	Centre for Healthcare Improvement (Chalmers University of Technology)
Education areas	Provide courses in *Improvement knowledge for managers (7.5 ECTS), Quality driven operation improvements (30 ECTS), Improvement knowledge for Resident physicians (7.5 ECTS), Lean within healthcare (7.5 ECTS)*
Resources/type of education	Courses, seminars, lecture series.

The table shows that three of the companies provide education and training in a number of different areas. Helseplan, which is a rather small consultancy firm, offers education in patient safety only. All companies offer education and training in form of on-line training, physical

courses, audio, video, magazines and forums. Medline Industries and Centre for Healthcare Improvement highlight the capability to provide accreditation for their courses.

A number of hospitals worldwide are providing training and education of lean principles and methods. One of these hospitals is Skåne University Hospital in Sweden. They provide *Basic training in Lean, Lean leadership training,* and courses in *The Lean Game.* The courses are given by experts in process redesign. Participants will get *Certificate of Completion* (for those who completed the assignments as well), and *Certificate of Participation*.

5 ANALYSIS

In this chapter the analysis of the empirical results is presented. The empirical findings regarding the different service types are analyzed and mapped in the conceptual framework. The chapter starts with a classification of the different service types, and thereafter each service type is presented and mapped individually. The chapter ends with a summary of required resources and capabilities for all service types. Words in bold are representing specific resources and capabilities to be mapped in the framework, while italic words are representing the different subgroups of resources and capabilities in the framework.

5.1 CLASSIFICATION OF THE DIFFERENT SERVICE TYPES

The service classification used in the conceptual framework is the distinction between product-oriented services and process-oriented services (Kowalkowski et al 2011). In *figure 10*, the classifications of the identified service types are presented. The argumentations for why the service types fall under the different categories are explained below.

PRODUCT-ORIENTED SERVICES		PROCESS-ORIENTED SERVICES				
Basic IB Services	*Maintenance services*	*Professional services*			*Operational services*	
F	C	A+B	C	F	D	E

A	Process Analysis
B	Process Improvements
C	Planning Tools
D	Logistics and Distribution Management
E	Waste Management
F	Education and Training

Figure 10. Service classifications. The service classifications of all service types mapped on the horizontal axis of the conceptual framework.

When providing services within process analysis and process improvement, the service provider aims at improving a particular process and provides support when introducing new methods of work. To provide these kinds of services can thus be seen as a process-oriented service, since the aim is not to take over the customers operations, but to support the performance of the customer by process improvements. The service types process analysis and process improvement can be further classified as professional services, which includes process-oriented consulting and training, and business-oriented consulting (Oliva & Kallenberg 2003). The classifications can be found in *table 2* in *chapter 3.1.1 Classifications of Services*.

Planning tools can in this case be offered in two different ways. The purpose of this service type is to facilitate and optimize surgery planning. One scenario is that the service includes an IT-tool that is offered to the customers. The case company would in this case own the system, and the customer would be using the tool. This service can therefore be characterized as a product-oriented service since the service is aiming at supporting the use of a product, and is further classified in the subgroup maintenance services (Oliva & Kallenberg 2003), where the case company would be having a full maintenance contract on the installed tool. The other scenario is that the case company offers improvements of planning routines at hospitals as a consultancy service. In this scenario, the service type would be classified as a process-

49

oriented service, and further classified as a professional service, with the same argumentation as when providing service types A+B.

Logistics and distribution management is offered to support material flow to, and within, hospitals. The service is connected to the customers' product, but not in the sense that the service is supporting the use of the products, but instead the process of making it possible for the customer to perform their activities within the hospital. The service is therefore considered to be a process-oriented service, and belongs to the subgroup operational service (Oliva & Kallenberg 2003), since the service is to take over and manage an operation at customer site.

Waste management is, in the context of this thesis, a service type that involves handling of medical waste, from segregation to final disposal. The purpose of the service is to allow the customer to focus on its core business by taking care of its non-core operations, in line with the trend presented by Punke (2013) and Nicholson et al (2004) to outsource non-core activities. Waste management is a process-oriented service, since it aims at taking over one of the functions and processes at customer location. Looking at the subgroups of a process-oriented service explained by Oliva and Kallenberg (2003), waste management can be considered to belong to the subgroup operational services. If agreeing to take care of the waste, the service provider are managing an operation at customer site, and thus taking over the risk and responsibility f or this process.

Education and training offered to organizations within the healthcare sector can be connected to both products and processes, and is therefore both a product-oriented service and a process-oriented service. Education and training can be classified as both a basic IB service and a professional service (Oliva & Kallenberg 2003). If the training is connected to any products, it is a basic IB service, since it is supporting the products. If the training is business-oriented or process-oriented, it is considered a professional service.

The service types can also be considered as either transaction-based or relationship-based services (Oliva & Kallenberg 2003; Malleret 2006). Process analysis and process improvement, and education and training are considered as transaction-based services. Logistics and distribution management, and waste management are classified as relationship-based services. Planning tools is classified either as a relationship-based service or a transaction-based service, depending on hoe the service is offered. According to Malleret (2006) a relationship-based service requires a long-term relationship between the service provider and the customer, while a transaction-based service is a one-time transaction. The author also claims that the relationship-based services require a more trusting and intense relationship between the service provider and the customer. Since the services classified as transaction-based services still concerns the customers' core processes, the importance of close relationships must be enhanced also for this classification. This is supported by Kowalkowski et al (2011), Oliva and Kallenberg (2003) and Mathieu (2001b) who all claim that offering services supporting the customers' processes will require close contact, and a great understanding of the customers' processes.

It can be difficult to state whether or not the services are just transaction-based or relationship-based services. One example is education and training, where the service often is a one-time transaction and the service can therefore be classified as a transaction-based service. But if the education is provided to enhance the customers' processes, the contact between the service provider and the customer can be considered as more of a relationship-based service. One example is the education offered by Centre for Healthcare Improvement in the empirical study, which provides education and training for a long period of time, up to two years. In this case, the contact between the service provider and the customer requires a close relationship and the service is more of a relationship-based service.

5.2 SERVICE PROVIDER STRATEGY

Two strategies presented by Gebauer et al (2010b) when offering service is the outsourcing partner strategy and the development partner strategy. The desired strategy for each service type is presented in *figure 11*. The motivation for why the service types require the different strategies are explained below.

DEVELOPMENT PARTNER STRATEGY			OUTSOURCING PARTNER STRATEGY		
A+B	C	F	D	E	F

Figure 11. Service provider strategy connected to the different service types.

Process analysis and process improvements offered to the healthcare sector can be connected to the development partner strategy. A company providing process analysis and process improvements would help a hospital to develop its processes to increase quality in services to patients, and together create a more efficient way of working. Noteworthy when providing these kinds of services is that Gebauer et al (2010b) claim that it is not necessary to separate the product and service division. Important in the case company's situation is yet to think about that the selling of products when offering services might decrease the trustworthiness of the service offering, as indicated by some of the interviewees. It could be negative to connect improvements to products, since the service then might be experienced by the customer as something used to sell more products, and not as a service to increase the customers' performance. When developing services together with the customer, the customers' knowledge is considered as a valuable resource (Echeverri & Edvardsson 2002). **The customers' knowledge** is in this case considered as a *human capital resource*, and the knowledge from the employees at customer location is required to understand the processes. This requires **customer involvement**, which is a capability mentioned by several authors (Echeverri & Edvardsson 2002; Kindström & Kowalkowski 2009; Gebauer et al 2010b; Gebauer et al 2008). Customer involvement can be considered to be a *realizing capability*, since it will capture and forward customer information by interacting and cooperating with the customers. Understanding of customer processes, close interaction with employees at customer site, and customer involvement were all capabilities mentioned by the interviewees and in the benchmarking regarding process analysis and process improvements. Offering a planning tool also requires a development partner strategy, since the aim is not to take over

the customers' operations but to support them in their development (Gebauer et al 2010b). The same factors as for process analysis and process improvement is thus important.

Regarding the material flow and distribution of material within a hospital, the hospital is outsourcing this activity when letting an external provider run this operation. The service provider should therefore use an outsourcing strategy, since they are taking over the risk and responsibility for the process (Gebauer et al 2010b). Important capabilities when adopting an outsourcing partner strategy are a **separate service division** and a **presence at customer location**. A separate service division is according to Kowalkowski and Kindström (2012) a *transforming capability*, while being present at customer location can be considered to be an *identifying capability*. To have a high service orientation within corporate culture and organizational structures are also considered important according to Gebauer et al (2010b). Factors connected to human resource management are not that important, which implies that the focus is not on what competences and education the employees have, but that they **understand the value of the service** and that this influences their behavior. This is a *realizing capability*, since understanding the value of the service will make it possible to show the value created by the service to the customers (Gebauer et al 2010b). If the case company is to offer logistic management within hospitals, employees from the case company will always be present at customer location. This will create an excellent opportunity to understand additional needs and business opportunities, which was highlighted as a positive effect in the empirical findings. The **ability to identify new needs** is an *identifying capability*, since it requires organizational roles designed to identify customer needs. If offering other consultancy services in addition to logistics and distribution services, being present at customer location will increase the chances of being hired to provide support in several areas. The company will also be able to identify needs the customers did not know they had, and create offerings according to this.

Waste management also requires an outsourcing partner strategy, since the service takes full responsibility for the waste management at customer location. As mentioned before, a **separate service division**, **presence at customer location** and **understanding the value of the service** are important for an outsourcing partner (Gebauer et al 2010b). Regarding organization structure, and apart from having a separate service division, it should also **be clear who is responsible for the service internally**. This is an *identifying capability,* since it requires an understanding of the internal service structure within the company. Echeverri and Edvardsson (2002) also highlighted the importance of clearly demonstrating who is responsible for different service activities. It is also important that the customer knows who to contact and turn to for support. If offering waste management as a service, a **key account manager** is therefore an important capability. This was found in the empirical findings, where one of the benchmarking companies highlighted that customers were assigned personal contacts, which were considered as a strength. Having a key account manager is categorized as an *organizational capital resource*, since it includes the formal relationship between the service provider and its customer (Barney 1991).

Education and training requires either a development partner strategy or an outsourcing partner strategy, depending on how the education and training is designed. If the education is designed in cooperation with the customer and the approach is to train workers from different areas that will serve as trainers for the rest of the staff, a development partner strategy is strived for. In this case, customized solutions are of importance and the training is adapted to customer needs. Therefore, **customer involvement** (*realizing capability*) and **understanding of customer processes** (*identifying capability*), is important. **The customer** is in this case considered as a *physical capital resource*, since employees from the customer location is used to forward knowledge within the organization and can be regarded as "equipment". This is an important resource that also Ward and Wood (2000) enhance as a way of overcoming the barrier concerning lack of time for education at customer location.

If offering courses at an external location or for example as on-line courses, the hospitals using the service are outsourcing the professional development of its staff, and the service provider should therefore adopt an outsourcing partner strategy. As mentioned before, important factors for an outsourcing partner are **an established service division** and the service culture and behavior of employees. The employees should put the concerns of the customers as the highest priority, and actively take the role as a trusted adviser for the customers (Gebauer et al 2010b). The training should not be perceived as a sales pitch of products to avoid losing credibility, which was enhanced in the empirical findings. It is therefore important that the employees of the service provider are aware of this.

To have a high service orientation within corporate culture is important within both service strategies (Gebauer et al 2020b). Important capabilities for all service types are thus to have an **understanding of the service value among the employees**, and to **show the value of the service** towards the customer, which both are considered as *realizing capabilities*.

5.3   PROCESS ANALYSIS AND PROCESS IMPROVEMENTS

In *figure 12* a visualization of identified resources and capabilities required when offering process analysis and process improvements is presented. The resources and capabilities are described below, except the resources and capabilities already mentioned in chapter *5.2 Service Provider Strategy*.

			PROCESSS-ORIENTED SERVICES				
			Professional services			Operational services	
			A+B				
RESOURCES	*Physical capital resources*						
	Human capital resources	Evidence-based findings	X				
		Customers' knowledge	X				
		Knowledge from other industries	X				
		Medical knowledge	X				
		Pedagogical skills	X				
		Change management knowledge	X				
		Deep understanding of the healthcare sector	X				
	Organizational capital resources	Contact points with top management (access to data)	X				
		Top management support	X				
		Contact points with middle management	X				
CAPABILITIES	**Operational capabilities**						
	Dynamic capabilities — *Identifying capabilities*	Presence at customer location	X				
		Understand customer processes	X				
		Broad range of service areas	X				
	Realizing capabilities	Actively involve customers	X				
		Identify user needs and communicate this ability	X				
		Communication skills and ability to change when addressing different roles	X				
		Ability to show cost savings/value of the service	X				
		Understanding of service value among employees	X				
	Transforming capabilities	Partnerships (academic world and partners with specific expertise)	X				

Figure 12. Resources and capabilities needed for service types A and B.

5.3.1 RESOURCES REQUIRED WHEN OFFERING PROCESS ANALYSIS AND PROCESS IMPROVEMENTS

During the empirical study the importance of having the ability to identify processes at customer site that can be standardized was identified. This can be connected to the knowledge that the employees in the company hold. The knowledge of the company can be seen as a resource, more exactly a *human capital resource* defined as competence, knowledge and training of the individual employees within the firm (Barney 1991). The empirical findings mentioned knowledge about queuing theory and the ability to adopt approaches used in other industries to the complex flows in hospitals as important competences. Some of the companies in the benchmarking mentioned the need for cross-functional teams, and that they have an employee-base consisting of **employees with medical knowledge** as well as **employees with knowledge from other industries**. Since there is a need to understand the customers' processes, a combination of people with different educations were considered useful.

An important factor mentioned in the empirical findings was the ability to provide process analysis and process improvement together with **evidence-based findings**. One example from

the empirical study is that a consultancy firm used literature search and external interviews with specialists to be able to identify best practices when conducting an improvement project at a hospital. This is highly appreciated in the healthcare sector, and an important resource when providing services to this type of customers. This knowledge could be seen as a *human capital resource* (Barney 1991), and Storbacka (2011) also suggests that references of solution delivery projects should be shared through a case repository when offering services. References throughout the whole company on successful service deliveries could be used in the selling and delivery phase to new customers, as evidence-based findings.

In the empirical study it was found that to understand the customers' processes, there is a need for **a deep understanding of the healthcare sector**, and in the case company's situation, a deep understanding of processes in the surgery room. This can be connected to *human capital resources*, since it is connected to the employees' knowledge (Barney 1991). Some companies in the empirical study use the PDCA-cycle as a supporting tool to involve customers in process improvements, and the empirical findings highlights **change management knowledge** as an important resource. It was also found during the empirical study that education and training is appreciated in an improvement project, which requires **pedagogical skills**. Both these resources are categorized as *human capital resources*.

It was found during the empirical study that top management support is crucial when implementing process improvements. To be able to show the value created by the service, contact points with top management plays an important role as well. Top management can give access to important data, such as costs for surgeries and employee salary, which is needed to be able to show cost savings. **Top management support** and the **contact points with top management** can be categorized as *organizational capital resources* (Barney 1991), since it includes the relationships between the organization and its customers. In the empirical study the **contact points with middle management** was enhanced as important, which also can be classified as an *organizational capital resource*.

5.3.2 CAPABILITIES REQUIRED WHEN OFFERING PROCESS ANALYSIS AND PROCESS IMPROVEMENTS

A capability mentioned during both the interviews and in the benchmarking is the ability to **understand customer processes**. This capability is mentioned by several authors (Vinnova 2013; Kindström & Kowalkowski 2009; Storbacka 2011; Gebauer et al 2008). Understanding customer processes can be connected to dynamic capabilities, and is an *identifying capability,* since it builds on deep knowledge about the customer and its processes (Kowalkowski and Kindström 2012). In the empirical findings, several interviewees explained their work process when conducting process analysis. All of the explained work processes started with spending time at customer location to identify the problem. A suggested approach was to spend a day together with a nurse, to follow his or her routines, and thus gain a deeper understanding of the process. The interviewees also highlighted the importance of integrated project teams, with participants from both the service provider and the customer, to create an understanding and exchange knowledge about the processes.

To understand customer processes is closely connected to the capability of **identifying user needs and be able to communicate this ability**, also enhanced by Vinnova (2013), Kindström and Kowalkowski (2009), Storbacka (2011) and Gebauer et al (2008). This capability is a *realizing capability*. According Kowalkowski and Kindström (2012), a realizing capability includes understanding, visualizing and offering value to the customer. It also increases contact points and interactions with customer, which can be seen as important when increasing the understanding of customer processes. To communicate the ability to identify user needs and areas for improvement, the service provider should explain to the customer which methods they will use. The service provider could for example state that they will spend a day together with the customer, or highlight the benefits of not being from the healthcare sector, which will make it possible to study the process from a new perspective. Spending time at customer location is also useful in order to understand the customer's processes. Several of the benchmarking companies mention customized solutions as well, which also require spending time at a customer location. To be **present at customer location** can be considered as an *identifying capability*, since it creates a way of listening to customer needs and demands.

Another important capability identified in the empirical study is **communication skills**. Close communication with nurses and to speak the "language" of hospital employees are mentioned, and also that there is a need for **different ways of communicating when addressing different roles in the hospital world**. The communication skills of the employees are a *realizing capability*, to be able to meet the employees at customer location in the right way and create a mutual understanding. The communication skills are also mentioned as important when adopting a development partner strategy (Gebauer et al 2010b). When communicating with employees at customer location, the background of the consultants can be discussed. One finding in the empirical study is that it can be seen as strength not to have a background in any of the four worlds within the hospital. The four worlds, defined by Glouberman and Mintzberg (2001) are cure, care, control and community. If not having a connection to any of the worlds, it is easier to address all employees in the same way and not make anybody feel forgotten.

Since this kind of service are concerning the customers core operations, the aim is to act as support and **actively involve the customers** to a great extent. The involvement of customers is a *realizing capability*, since it will capture and forward customer information by interacting and cooperating with the customers (Kowalkowski & Kindström 2012). The importance of customer involvement is enhanced by many authors in the literature (Echeverri & Edvardsson 2002; Kindström & Kowalkowski 2009; Gebauer et al 2010b; Gebauer et al 2008). Another interesting area to address is which employees at customer site that are important to involve. The empirical study shows that top management support is crucial to be able to succeed with the process analysis and process improvement. A capability connected to this is the **ability to show cost savings when selling the service**, since this is mentioned in the empirical study as an order winner. The ability to show the value that is created in the service process is thus important (Vinnova 2013; Kowalkowski & Kindström 2009; Storbacka 2011). This ability can be categorized as a *realizing capability*, according to Kowalkowski and Kindström (2012).

As seen in the benchmarking, many of the companies are **offering several different types of services** connected to business performance improvement. By having a broad range of services and providing end-to-end solutions there is a possibility to capture needs of the customers in several areas, and this is therefore an *identifying capability* (Kowalkowski and Kindström 2012). The **importance of partnerships** was mentioned in the empirical study as well. A partnership can be useful for a small company to be able to increase the width of the services, and can be a fruitful combination since other companies can hold specialized knowledge but not have the customer contact points. Partnerships with other companies are connected to *transforming capabilities*. An important aspect to keep in mind is close communication between the partnering companies to give a consistent message to customers. Another partnership enhanced in the empirical study is the collaboration with the academic world, since the healthcare sector appreciates this connection.

5.4 PLANNING TOOLS

In *figure 13* a visualization of identified resources and capabilities required when offering planning services is presented. The resources and capabilities are described below, except the resources and capabilities already mentioned in chapter *5.2 Service Provider Strategy*.

			PRODUCT-ORIENTED SERVICES			PROCESS-ORIENTED SERVICES			
			Basic IB Services		Maintenance services		Professional services		Operational services	
					C		C			
RESOURCES	Physical capital resources	IT-tools			x					
	Human capital resources	Knowledge in planning theory					x			
		Customers' knowledge			x		x			
		Evidence-based findings					x			
		Medical knowledge					x			
		Knowledge from other industries					x			
	Organizational capital resources	Top management support					x			
CAPABILITIES	Operational capabilities									
	Dynamic capabilities — Identifying capabilities	Understanding of customer processes			x		x			
	Dynamic capabilities — Realizing capabilities	Actively involve customers					x			
		Understanding of service value among employees			x		x			
		Ability to show value of the service			x		x			
	Dynamic capabilities — Transforming capabilities	Partnership with software companies			x					
	Systems integration capabilities	Integration with IT-systems at customer site			x					
		Customer data			x		x			

Figure 13. Resources and capabilities needed for service type C.

5.4.1 RESOURCES REQUIRED WHEN OFFERING PLANNING TOOLS

In the empirical findings it was mentioned that if offering a planning tool to be used by the customer, the **IT-tool** is of great importance. This IT-solution can be classified as a *physical capital resource*. Since the case company does not hold these competences internally today,

they have in a local office established a partnership with another company specialized in software systems, and are together offering this service to hospitals.

When offering planning as a consultancy service, similar resources as required for process analysis and process improvement were found in the empirical study; **top management support** and **evidence-based findings**. The empirical study also showed that the medical background of employees could be viewed from two perspectives. On one hand, **medical background** enhanced the trustworthiness of the persons offering services. On the other hand, belonging to one of the worlds, presented by Glouberman and Mintzberg (2001), may reduce support from employees belonging to the other three worlds. Therefore having **knowledge from other industries** could be enhanced as a strength, since the persons offering the service could look at the healthcare organization from another perspective, and come up with new solutions to the planning problem. It was also mentioned that **knowledge in planning theory** is needed, which is a *human capital resource* since it refers to the knowledge of the employees.

5.4.2 CAPABILITIES REQUIRED WHEN OFFERING PLANNING TOOLS

Since the IT-tool was mentioned as an important resource, **well-functioning partnerships with software companies** can be seen as a capability that is needed, which is classified as a *transforming capability*. Another important aspect to consider is that the customers are requesting easy **integration with other IT-systems on customer site**. This was also highlighted in the benchmarking since the solution that one of the companies offered was able to do this. This can be connected to *system integration capabilities* presented by Brady et al (2005).

An issue connected to planning in hospitals is that there is a need to coordinate schedules between the nurses and the doctors. According to the empirical findings, a problem today is that the schedules for nurses and doctors are each created independently, which leads to an unbalanced occupancy of operating rooms. To be able to coordinate schedules, there is a need for **data from the hospital**, in order to integrate the data in the planning system. The ability to forecast patient flows were also mentioned during the empirical study and in order to achieve this, data from the hospital is crucial as well. An important aspect to consider in the case of this capability is that it will require collaboration with other software suppliers, since different suppliers manage different systems at hospitals. This is classified as a *systems integration capability* since access data is necessary to be able to integrate different IT-systems (Brady et al 2005). The empirical findings highlighted that customized solutions were important if offering services within planning, why an **understanding of customer processes** (*identifying capability*) is important to be able to highlight problems in the planning process.

If offering services regarding planning in hospitals as a consultancy service, the empirical findings enhance that an additional capability is required. As in process analysis and process improvements, the aim when offering this kind of service is to act as support during the

improvement of planning processes, and therefore it is important to **actively involve customers** (*realizing capability*).

5.5 LOGISTICS AND DISTRIBUTION MANAGEMENT

In *figure 14* a visualization of identified resources and capabilities required when offering logistics and distribution management is presented. The resources and capabilities are described below, except the resources and capabilities already mentioned in chapter *5.2 Service Provider Strategy*.

			PROCESS-ORIENTED SERVICES				
			Professional services			*Operational services*	
						D	
RESOURCES	*Physical capital resources*	Large product range				X	
		Invest in a technical solution for traceability				X	
	Human capital resources						
	Organizational capital resources						
CAPABILITIES	**Operational capabilities**						
	Dynamic capabilities — *Identifying capabilities*	Presence at customer location (distribution within hospitals)				X	
		Ability to identify new needs (distribution within hospitals)				X	
		Understand customer processes				X	
	Realizing capabilities	Value-based pricing model				X	
		Ability to show value of the service				X	
		Understanding of service value among employees				X	
	Transforming capabilities	Separate service division				X	
		Well-functioning network				X	
	Systems integration capabilities	Joint IT-systems for traceability				X	

Figure 14. Resources and capabilities needed for service type D.

5.5.1 RESOURCES REQUIRED WHEN OFFERING LOGISTICS AND DISTRIBUTION MANAGEMENT

Two important resources were highlighted in the empirical findings regarding logistics and distribution management. Having a **large product range** was one, which can be considered a *physical capital resource* (Barney 1991). Another important resource is to **invest in a technical solution for traceability**, e.g. standardized barcodes, to increase the traceability of products within the hospitals. This is a *physical capital resource,* since it requires an investment in new technology (Barney 1991).

5.5.2 Capabilities Required when Offering Logistics and Distribution Management

One challenge mentioned in the empirical findings, was the difficulty to charge for this type of service. Hence, a **value-based pricing model** is needed, which is enhanced by Storbacka (2011) and Gebauer et al (2010b) as well. This is a *realizing capability* according to Kowalkowski and Kindström (2012). To understand customer processes will facilitate the development of such a model. Another important capability is to co-operate with other brands to include more products in the distribution offer to hospitals. **Well-functioning networks** is thus important, which can be considered to be *transforming capability,* since it is about which partnerships and collaborations with external actors the company should have (Kowalkowski and Kindström 2012). Customized solutions were also highlighted as important, which builds on the capability to **understand the customers' processes.** This is an *identifying capability*, since it includes acquiring extensive knowledge about the customer.

There is also a need for **joint IT-systems between the service provider and the customer**. Both standardized barcodes and joint IT-systems were mentioned in the empirical findings as a prerequisite to achieve traceability. This can be connected to the classification *system integration capabilities,* presented by Brady et al (2005). These capabilities include the abilities to integrate, and also design, systems consisting of hardware, software and services coming from the own company, external partners and customers. Logistics and distribution management is thus a technology intensive service.

5.6 Waste Management

In *figure 15* a visualization of identified resources and capabilities required when offering waste management is presented. The resources and capabilities are described below, except the resources and capabilities already mentioned in chapter *5.2 Service Provider Strategy*.

			Professional services			Operational services	
							E
RESOURCES	Physical capital resources	IT-system					X
		"Green" vehicles					X
	Human capital resources	Knowledge about laws and regulations					X
		Knowledge about waste					X
		Pedagogical skills					X
		Certificates and permits					X
	Organizational capital resources	Key account manager					X
CAPABILITIES	Operational capabilities						
	Dynamic capabilities — Identifying capabilities	Presence at customer location					X
		Clear internal structures					X
		Understanding of customer organisation and processes					X
	Realizing capabilities	Understanding of service value among employees					X
		Value-based pricing model					X
		Close contact with the emloyees at customer location					X
		Ability to show value of the service					X
	Transforming capabilities	Separate service division					X

Figure 15. Resources and capabilities needed for service type E.

5.6.1 RESOURCES REQUIRED WHEN OFFERING WASTE MANAGEMENT

To facilitate the calculation of the value and price of waste management and the offered service, data to keep track of the amount of waste is required. For this an **IT-system** is needed, which can be considered to be a *physical capital resource*. Another important resource mentioned in the empirical findings is **knowledge about laws and regulations** connected to waste management. Different countries have different laws, which require updated information and adaption to local regulations. This is a *human capital resource* since it involves knowledge among the employees. A service provider within waste management should, according to the empirical findings be able to offer education, which requires **extensive knowledge about waste** as well as **pedagogical skills**, also classified as *human capital resources*.

According to Barney (1991) physical capital resources are defined as geographical location, equipment, plants and technology. The vehicles used to collect the waste are therefore *physical capital resources*. According to the empirical findings, one of the criteria a waste management firm is evaluated upon is which type of cars they use and if the car and the fuel are environmentally friendly. **"Green" vehicles** are thus an important resource when competing for procurements. A waste management firm can be evaluated based on which fractions it is allowed to move. For this **several certificates and permits** are required, which can be considered to be *human capital resources*, since it is connected to what internal knowledge and expertise the firm possesses.

61

As mentioned previously, a **separate service division** is an important capability when being an outsourcing partner. The isolated service division should, according to Gebauer et al (2010b), be responsible for its own profits and losses. This means it must be possible to charge for the service, or the service division might present poor results. A **value-based pricing model** is therefore an important capability if wanting to offer waste management. Storbacka (2010) also mentioned the importance of value-based pricing models when offering services. This is a *realizing capability* (Kowalkowski & Kindström 2012). To be able to develop such a model an **understanding of the customer's organization and processes** is required, in order to quantify the value created by the service. The companies in the benchmarking highlighted the importance of possessing knowledge about the customers' processes. This is an *identifying capability*, since it includes acquiring extensive knowledge about the customer. If involved in the segregation of waste, **close contact with the employees at customer location** is needed, according to the empirical findings. This is a *realizing capability* since it involves close cooperation and integration with customers (Kowalkowski & Kindström 2012).

5.7 EDUCATION AND TRAINING

In *figure 16* a visualization of identified resources and capabilities required when offering education and training is presented. The resources and capabilities are described below, except the resources and capabilities already mentioned in chapter *5.2 Service Provider Strategy*.

			PRODUCT-ORIENTED SERVICES			PROCESS-ORIENTED SERVICES			
			Basic IB Services	Maintenance services		Professional services		Operational services	
			F				F		
RESOURCES	Physical capital resources	Technology solutions	X				X		
		The customer	X				X		
	Human capital resources	Accreditation	X				X		
		Medical knowledge	X				X		
		Knowledge in a broad range of areas	X				X		
	Organizational capital resources								
CAPABILITIES	Operational capabilities								
	Identifying capabilities	Understanding of customer processes	X				X		
	Realizing capabilities	Ability to show the value of the service	X				X		
		Actively involve customers	X				X		
		Understanding of service value among employees	X				X		
	Transforming capabilities	Separate service division	X						
		Partnerships with software companies	X				X		

Figure 16. Resources and capabilities needed for service type F.

5.7.1 Resources Required when Offering Education and Training

According to the empirical findings, **accreditation** for education and training is highly appreciated. Different countries have different ways to decide this, and internal knowledge about the possibilities to provide accreditation or ECTS for the training is a requirement, which is a *human capital resource*. If the training is connected to medical practices, a **medical background among the employees** of the service provider increases credibility. Employees with a medical background are also *human capital resources*, and this applies to all of the trainers leading any courses, since they must possess knowledge about the area they are teaching. Practical expertise is also sought for, according to Ward and Wood (2000). If the education and training is offered on-line or through audio and video, it can be considered a *physical capital resource*, since all different types are based on some sort of **technology**. The customers are requesting more accessible training, and it is therefore important to have theses various types to fulfill different customers' needs, which is also enhanced by Ward and Wood (2000).

Most benchmarking organizations are offering education and training within a broad range of topics, both connected to medical practices and organizational and process-oriented topics, such as leadership training and organizational behavior. This requires **knowledge in a broad range of areas**, and is a *human capital resource*. Having a broad range of education topics makes it easier to offer customized solutions, which is crucial when offering services to achieve competitive advantages (Teece 2007).

5.7.2 Capabilities Required when Offering Education and Training

To avoid offering education and training free of charge, it is important to **be able to show the value created by the service**. Several authors highlight this as an important capability when offering services (Vinnova 2013; Kindström & Kowalkowski 2009; Storbacka 2011; Ward & Wood 2000). This can be connected to *realizing capabilities*, which builds on the internal ability to understand and communicate the value created by the service to the customer. It is also about understanding the customer processes, which will contribute to an understanding of the created value. **Partnerships** with external companies are also mentioned in the benchmarking, which can be considered to be a *transforming capability*. This creates an opportunity for the service provider to be more diversified, since all knowledge does not have to be held in-house.

5.8 SUMMARY OF REQUIRED RESOURCES AND CAPABILITIES

In *figure 17* a summary of all identified resources and capabilities required for all service types is presented.

			PRODUCT-ORIENTED SERVICES				PROCESS-ORIENTED SERVICES				
			Basic IB Services		*Maintenance services*		*Professional services*			*Operational services*	
			F		**C**		**A+B**	**C**	**F**	**D**	**E**
RESOURCES	*Physical capital resources*	IT-tool			x						
		Technology solutions	x						x		
		IT-system									x
		"Green" vehicles									x
		The customer	x						x		
		Large product range								x	
		Invest in a technical solution for traceability								x	
	Human capital resources	Knowledge in planning theory						x			
		Customers' knowledge			x		x	x			
		Accreditation	x						x		
		Deep understanding of the healthcare sector					x				
		Evidence-based findings					x	x			
		Change management knowledge					x				
		Knowledge about laws and regulations									x
		Pedagogical skills	x				x		x		x
		Knowledge about waste									x
		Permits and certificates									x
		Medical knowledge	x				x	x	x		
		Knowledge from other industries	x				x	x	x		
	Organizational capital resources	Key account manager									x
		Top management support					x	x			
		Contact points with top management					x				
		Contact points with middle management					x				
CAPABILITIES	**Operational capabilities**										
	Dynamic capabilities — *Identifying capabilities*	**Understanding of customer processes**	x		x		x	x	x	x	x
		Presence at customer location					x			x	x
		Broad range of service areas					x				
		Ability to identify new needs								x	
		Clear internal structures									x
	Realizing capabilities	**Actively involve customers**	x				x	x	x		x
		Communication skills and ability to change when addressing different roles					x				
		Identify user needs and communicate this ability					x				
		Understanding of service value among employees	x		x		x	x	x	x	x
		Ability to show cost savings/value of the service	x		x		x	x	x	x	x
		Value-based pricing model								x	x
	Transforming capabilities	Partnership with software companies	x		x				x		
		Partnerships (academic world and medical expertise)					x				
		Separate service division	x							x	x
		Well-functioning network								x	
	Systems integration capabilities	Integration with IT-systems at customer site			x					x	
		Customer data			x			x			

Figure 17. Resources and capabilities needed for all service types.

According to the table, certain resources and capabilities can be considered to be more important than others when offering these service types. Understanding of service value among employees and the ability to show cost savings are important for all service types. This is supported by the empirical findings where the ability to show cost savings were strongly emphasized. These two capabilities are connected to each other, since to be able to show the value of the service, there must be an understanding present internally within the company.

Another capability important to all service types is, according to the table, an understanding of customers' processes. This capability together with the capability to actively involve

customers, which was important to five of the service types, requires extensive knowledge about the customer and its environment. This statement is supported by the fact that the most important resources for a majority of the service types were medical knowledge, knowledge from other industries, and/or pedagogical skills. To achieve the capabilities of having an understanding of customers' processes and actively involve the customers, human capital resources are a prerequisite. Capabilities cannot be achieved without the appropriate resources. In the healthcare sector the involvement of customers and the knowledge of the service provider can be considered even more important, since this environment is "profession-focused". In such environment, where high autonomy exists, the employees listen more to people that understand their business and involve them in the decision about changes.

6 DISCUSSION

In this chapter the discussion is presented. The discussion is divided into theoretical and managerial implications. In the theoretical implications the contribution to theory is discussed and an extended conceptual framework is presented, together with a suggestion for future research. The managerial implication discusses the findings regarding the identified service types in this thesis.

6.1 THEORETICAL IMPLICATIONS

The purpose of this thesis was to investigate and identify which resources and capabilities that are required when offering new service types. The purpose was also to develop a framework to be used to map required resources and capabilities for different types of service offerings. The developed conceptual framework was a merger of classifications of service types, and classifications of different resources and capabilities found in various literature (Kowalkowski et al 2011; Oliva and Kallenberg 2003; Mathieu 2001b; Jiang 2014; Barney 1991; Kowalkowski and Kindström 2012). By connecting service classifications and resources and capabilities, it is possible to analyze resources and capabilities required for certain service types. This can be useful when creating business portfolios, to take advantage of and invest in new service offerings that require similar resources and capabilities.

In the conceptual framework, none of the capability classifications were considered to suit the ability to integrate systems owned by the service provider with systems at customer site. The ability to have access to important data from IT-systems at customer site did not fit in any of the classifications in the conceptual framework either. According to the analysis, it seems crucial to have these kinds of capabilities. A classification considered more suited for these kinds of capabilities was *systems integration capabilities* presented by Brady et al (2005). Therefore, the classification *systems integration capabilities* was added to the subgroups of dynamic capabilities in the conceptual framework. The reason this capability was regarded as a dynamic capability is the fact that IT-systems are constantly updated, and the integration mechanisms must be able to respond to these dynamic changes. Systems integration capabilities meet the requirements of a dynamic capability, which is defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al 1997 p. 516).

When mapping the resources and capabilities for the different service types, no capabilities were considered to belong to the classification *operational capabilities*. Operational capabilities are the capabilities a company holds to be able to perform a certain activity, such as predefined routines (Helfat & Peteraf 2003). These capabilities can be considered more connected to products. Since services are not standardized and often customized (Bowen et al 1989), they lack predefined routines for how to perform a certain task. Therefore the identified resources and capabilities were classified as either belonging to the subgroups of *resources* or *dynamic capabilities*. Operational capabilities were therefore removed from the conceptual framework. See *figure 18* for the extended conceptual framework.

		PRODUCT-ORIENTED SERVICES		PROCESS-ORIENTED SERVICES	
		Basic IB Services	Maintenance services	Professional services	Operational services
RESOURCES	Physical capital resources				
	Human capital resources				
	Organizational capital resources				
CAPABILITIES (Dynamic capabilities)	Identifying capabilities				
	Realizing capabilities				
	Transforming capabilities				
	Systems integration capabilities				

Figure 18. The extended conceptual framework.

As mentioned in the background, Oliva and Kallenberg (2003) believe that organizational attributes, i.e. firm resources and capabilities, are important when entering new service markets. The connection between service types and resources and capabilities were not as explored in the literature as each of them was individually. By using the extended conceptual framework, the connection between service types and required resources and capabilities will be possible to map. The framework will facilitate the evaluation of new service types by providing the possibility to identify similarities in required resources and capabilities, and act as decision-support when moving towards a more service-oriented business portfolio. By investing in resources and capabilities that are shared by several service types, more services can be added to the business portfolio, which will increase the possibilities to benefit from the investment.

6.2 MANAGERIAL IMPLICATIONS

When mapping the identified service types, some similarities regarding required resources and capabilities were found. Within almost all service types, a physical resource that is required is different type of IT-solutions. This type of resource is probably quite cost intensive, but seem to be something that is crucial to maintain when offering different type of services. If not having this resource internally at a company, this is something that can be achieved by partnerships or acquisitions.

When mapping the resources required within the different service types, it was found that human capital resources, such as knowledge, are crucial since this type of resources were the

67

most common resources found in the empirical study. Human capital resources are difficult to copy (Hutt & Speh 2010), and if a company invests in human capital resources, the chances of succeeding with the service and achieve competitive advantage will increase. Human capital resources were particularly highlighted in process-oriented service, why it can be derived that human capital resources are even more crucial within these types of services. An interesting cluster that can be seen in the mapping is that when offering professional services, medical knowledge is considered more important compared to the service types classified as operational services. This might be due to the fact that the services classified as professional services, are regarding the customers core processes, which is to cure and care for patients. To gain trustworthiness within these areas, medical knowledge, and also medical background seems to be crucial in order to win the customers trust. The service types classified as operational services are more connected to non-core activities such as waste management and logistics, and here the service provider is supposed to act as an outsourcing partner where a medical background is not important. This can be connected to the trend of outsourcing non-core activities, which is supported by Punke (2013) who highlights that hospitals mainly outsource non-core activities. In these areas, other type of knowledge is important.

The understanding of customers' processes is important for all service types. When offering services, the connection with the customer is more intense and the solutions are often more customized, compared to product offerings. The understanding of customer processes is thus crucial, to be able to deliver customized solutions. Kowalkowski and Kindström (2012) also mention the need for dynamic capabilities due to the ever-changing business environment, and the deep understanding of customer processes is therefore important to be able to capture new needs and identify new business opportunities regarding. To be present at customer location is therefore beneficial, and in the mapping it can be seen that this is highlighted in the process-oriented services.

What can be identified in the framework is that different forms of partnerships are required for all service types. This might indicate that to be able to deliver holistic and end-to-end solutions, it is not possible to hold all the required knowledge internally in one company. Therefore partnerships are crucial. What needs to be considered when establishing partnerships is who will be responsible for the contact with the customer. Some partnerships might result in one partner losing the contact point with the customer, which can be considered as a risk since it will be more difficult to identify new customer needs.

For a manufacturing company, if striving to become more service-oriented and offer more process-oriented services, the services should be separated from the products. This is especially important regarding education and training. Training connected to products should be kept separated from training regarding other areas, to avoid sending mixed signals and lose credibility. If the education regarding other areas are promoting products as well, the customer will perceive the training as a sales pitch, and not proper education that they would be willing to pay for. Another area for discussion is pricing of services. In this thesis it has been found that services are sometimes offered for free in connection to product offerings, since the value of the service is difficult to estimate. This is another reason for keeping the

services separated from the products. If an understanding of the service value is achieved internally, together with the ability to show the value towards the customer, this will make it easier to charge for the service. The customer will not pay for something they cannot see the value of.

When being an outsourcing partner, a separate service division is an important capability to maintain. For the service types that not are classified as requiring a development partner strategy, a separate service division might be counterproductive (Gebauer et al 2010b). When choosing what service types to offer to the customers, this difference is important to consider. The results might indicate that it is better to either be involved in development partner offerings or outsourcing partner offerings, and not both.

Looking at the servitization transition, there is a high degree of servitization when a company is offering total solutions. This should be the main goal, and is a combination of products and services, which will end in taking over parts of the end-users operations. It may be difficult to go from pure products to solutions over a day, since resources and capabilities must be added to the company. Regarding the case company, the transition should be undertaken gradually. However, the focus should be on professional services since the company possesses knowledge within these areas.

6.3 FUTURE RESEARCH

This master thesis has been limited to services offered to customers within the healthcare sector. The identified resources and capabilities are therefore affected by this limitation, and other resources and capabilities might be of more importance in other industries. An interesting area for further research is therefore to apply the conceptual framework to other industries to investigate if it can be extended further, both on the vertical and horizontal axis.

Two out of five challenges presented by Martinez et al (2010) have been addressed in this thesis. These challenges are *embedded product-service culture* and *internal processes and capabilities*. By using the developed framework, companies can identify resources and capabilities needed within the firm, and thereby identify ways to overcome these challenges. Ways to overcome the three other challenges presented by Martinez et al (2010) could be a subject for future research.

7 CONCLUSIONS

The purpose of this thesis was to investigate and identify which resources and capabilities that are required when offering new service types. The purpose was also to develop a framework to be used to map required resources and capabilities for different types of service offerings. The purpose was addressed through a case study in collaboration with the case company's service division, who identified six service types to investigate. The purpose was divided into two research questions, and by answering these research questions the purpose of this thesis is fulfilled.

RQ1: What is required in form of resources and capabilities to be able to offer the six identified service types?

By analyzing the findings in the literature study and the empirical study the following resources and capabilities were found to be most important:

Understanding of customers' processes – This capability was highlighted within almost all service types. The understanding of customers' processes is a prerequisite to be able to offer customized solutions. To have this capability, human capital resources are proven to be important.

Available knowledge within the company – As mentioned above, human capital resources are important. Different type of knowledge is required within different service types. In the service types where knowledge was highlighted as especially important, the service offerings are based on the knowledge that the employees in the company possess.

The mix of medical and other expertise – Within the healthcare sector, medical expertise enhances the trustworthiness of the service offering. However, it is important to have knowledge within other areas as well, to be able to offer an outsider's view on the processes.

Understanding of service value among employees – This is important to all service types. An understanding of service value will facilitate the ability to show cost savings, which is another important capability, since cost efficiency is an order-winner.

RQ2: How can the connections between service types and resources and capabilities be analyzed?

The connections between the studied service types and resources and capabilities were analyzed by mapping the results from the empirical findings in the conceptual framework derived from the literature. This made it possible to identify clusters and similarities of the required resources and capabilities. By analyzing the summary of resources and capabilities required for all service types, an extended conceptual framework was created, see *figure 19*. This framework can be used to map and analyze any service types, and act as decision-

support when evaluating new service types. By investing in resources and capabilities that are shared by several service types, the possibility to benefit from the investment increases.

			PRODUCT-ORIENTED SERVICES		PROCESS-ORIENTED SERVICES	
			Basic IB Services	Maintenance services	Professional services	Operational services
RESOURCES		Physical capital resources				
		Human capital resources				
		Organizational capital resources				
CAPABILITIES	Dynamic capabilities	Identifying capabilities				
		Realizing capabilities				
		Transforming capabilities				
		Systems integration capabilities				

Figure 19. The extended conceptual framework.

By combining the answers to these two research questions, the purpose of this thesis was fulfilled. The mapping of the empirical findings made it possible to identify which resources and capabilities that are required when offering these service types, and in the framework connections and similarities between the service types could be found. The discussion of the results led to an extended conceptual framework, to be used to map the required resources and capabilities for any types of service offerings.

REFERENCES

Amit, R. & Shoemaker, P.J.H. (1993). Strategic assets and organizational rent. *Strategic Management Journal,* Vol. 14 No. 1, pp. 33-46. Cited in Jiang, W. (2014). *Business Partnerships and Organizational Performance: The Role of Resources and Capabilities.* Berlin Heidelberg: Springer.

Baines, T.S., Lightfoot, H., Benedettini, O., Whitney, D. & Kay, J.M. (2009). The adoption of servitization strategies by UK-based manufacturers. *IJMechE Part B,* Vol. 224 No. 5, pp. 815-830.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management,* Vol. 17 No. 1, pp. 99-120.

Becker, S., Schanaberger, J. & Timmerman, A. (2013). 5 Key Trends in Healthcare for 2013. *http://www.beckershospitalreview.com/hospital-management-administration/5-key-trends-in-healthcare-for-2013.html* [2014-04-07]

Bowen, D.E., Siehl, C. & Schneider, B. (1989). A framework for analyzing customer service orientations in manufacturing. *The Academy of Management Review,* Vol.14 No. 1, pp. 75-95.

Brady, T., Davies, A. & Gann, D.M. (2005). Creating value by delivering integrated solutions. *International Journal of Project Management,* Vol. 23, pp. 360-365.

Brax, S. (2005). A manufacturer becoming service provider – challenges and a paradox. *Managing Service Quality,* Vol. 15 No. 2, pp. 142-155.

Bryman, A. & Bell, E. (2011). *Business research methods*, 3rd edition. Oxford: Oxford University Press.

Capire/HCM on behalf of SVID (Stiftelsen Svensk Industridesign). (2013). *Design av tjänster inom hälsa, vård och omsorg: En kunskapsöversikt.* SVID.

Chandra, C. (2008). The case for healthcare supply chain management: insights from problem-solving approaches. *Int. J. Procurement Management*, Vol. 1 No. 3, pp. 261-279.

Clawson, J., Lawyer, P., Schweizer, C. & Larsson, S. (2014). Competing on Outcomes: Winning Strategies for Value-based Health Care https://www.bcgperspectives.com/content/articles/health_care_payers_providers_biopharma_competing_on_outcomes_winning_strategies_value_based_health_care/ [2014-04-07]

Collis, D. & Montgomery, C. (2008). Competing on resources. *Harvard Business Review*, July-August 2008, pp.140-150.

Dubois, A. & Gadde, L-E. (2002). Systematic combining: an abductive approach to case research. *Journal of Business Research,* Vol. 55 No. 7, pp. 553-560.

Echeverri, P. & Edvardsson, B. (2002). *Marknadsföring i tjänsteekonomin.* Lund: Studentlitteratur.

Ellis, N. (2011). *Business-to-Business Marketing: Relationships, Networks & Strategies.* Oxford: Oxford University Press.

Eriksson, L.T. & Wiedersheim-Paul, F. (2008). *Rapportboken - hur man skriver uppsatser, artiklar och examensarbeten*. Liber.

Gebauer, H., Bravo-Sanchez, C. & Fleisch, E. (2008). Service strategies in product manufacturing companies. *Business Strategy Series,* Vol. 9 No. 1, pp. 12-20.

Gebauer, H., Edvardsson, B. & Bjurko, M. (2010a). The impact of service orientation in corporate culture on business performance in manufacturing companies. *Journal of Service Management,* Vol. 21 No. 2, pp. 237-259.

Gebauer, H., Edvardsson, B., Gustafsson, A. & Witell, L. (2010b). Match or mismatch: Strategy-Structure configurations in the service business of manufacturing companies. *Journal of Service Research,* Vol. 13 No. 2, pp. 198-215.

Gebauer, H. & Fleisch, E. (2007). An investigation of the relationship between behavioral processes, motivation, investments in the service business and service revenue. *Industrial Marketing Management,* Vol. 36 No. 3, pp. 337-348.

Gebauer, H., Fleisch, E. & Friedli, T. (2005). Overcoming the service paradox in manufacturing companies. *European Management Journal,* Vol. 23 No. 1, pp. 14-26.

Glouberman, S. & Mintzberg, H. (2001). Managing the care of health and the cure of disease - part 1: differentiation. *Health Care Management Review*, Vol. 26 No. 1, pp. 56-69.

Gremyr, I., Löfberg, N. & Witell, L. (2010). Service innovations in manufacturing firms. *Managing Service Quality,* Vol. 20 No. 2, pp. 161-175.

Gremyr, I., Witell, L., Edvardsson, E. & Gustafsson, A. (2012). Tjänstelogik som utgångspunkt för innovationer i tillverkningsindustrin. In *Innovationsledning och kreativitet i svenska företag,* editor: Richtnér, A. & Frishammar, J., pp. 122-129. Vinnova och Stiftelsen IMIT.

Gustavsson, S. (2013). *The customer in focus: Patient roles in designing and improving care processes.* Licentiate thesis. Chalmers University of Technology. Gothenburg: University.

Hedley, B. (1977). Strategy and the "business portfolio". *Long Range Planning.* Vol. 10 No. 1, pp. 9-15.

Helfat, C.E. & Peteraf, M.A. (2003). The dynamic resource-based view: capability lifecycles. *Strategic Management Journal*, Vol. 24 No. 10, pp. 997-1010.

Hutt, M.D. & Speh, T.W. (2010). *Business Marketing Management B2B,* 10th edition. South-Western Cengage Learning.

Jiang, W. (2014). *Business Partnerships and Organizational Performance: The Role of Resources and Capabilities.* Berlin Heidelberg: Springer.

Kindström, D. & Kowalkowski, C. (2009). Development of industrial service offerings: a process framework. *Journal of Service Management*, Vol. 20 No. 2, pp. 156-172.

Kindström, D. & Kowalkowski, C. (2014). Service innovation in product-centric firms: a multidimensional business model perspective. *Journal of Business & Industrial Marketing,* Vol. 29 No. 2, pp. 96-111.

Kowalkowski, C. & Kindström, D. (2012). *Tjänster och helhetslösningar, nya affärsmodeller för konkurrenskraft*. Malmö: Liber AB.

Kowalkowski, C., Kindström, D. & Brehmer, P-O. (2011). Managing industrial service offerings in global business markets. *Journal of Business & Industrial Marketing*, Vol. 26 No. 3, pp. 181-192.

Kumar, R. (2011). *Research methodology – a step-by-step guide for beginners,* 3rd Edition. London: Sage Publications Limited.

Lee, B-K., Ellenbecker, M.J. & Moure-Ersaso, R. (2004). Alternatives for treatment and disposal cost reduction of regulated medical wastes. *Waste Management,* Vol. 24, pp. 143–151.

MacDonald, I. (2013). 4 super-sized healthcare trends. http://www.fiercehealthcare.com/story/4-supersized-trends-changing-future-healthcare/2013-11-27 [2014-04-07]

Malleret, V. (2006). Value creation through service offers. *European Management Journal*, Vol. 24 No. 1, pp. 106-116.

Martinez, V., Bastl, M., Kingston, J. & Evans, S. (2010). Challenges in transforming manufacturing organizations into product-service providers. *Journal of Manufacturing Technology Management,* Vol. 21 No. 4, pp. 449-469.

Mathieu, V. (2001a). Service strategies within the manufacturing sector: benefits, costs and partnerships. *International Journal of Service Industry Management,* Vol. 12 No. 5, pp. 451-475.

Mathieu, V. (2001b). Product services: from a service supporting the product to a service supporting the client. *Journal of Business & Industrial Marketing,* Vol. 16 No. 1, pp. 39-58.

Maxwell, J.A. (1992). Understanding and Validity in Qualitative Research. *Harvard Educational Review,* Vol. 62 No. 3, pp. 279-300.

Mohr, J., Sengupta, S. & Slater, S. (2010). *Marketing of High-Technology Products and Innovations*, 3rd edition. New Jersey: Pearson.

Neu, W.A. & Brown, S.W. (2005). Forming successful business-to-business services in goods-dominant firms. *Journal of Service Research,* Vol. 8 No. 1, pp. 3-17.

Nicholson, L., Vakharia, A.J., & Erenguc S.S. (2004). Outsourcing inventory management decisions in healthcare: Models and application. *European Journal of Operational Research*, Vol. 154 No. 1, pp. 271-290.
Oliva, R. & Kallenberg, R. (2003). Managing the transition from products to services. *International Journal of Service Industry Management,* Vol. 14 No. 2, pp. 160-172.

Porter, M.E. & Teisman, E. (2004). Redefining Competition in Health Care. *Harvard Business Review,* June 2004, pp. 1-14.

Punke, H. (2013). Outsourcing is Exploding in Healthcare – Will the Trend Last? http://www.beckershospitalreview.com/workforce-labor-management/outsourcing-is-exploding-in-healthcare-will-the-trend-last.html [2014-04-07]

Saarela, J. (2012). Avfallshantering – Problem och perspektiv vid Sahlgrenska Universitets. Master thesis. Institution for biology and environmental sciences, Gothenburg University. Gothenburg: University.

Storbacka, K. (2011). A solution business model: Capabilities and management practices for integrated solutions. *Industrial Marketing Management,* Vol. 40 No. 5, pp. 699-711.

Teece, D. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal,* Vol. 28 No. 13, pp. 1319-1350.

Teece, D., Pisano, G. & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal,* Vol. 18 No. 7, pp. 509–533.

Theodosiou, M., Kehagias, J. & Katsikea, E. (2012). Strategic orientations, marketing capabilities and firm performance: An empirical investigation in the context of frontline managers in service organizations. *Industrial Marketing Management,* Vol. 41 No. 7, pp. 1058-1070.

Thurmond, V. (2001). The point of triangulation. *Journal of Nursing Scholarship,* Vol. 33 No. 3, pp. 253-258.

Tsakona, M., Anagnostopoulou, E. & Gidarakos, E. (2007). Hospital waste management and toxicity evaluation: A case study. *Waste Management,* Vol. 27, pp. 912-920.

Valentine, S. (2014). Top 10 Healthcare Trends to Watch in 2014. http://www.thecamdengroup.com/thought-leadership/top-ten/10-healthcare-trends-to-watch-in-2014/ [2014-04-07]

Vandermerwe, S. & Rada, J. (1988). Servitization of business: adding value by adding services. *European Management Journal,* Vol. 6 No. 4, pp. 314-324.

Vinnova. (2013). *Handledning för insatser riktade mot tjänsteverksamheter och tjänsteinnovation.* (Rapport 2013:15). Stockholm: Vinnova.

Visnjic Kastalli, I. & Van Looy, B. (2013). Servitization: Disentangling the impact of service business model innovation on manufacturing firm performance. *Journal of Operations Management,* Vol. 31 No. 4, pp. 169-180.

Ward, J. & Wood, C. (2000). Education and training of healthcare staff: the barriers to it success. *European Journal of Cancer Care,* Vol. 9, pp. 80-85.

Wiengarten, F. & Pagell, M. (2012). The importance of quality management for the success of environmental management initiatives. *International Journal Production Economics,* Vol. 140 No. 1, pp. 407-415.

Yin, R.K. (2013). Validity and generalization in future case study evaluations. *Evaluation,* Vol. 19 No. 3, pp. 321-332.

Appendix A – Interview Guides

Examples of questions asked during the internal interviews:
1. What type of background do you have and what is your role in the company?
2. What is done within this service area in your country/region?
3. Do you know what competitors are doing in this area?
4. How do you evaluate the potential of this service area?
5. In your opinion, which capabilities would a company need if offering this type of service?
6. What do you think about having a stand-alone service not connected to products and offered to new customers as well?
7. How do you perceive the possibility to charge for this service type?
8. Have you experienced any customer demands regarding this service type?

Examples of questions asked during the external interviews:
1. What kind of background do you have, and what is your main expertise?
2. In your opinion, what are the main challenges when offering services to the healthcare sector?
3. In your opinion, what are the main challenges when offering this particular service type to the healthcare sector?
4. Which are the most important contact points at customer location?
5. What is the most important knowledge possessed within your company?
6. What are the most important resources and capabilities?
7. What is required from an organization offering this type of service to healthcare providers?
8. Do you believe partnerships are important when offering this type of service?