Master’s Thesis Study

Toward service orientation in manufacturing firms
The requirements and challenges for innovation and new service development process
The case of Ericsson AB

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Abstract

Moving toward services business is more than just a new source of revenue for the manufacturing firms. Increased competition blended with ever increasing demands from customers makes the transition toward services an essential shift for competitiveness and survival of manufacturing companies. This new landscape, however, brings about some challenges for the manufacturing firms that possess long lasting organizational routines and processes designed for the context of physical products or software. Idiosyncratic characteristics of services (Intangibility, inseparability, heterogeneity, perishability) urge for routines and processes which are different to those for physical products. New service development (NSD) process is among these critical areas. This research is aimed at understanding the requirements of an effective NSD process through a single in-depth case study.

In this research we provide empirical support for the NSD process model suggested by (Kindström and Kowalkowsky(2009). Theoretical contributions also include deeper understanding of services and differentiation of services with regards to 1) their nature of relationship with customers, 2) degree of Standardizability 3) degree of integration/separation of services to physical products. We have also considered typology of service innovation in our study and tried to map empirical findings from the case study to the earlier findings in this context. The study results suggest adjustments to the process according to findings from different service areas. Managerial implications also consider adaptation of knowledge management strategies and supportive approaches to amplify service innovation at Ericsson AB.

**Keywords:** New service development process, Service innovation, Knowledge management for services, Service typology, NSD effectiveness
We would like to thank our supervisor Nicolette Lakemond (Associate Professor) for providing academic support during the study. We would also thank our opponent Ksenia Onufrey (M.Sc.) for her critical reviews and constructive feedbacks on our thesis.

Our gratitude also goes to our company supervisor, Anders Areskoug (M.Sc. MBA) and his colleagues at Ericsson AB for their supportive role during the project as well as providing facilities and maintaining continuous dialogue and productive discussions that helped us in data collection and analysis of our findings at the company.

This research was relied on cooperation of many of hundreds of Ericsson employees who dedicated their precious time to participate in the interview, answer our questionnaires or supported us in finding the required pieces of information. Some of the names are mentioned in the appendixes, but we are thankful to many other people whose name is not mentioned in this report.
1. Introduction
This chapter is an augmentation to the thesis by describing the study background, identifying problem and purpose of the study, as well as defining the scope, research questions, limitations, delimitations and thesis disposition.

1.1. Background
In response to intensified competition and new customer demands, service offerings are becoming more and more important for the manufacturing companies (Kindström, 2010, Sundin et al, 2010). Services business provides new sources of competitiveness to manufacturing companies by opening gateways to exploit new financial, strategic and marketing opportunities (Gebauer et al, 2009). Service offerings are not only a source of additional direct profits for the companies, but also a strategic tool to create value for the customers and to secure long term competitiveness.

During the last decade, a number of leading manufacturing companies have moved toward service business rapidly and have integrated services into their offerings, while adjusting their organization and processes for the same purpose (cf. Davies et al, 2006). Nonetheless, there is a question to answer concerning the question that whether it is better to adopt the best practices of these companies in manufacturing to the services offerings (with some modifications) or it is necessary to develop totally new sets of processes for the purpose of service business. Among these critical areas is the process for development of new services, or New Service Development (NSD) process. In this study, empirical data from a single in-depth case research are synthesized against literature so as to address the same issue.

1.2. Problem definition
As a result of trend towards service business, manufacturing companies need to increase their focus on services and on solutions covering both services and products to maximize value of their offerings (Gebauer et al, 2005). This “servicification” (Normann, 2001) is a challenge for manufacturing firms, because they typically have a long lasting manufacturing/production culture and mentality (Kindström and Kowalkowsky, 2009). Due to a number of fundamental differences between services and physical products (Ibid), New service development and its underlying process cannot be treated just as new product development practices of manufacturing firms.
Nevertheless, it has been suggested that generic good practices which are relevant in the management and organization of (physical) product development can be useful for the context of service development as well (Tidd and Hull, 2010). However due to specific characteristics of services, literature suggest that some important adaptations or a totally new set of processes might be required for service related matters (cf. Tidd and Hull, 2010). Innovation in services and the process of Service development (in the context of manufacturing firms) is one of those areas which has been neglected for decades in the literature, due to focus of studies on manufacturing context.

1.3. Purpose, Scope and Research Questions

The objective of this research project is to assess the effectiveness of using common processes for development of products and services. Identification of probable shortcomings of this approach in practice together with theoretical framework provides a basis to respond to this dilemma in service-manufacturing companies as well as finding an answer for “new service development process” in this context. Furthermore, based on understanding differences between services, we aim to identify possibilities for improvement on new service development process.

In view of the above issues, the scope of this research is divided into two main areas as following:

- **Process Effectiveness**: The extent to which formal service development process fulfills the needs\(^1\) and the reasons behind cases of ineffectiveness
- **Process Improvement**: Possibilities for improvement in NSD process according to the research findings and insights from practitioners

Based on this classification, Three Research Questions can be identified as following:

- **Research Question 1**: What are the differences in requirements of service development process and product development process in the context of manufacturing firms?
- **Research Question 2**: To what extent it is possible to manage different types of services and different levels of innovativeness with the same process?
- **Research Question 3**: How can existing service development process be improved in order to increase its effectiveness and address specific requirements of service users?

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\(^1\) Effectiveness can be defined as “The degree to which objectives are achieved and the extent to which targeted problems are solved” (According to businessdictionary.com). However, the objectives can be defined in different levels and for our context, measures such as “service business profitability”, “new service development time” or “market share in service business” can be considered as appropriate. However, all of these items are dependent on many factors other than the development process and it is impossible to isolate their effect. For this reason, we define the process effectiveness as the perception of process users about the degree to which the process fulfills firm’s objectives.
The answer to above research questions will provide insights into the problem that whether a totally new process is necessary for the service development process or a number of adjustments to the generic product development process would be effective. The identified requirements will be translated into a set of specific recommendations for service development process.

1.4. Research delimitations

Ericsson has a large organization including joint ventures, sister companies and a number of different functions from manufacturing/production to the sales, support and services, etc. but for the purpose of our research that is to study service development process, we deliberately narrowed down the scope of our study merely to the service organization of the company. Chapter 2 of this thesis provides a comprehensive background about the company and its organizational structure as well as elucidation on its service organization.

Since investigation of formal processes and confronting them with the real practice in order to find cases of decoupling as well as measuring its effectiveness with regards to the requirements of service development in different areas and suggesting improvement proposals requires an in-depth understanding of the phenomenon, we deliberately limited the scope of our study in order to be able to focus in the defined area rather than horizontal integration of many different aspects. Nevertheless we found some areas to have a high level of impact in our study; such as service innovation and customer feedbacks/involvement in service development as well as knowledge sharing and knowledge management, etc. To compensate and make a balance, we tried to cover some of these aspects which we found so much critical in our study, while still keeping them limited within the abovementioned scope of the study, representing peripheral aspects of the main areas of our research. Yet we think these areas worth more investigation by future researchers, thus we tried to collect a number of recommendations for future studies in this field which we found important throughout our study. These recommendations can be found in the concluding parts of our thesis paper.
1.5. Thesis disposition

As demonstrated in the figure, this master’s thesis consists of seven chapters as following:

- Chapter One: As an opening chapter to the thesis paper, provides brief introduction to the background, scope, purpose and research questions of our study. Boundaries of research (delimitation) and limitations of our study are also provided in this chapter.

- Chapter Two: Provides an overall view of the empirical scope of our study, with an illustration on organizational structure and service organization of the case company. This chapter is especially helpful for those readers who don’t have previous knowledge and background about the company and thus can gain general understanding about our case.

- Chapter Three: Describes how the study was conducted, justifying our research approach, means of data collection as well as analysis, validity and reliability of the study.

- Chapter Four: Constructs theoretical foundations of our study and a review of the most relevant literature and introduces studies and experiences from previous studies within the scope of our research.

- Chapter Five: Represents our empirical findings from the case company, which are brought together through different means of data collection used in the study.

- Chapter Six: Provides an analysis to the empirical findings, which is a result of triangulation of findings from different sources data collection as well as contrasting existing literature and earlier findings within the scope of the study.

- Chapter Seven: Represent a summary of the results and recommendations for future research in this area, based on findings from our study. This chapter mainly covers academic contributions and managerial implications and insights for practitioners in this field to be able to employ findings of this study into the real world.

The structure of our study is further illustrated in figure 1 (next page).
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Figure 1-1 Overview of the thesis
2. **Background information about Ericsson**

This chapter is dedicated to a brief introduction of our case company and the empirical environment in which we collected our data in this study. The aim is to provide the readers with an overall picture of Ericsson and its service business in a general level. Empirical findings from the company are then represented in a separate chapter. This chapter introduces the company and its organizational structure as well as an introduction to the services business at Ericsson.

### 2.1. What is Ericsson

Established in 1876 at Stockholm with original name as Telefonaktiebolaget LM Ericsson, the company is a world-leading provider of telecommunications equipment and related services to mobile and fixed network operators, offering end-to-end solutions for all major mobile communication standards globally. Moreover, Ericsson invests heavily in R&D and actively promotes open standards and systems, owning over 23,000 patents. Ericsson’s strategy is built on three fundamental pillars: Customer intimacy (end-to-end capabilities), Operational excellence and scale (fast and efficient to market) as well as Technology leadership (industry leading solutions).

Ericsson tends to focus on having well defined operational, business models, processes, and ‘clear’ and ‘simple’ organization. Ericsson has emphasized the importance of operational excellence at all levels. This is needed to secure efficiency and time to market for technological solutions and improving financial margins. Operational Excellence is focused on the ability of company to execute its strategies and plans in a fast and efficient way. It contributes to extending innovation capabilities and to improving ability to reuse assets, competence and knowledge for increased productivity.

Ericsson has a clear concentration on customer relationship, and for having end to end capabilities for its solutions, and it has the ambition to take end to end responsibility towards customers. Ericsson claims to be the partner of choice for mobile operators’ revenue growth, operator cost efficiency, and mobile and fixed operator network transformation. In addition to that, Ericsson positions itself as the leading business and technology innovator. Value creation for customers is argued to be in the centre of all company decisions. Ericsson wants to be seen as “innovative, responsive, empowering and customer-oriented” throughout the whole organization.

Ericsson has been driving the technology and standardization for decades. For instance, HSPA and LTE\(^2\) are now world standards and Ericsson has a leading position in these technologies. It secures that Ericsson is always capable of offering the industry leading solutions to its customers and hence can have an enormous competitive advantage over its competitors. Nonetheless, the

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\(^2\) HSPA (High Speed Packet Access) and LTE (Long Term Evolution) also known as 4G (4th-Generation) are the latest standards/protocols in the mobile network technology that enable increased peak data rates of for instance over 100Mbps (Mega bits per second).
competition and business landscape is quite challenging, in part because strong Chinese competition is declining volume of product sales in some markets and strong bargaining power of operators are now making competition more fierce than the past.

2.2. Ericsson’s organizational structure

Below illustration shows the global organizational structure of Ericsson. According to the company’s annual report (2008) the CEO and the Executive Vice President of Ericsson are appointed by the Board of Directors. The CEO in consultation with the President and the Group Management Team (which consists of the Heads of Group Functions and the Heads of the business units) are responsible for the daily management. Their major tasks are to establish long-term visions, to form strategies and policies and maximize the group’s business.

Next to the CEO are the Group Functions. These functions consist of: Communication, Finance, Human Resources & Organization, Legal Affairs, Sales & Marketing, Strategy & Operational Excellence and Technology. Their role is to systemize the company’s strategy, operations and resource allocation and to ensure efficiency by optimizing common processes, tools and the organization in general. The heads of the Group Functions directly report to the CEO.
Under these two (CEO and Group Functions) in the organization chart, Business Units (Bus) are located. They are divided into four main areas as:

- **BU Networks**: Provides the basic technology for communication

- **BU CDMA**: Provides core technologies for multiple access to mobile communication channels

- **BU Global Services**: including business areas of Consulting, Customer Support, Learning Services, Managed Services, Network Roll-Out and Systems Integration provides wide range of services from product-near (add-on services on installed-base equipments) to product-agnostic services (pure or stand-alone services such as consultation and project management, etc.) We will further elaborate on this part of the organization as main focus of our study is on services.

- **BU Multimedia**: Provides customers with mobile TV and music solutions.

These business units are each responsible for their profits and their growth. They also report to the CEO. (This is Ericsson, 2008)

Further, Ericsson has also market units (regions), which are marketing and sales representatives in the local markets (e.g. Central Europe, France, Mexico, North America, etc.) Their role is to define customer strategies and to enhance business growth. They are responsible for the whole customer relations starting at marketing via sales and to after sales services. (Ericsson organization, 2009)

### 2.3. Services business at Ericsson

Ericsson has a long tradition of providing services and it has been working with a specified unit (Business Unit Global Services) for more than a decade. In this sense, Ericsson is quite advanced and experienced in the field of services in compare to other manufacturing firms.

Nevertheless, professional services are increasingly become important for Ericsson and an indication of this trend is the fact that Services sales accounted for 27 percent of total sales in 2009, up from 23 percent in 2008.

Demand for professional services in telecommunication industry is growing rapidly. This growth in demand is a consequence of network operators’ shift towards optimizing their Capital

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3 The information in this section are all retrieved from company public information on its website and annual reports and complimented by personal observations of the researchers.
investments (Capex) for instance by reducing cost of ownership for installed-base equipments, avoiding unnecessary costs and providing a competitive end-user experience. While the share of services sales is still low when compared to network products, the number of employees in this section is around 50% of total company employees and this is a clear indication of importance of service business for Ericsson organization. The portfolio of Ericsson professional services consists of six service product (service) areas:

1- Managed Services: Ericsson claims being the market leader in managed services and offering the most comprehensive managed services solutions. This type of services is about outsourcing network operations and taking over operations of mobile networks by Ericsson, which can be done with totally different scope and settings. These operations can include network design and planning, network operations (including operation of non-Ericsson equipment), field operations site maintenance, shared solutions (e.g. managed backhaul, hosting of platforms like pre-paid or real time billing, charging, etc.)

For Ericsson and its competitors, the potential value of managed services is expected to be higher than value of for network equipment and related deployment services. A well-established mobile network operator typically spends around 6 percent of revenues on network equipment and around 12 percent on operating its network. Today, operators handle majority of operational expenses internally but at the same time, for cost saving and effectiveness, outsourcing managed services is getting more and more popular among network operators.

More than two-thirds of network operational expenses today are believed to be handled in-house by operators, but network operations are increasingly being outsourced as operators realize the competitive advantages and potential cost savings. Therefore, the available market for managed services is expected to continue to growth further. Over the time, as networks evolve and grow and become more versatile, their complexity increases and so does the number of operations and business support systems required to handle the operations.

2- Systems Integration: integrating equipment from multiple suppliers, manage technology change programs, designing and integrating new solutions are among typical service integration offerings. Operators increasingly rely on Ericsson and similar companies to serve as prime integrators in order to ensure successful deployment of complicated solutions. The increased usage of multimedia services has triggered the pace for this trend toward increased demand for system integrators.

3- Consulting Services: Ericsson’s consulting services offer support to customers in decision-making, planning and execution in the way to improve and grow their business. Expertise in business, strategy and technology are the main drivers of the quality of Ericsson consulting services. Ericsson claims the ability to provide expertise into end-to-end solutions in the key
areas of multimedia, 3G, network rollout, broadband, value creation and revenue assurance. *Strategy consulting*, *Operational consulting* and *Technology consulting* are three areas that are included in this type of services.

4- **Education and learning services**: These services include classic training courses and also on-the-job training or virtual-training courses for operators on Ericsson products or general telecommunication technologies. Ericsson provides tailored education programs to its customers with the aim of ensuring that operators’ employees have the right skills and competences required for managing current and future complex technologies.

5- **Customer Support**: The main objective for customer support services is to provide mobile network operators with network availability, stability with new technology, operational efficiency and service continuity. Different level of hardware and software support, software and hardware update and upgrade, spare part management systems and alike are provided by Customer Support Services of Ericsson through local offices as well as regional and global support centers.

6- **Network Roll-out**: Operators need purchased products to be deployed, expanded, restructured, and upgraded or migrated by the equipment vendors. Network Roll-Out services address such needs and related areas. Ericsson provides customizations to roll-out service offerings in order to meet specific customer needs and create more customer value, calling on solutions for the full range of turnkey network rollout needs. The Network Roll-out services include *Project Management*, *Network Planning & Design*, *Network Build*, *Network Integration*, and *Network & Site Optimization*. 
3. Methodology

In this chapter, we describe how we conducted this research. The overall framework of the study is presented by identifying the research approach followed by data collection and data analysis methodologies.

3.1. Research approach

Existing studies within service literature show that New Service Development (NSD) and its related issues (i.e. service innovation, service diversification, service taxonomy, service standardization, etc.) are growing fields of research. It is also apparent that this area of research still needs explorative approaches and profound studies in order to widen its boundaries until it gets more consolidation and maturity. Likewise, our research is mainly focused on service development process within the context of manufacturing firms and it concerns exploring requirements for effective service development and discovering improvement solutions accordingly.

Previously, there have been attempts by some researchers to frame the research areas within product service-systems (Sakao, et al., 2009), but there is still room for more research to facilitate deeper understanding, discovering challenges and shaping the scope of research in this area. Therefore, there is a need for consistent research approaches to comply with such characteristics if new studies are to be conducted in this field.

As mentioned earlier in previous chapter, our study aims at exploring differences in requirements for service development and finding decoupling between formal process and actual practice in NSD as well as improvement areas for the process to increase its effectiveness. Therefore, an explorative and in-depth research approach needs to be taken in order to correspond to the very nature of the study.

Other studies on service innovation and service-manufacturing dimensions also showed that research is still developing and there is still room and need for qualitative studies to be done in this field (Sundbo, 2007).

Our study, therefore, deployed a qualitative case-study research approach as described by Yin (2003) in his book on case study research. According to Yin, “a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when boundaries between phenomenon and context are not clearly evident”. Taking this definition into consideration, it is indeed required to look into an emerging issue in the context of service innovation through the lens of in-depth case study. The advantage of using a case study approach lies on its inherent characteristic of in-depth investigation that enables the researcher to dig down into the subject in order to find underlying principles and explore causations while
benefiting from multiple sources of evidence and prior development of theoretical propositions. (Yin, 2003) In our study we also used multiple sources of data and triangulation which are further described in the following sections.

3.2. Research design
Following is the detail process that describes how the research boundaries were formed and developed.

Forming research boundaries
The origin of this research project was a real business problem at a major telecommunication company as described earlier in chapter 2. Initial interviews with company’s experts who had called for this project were conducted to understand the situation. Two full-day sessions of interactive discussions provided an overall understanding of service business at Ericsson and more importantly, the specific issue of service development process in the Business Unit Global Services. The main outcome of these sessions was the outline of our research questions which with later developments structured the research proposal as well as scope of the study.

Academic sources, databases and other sources of information
The first round of literature review was conducted to find prior research findings related to this field. Scientific papers were the primary source of this phase of study, while published books on service management and service innovation were also of great value (see reference list). Scopus and Business Source Premier were among the main scientific databases which we used to find journal articles, and due to newness of the topic and scarcity of resources we did not limit the result to first tier journals. In addition, Google search and its novel function called scholar search were also quite useful in finding publicly published papers (at university websites, or in commercial sources) and benchmarking cases from other sources than academic ones. We also utilized Linköping university library premises for accessing to the hard copy of some of our academic references (such as books), which were not available in the electronic version otherwise.

Searching methods
The primary keywords were “New service development” (or NSD), “Service Innovation”, “NSD Process”, and different combination of these keywords with “Knowledge Management” or
“KM”, “Knowledge Sharing”, “KS” and the results were further investigated to assess their appropriateness. We also made good use of Publish or Perish (Harzing) and its functionalities to check popularity of the paper as well as their authors in other academic sources. Notwithstanding more attention was given to the papers with more citations as more significant research activities. This phase of literature review led to a preliminary framework for the study.

Forming Focus-Group
Aforementioned overall framework provided a suitable ground to form a focus group with a number of key managers at the company who were responsible for the development of different services in their areas within Ericsson’s portfolio. These people have been selected based on their function in the organization and each of them was representing a unique function of the organization within Business Unit Global Services (BUGS) at Ericsson. The purpose of having a focus group in the study was to define the needs and scope of the study as well as having a reliable source of firsthand information available during the whole period of study that can guide us throughout the project when it’s needed.

The scope and objectives of the study was then presented formally for the reference group for confirmation and agreement to start the project. The initial findings were also presented to the audiences and then an open discussion was used to record the reflections upon the presentation. Furthermore, there were close interaction and ongoing discussions with the company representative to provide constant feedback on the progress of the study according to the specified objectives as well as weekly reports summarizing the progress of data collection and its synthesis to the academic supervisor at the university.

Interval checkpoints
Moreover, there have been interval sessions with both supervisor as well as company representative to formally present our study progress and receive feedbacks according to the objectives. Below figure demonstrates an overview of these interval sessions during the research period from December 2010 until May 2001.
As illustrated in Figure 3.1, there have been several checkpoints with both academic supervisor at the university as well as company representative and reference group throughout the study period. Following table also represents details of each session and main deliveries in each checkpoint:

### Table 3-1  Interval checkpoints, dates and outcome of each session

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<th>Description of the session and main outcomes</th>
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<td>1</td>
<td>24,Nov,2010</td>
<td>Formal initiation of the project (academic)</td>
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<td>2</td>
<td>2,Dec,2010</td>
<td>Formal initiation of the project (company)</td>
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<td>3</td>
<td>15,Dec,2010</td>
<td>Kick-off presentation with the reference group, agreements on project scope and objectives (company)</td>
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<td>4</td>
<td>8, Feb,2011</td>
<td>Presentation of early academic report to the supervisor (academic)</td>
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<td>5</td>
<td>18, April,2011</td>
<td>Preliminary presentation of research findings to the company representatives and experts within service research at Ericsson (company)</td>
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<tr>
<td>6</td>
<td>20, May,2011</td>
<td>Submission of draft report to the supervisor (academic)</td>
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<tr>
<td>7</td>
<td>30, May,2011</td>
<td>Final submission of academic report and defense session at the university (academic)</td>
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<tr>
<td>8</td>
<td>June, 2011</td>
<td>Final submission of research findings to the company representative &amp; reference group – Project endings (company)</td>
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### 3.3. Research quality

As an in-depth study, we needed profound understanding of the case in its embedded complex environment. On the other hand, to ensure quality aspects of the research were looking for ways to improve reliability of our findings; and the quality of findings is to a large extent related to the
measurements (e.g. data collection, empirical findings, etc). As described by Trochim & Land (1982), reliability refers to "the degree to which an instrument measures the same way each time it is used under the same condition with the same subject". In other words, it is the repeatability of the measurement. Thus, by repeating our main instrument measures we tried to improve reliability of our study. This was done through three phases of data collection including two rounds of in-depth interviews as well as a questionnaire-based round of interview as elaborated below. Each of these phases are further described and justified in the next sections.

Phase I: One-to-one in-depth interviews with the focus group
Phase II: Second round of interview including wider range of interviewees
Phase III: Questionnaire-based interviews to double-check the results of the interviews

On the other hand, ensuring validity of the research was mainly related to the synthesis and analysis of the data. Cook & Campbell (1979) defined validity as "the strength of conclusions, inferences or propositions" and we wanted to make sure our conclusions are an accurate approximation of the reality. For this purpose, we used multiple phase analysis and made good use of available literature in the field to avoid bias in our conclusions. We also paid attention to a number of additional considerations that are further described in the final part of this chapter. Below are the explanatory aspects of our research quality measures with regards to data collection, synthesis, analysis and conclusions.

1. First phase of data collection: One-to-one interviews with the focus group
In-depth interviews with all focus group members have been conducted to acquire detailed information about the status of service development process at each of the functions within the studied organization.

Personal interviews were based on open-ended questions and followed as a guided interview by letting the interviewees to express themselves in a descriptive manner. However, when it was needed, the interviewers intervened to ask further questions or to guide the interview to the intended directions within the scope of the study. The interview process was usually started with a short introduction to the research project and letting them to know about interviewers and their background as well as getting to know about interviewees, their position in the organization, their areas of responsibilities and introduction to the services in their area. Thereafter, the interviewees were asked to describe current service development process in their respective service area and how the formal NSD process is interpreted and being handled in their area.

A total number of nine interviews were conducted in this stage each of which last between 45 minutes to two hours. Most interviews were conducted through face-to-face meetings, except
Methodology

1. First phase of data collection: telephone interviews

Three interviews were conducted via telephone; because the related interviewees were either too busy or unavailable at the premises during that period of time. All interviews were either recorded and then narrated into text, or noted down during the interview and re-organized for further analysis. Furthermore, a summary of interview has been sent to the interviewees for confirmation and final modifications if needed. A list of interviews is provided in the Appendix.

2. Second phase of data collection: wider scope of interviews

A second round of interviews was conducted to clarify primary findings of the first round interviews. Moreover, we found that there are other relevant areas that needed to be covered in order for us to be able to carry out an appropriate analysis of findings. Therefore, early findings from the first round was gathered and a list of wider range of interviewees were ordered in order to provide more comprehensive understanding of the phenomenon as well as clarifying early findings from the first round of interviews. Second round of interviews covered some of previously interviewed managers that more elaboration of their areas were needed as well as a number of other relevant areas that could either affect service development process, or was directly affected by the results of service development process, such as service delivery and sales. Total number of 14 interviews at this stage was done and approximate duration of each interview was 30 to 45 minutes. All interviews in this phase were done through face-to-face meetings. List of interviewee’s titles are provided in the Appendix.

3. Final phase of data collection: Questionnaire-based interviews

After careful consideration of results from the first and second round of interviews, we came to conclude a number of key factors in service development which could be further tested on a wider range of interviews from different service areas. The main purpose with this phase was to have an overall and unified picture of service development from all services areas in the case company. For this purpose, a large number of pillars (criteria) which have been previously found through in-depth interviews were formulated in an on-line questionnaire platform within the company’s internal website which enabled correspondents to reflect their views based on each of these pillars in the numerical scales.

However, it should be noted that quantifying the results of this study was neither possible (due to the complexity of its nature), nor was it the objective of our research to conduct quantitative measures (as explained earlier). Nevertheless, having an overall estimation of correspondents’ reflection upon specific aspects of service development through a cohesive perspective to be able to compare and analyze qualitative findings was the only purpose with conducting such questionnaire or web-poll in our study. After a number of revisions and modifications to this
questionnaire, a wide range of relevant issues have been formulated as measurable aspects (between 30-40 pillars) and correspondents were contacted and asked to fill-in the questionnaire. Due to the length and complexity of this questionnaire, interviewees have been called one by one and were asked to spend their time in filling in the forms while interviewers were present at the same time to provide support and clarify the purpose of each question to ensure the quality aspects of the responses. Each questionnaire took between 15 to 30 minutes to fill in at this phase. More than 30 respondents were targeted to fill in the questionnaires at this stage.

A survey has been also designed to target issues related to knowledge sharing that could lead to potential new service initiations and service innovation from the market side (employee-driven innovation). The survey was aimed to target front-end personnel who are in close contact with customers and their needs, which are also expected to have better understanding the nature of competition and trends in the market. Thus the survey was sent to the sales and delivery personnel in different regions within a wide range of service areas at Ericsson to cover both feedbacks on service improvements as well as collecting new service initiative ideas.

3.4. Analysis and synthesis

The analysis of the gathered data in the first round showed that the previously developed high level framework is insufficient to explain variations between different offerings within Ericsson portfolio of services. There was a need for differentiation between different services and different levels of innovation in development projects. Furthermore, based on outcomes of the studied research papers and inputs from interviews, a specific area of the high level framework proved to be very important for the context of this study. This area, namely knowledge management for service innovation needed further elaboration, because we believed it has some fundamental connection with the effectiveness of new service development process. To address these two areas, a second round of literature review was conducted.

For the service classification, again the same sources were utilized for search, with more emphasize on Scopus database as the primary source and keywords such as “service typology”, “service classification”, “innovation typology in development projects” and so forth. The results were limited in number, but some of them were quite relevant and significant. For the knowledge management and sharing, the same database was used. There is abundance of literature concerning knowledge management, hence to filter the most relevant data, only those which were dealing with service development processes were considered.

In order to make best use out of interviews and questionnaire responses, we tried to relate all the questions to the developed theoretical framework. However, not all of the responses were of the
same significance and validity. This is mainly related to the fact that only a few persons within
the organization possess the high level perspective toward the under study areas and others were
focused only on certain parts. For the same reason, the responses from department heads and
people with more knowledge about the field of study were prioritized.

The outcomes were interestingly helpful to explain many implied or articulated problems of our
research. The initial findings were presented to a number of Ericsson’s research experts in a 90
minutes session and the feedbacks were collected (referring to one of the interval checkpoints on
18, April, 2011 as mentioned earlier). To triangulate the validity of findings from interviews, the
questionnaire that was developed in the third phase of empirical findings to measure the degree
to which the existing process satisfies the users’ needs was quite helpful. As explained, the
questionnaire was a reflection of developed theoretical framework and previous two rounds of
interviewees, which was also purified by academic supervisor as well as company experts
through the interval sessions and continuous feedbacks. A total number of 18 questionnaires
were hand to the selected respondents and after explanation about each question their response
were recorded on a Likert scale.

3.5. Benchmarking cases

To provide more validity to our findings as well as comparing our results with external sources, a
leading Swedish truck manufacturer which has also moved towards service business recently was
considered and an interview with a high level manager responsible for service development was
held in that company. This face-to-face interview was held in Göteborg for around two hours,
but it was not recorded due to confidentiality considerations. Nonetheless, the insights from this
brief study were valuable to validate some of the research findings.

Another benchmarking case was selected among a number of other manufacturers with
similarities with emphasize on service experience and knowledge management. ABB Facility
Management in Sweden was found out to be a potential benchmarking case covering both
aspects as well as many similarities with our case. Reasons underlying choosing this case was
that both companies (Ericsson and ABB) are considered as large organizations that knowledge
management and information sharing are considered as a challenging task in their context.
Furthermore, both studies are conducted at the same geographic areas with similar social and
cultural factors that may influence people’s behavior and mindsets as well as their approach to
the use of information systems at their job. Third, the resemblance of the problem in both
companies makes it easier to draw comparisons between the two cases. Furthermore, as a service
provider in the field of facilities management services, ABB FM was considered as the world’s
best practitioner of IT systems and information processing according to an international benchmarking study among European facilities management companies (Petri 2000; p. 11).

3.6. Additional considerations

To ensure quality aspects of the research, we have also considered following issue in our study. It should be mentioned that some of these issues were carefully observed and was brought under control, but for some other aspects we were somewhat limited to the practical boundaries of the research. Certainly, we are aware of these limitations and tried to minimize their impact in the study as much as possible. Following, are a number of issues we observed during the study.

NSD as a human-oriented process
New service development requires involvement of large number of specialists and experts from a wide range of disciplines, with many different priorities and aspirations and thus incorporates some levels of human aspects into the process. It seems inevitable to avoid such human interference in to the processes, since services naturally comprise of intangible artifacts such as tacit knowledge, which is embedded and internal to the people, group dynamics and human imperfections. Nevertheless, we observed and tried to cope with such aspects in the study, by triangulation of information and empirical findings and evaluation and confirmation of our early finding in different phases throughout the research. We have further elaborated these aspects with regards to people’s resistance to change, sharing knowledge as well as complexities embracing NSD processes in the analysis chapter.

Confidentiality
We were also bounded by confidential aspects of the company’s business, since some information was considered strategic and limited to the internal organization and sometimes only available to the top management level. In this regard, our access to such information was limited and thus might have limited our findings to some extent. Nevertheless, we had to respect company’s security guidelines, while at the same time stay with our mission to contribute to the academia as committed scholars.

Researchers’ own perception
As mentioned earlier, validity of the results was to a high extent related to the analysis of the data and the way researchers make conclusions and interpretation of findings. We made our best efforts to act professionally and stay impartial to the observations and empirical findings as well
as being cautious to the research scope and its limitations in our analysis. However, it is possible to assume that researchers might be biased by their own perceptions or early judgment on the results. To mitigate negative effects of this aspect, continuous discussions between two of us and feedbacks from our academic supervisor as well as the company couch, who was kindly supportive and guiding throughout the whole period of the project, were quite helpful and valuable to this study.

Extending the results
Nevertheless, it was not the intension of this study to make conclusions on broader scales or generalize findings to an industry-wide scope, as it is difficult to expect in-depth case studies to make such general conclusions. Moreover, this novel area of research still needs more explorative approaches to expand its boundaries and develop, and are aware of the fact that our study could not cover many other aspects of research due to its limitations, but we hope our recommendations for future researchers to be helpful in further improvement of the research quality in this field. A list of recommendations for further research is available at the end of this document.
4. Theoretical framework

In this chapter innovation process within the context of services will be explored and contrasting factors with innovation of physical goods will be highlighted. Following sections will look into the process of New Service Development and differences with NPD process will be identified. Next, discussions in previous sections and specific literature review on success factors of NSD endeavors at manufacturing companies will be used to develop a framework of success criteria for NSD process. This discussion will result in development of hypotheses of this study.

4.1. Innovation in Services

While according to almost all of the definitions, innovation includes development and implementation of “something new”, innovations in services can be connected with changes in a variety of dimensions (Dejong and Vermeulen, 2003). Dejong and Vermeulen (2003) have put forward a number of examples for service innovation such as innovation in the service concept, the client interface, the delivery system and technological options.

According to Drejer (2004), the area of services had been neglected in innovation studies for decades and consequently studies on Service innovation are still immature. Service innovation can have been studied with three different viewpoints (Coombs and Miles, 2000; Gallouj, 2002): (i) assimilation (Technologist) approach which considers manufacturing and services similar; (ii) demarcation (service-oriented) approach, which suggests that product and service innovation are completely different and there is a requirement for new theories and instruments to study innovation in services; and (iii) Synthesis (integrative) approach that suggests service innovation brings some elements of innovation into attention which are relevant for products as well and were neglected in previous studies (e.g. customer involvement). Researchers are increasingly acknowledge service innovation as a distinct area of study and consequently the focus on first and second approaches among researches is declining and instead the third approach is gaining importance (Droege et al, 2009).

The question that whether findings and best practices in the context of product innovation are equally applicable to service innovation is an ongoing study among scholars (Tidd and Bessant, 2009). It has been suggested that generic good practices which are relevant in the management and organization of product development, with some adaptations, are also useful for the context of service development (Tidd and Hull, 2010) In this section, the sources of differences between product innovation and service innovation and requirements for adaptations of manufacturing experiences to services context will be discussed.

A major difference between innovation in services and manufacturing is that service innovation is not necessarily technological, but it can be non-technological or social (Sundbo, 2007). This is
true because service is highly connected to behavior and knowledge, which both are social phenomena with human resources playing a critical role in development process. For the same reason involvement of management and employees in service innovation has been emphasized (Sundbo, 2007).

Gallouj (2002), identifies three specific characteristics for services which affects the service innovation process in comparison with that of products: (i) Services have a fuzzy and unstable nature because it is not easy to define the boundaries of a service, (ii) Services are interactive and require some degree of involvement from customers in their innovation process, and (iii) there is a higher amount of diversity in relation with the nature and level of innovation within services sector and companies may need to use ad hoc approaches to deal with their specific needs in connection with service innovation. From a different perspective, four distinctive characteristics have been identified for service products: i) **Intangibility** (remaining conceptual throughout the development process, consequently highly uncertain and risky), ii) **Inseparability** or Simultaneity of production and consumption (Produced and consumed at the same time), iii) **heterogeneity** (variations between the actual service outcome and the customer’s experience at each purchase occasion), iv) **Perishability** (Services cannot be produced in advance and then be kept in stock) (Avlonitis and Papastathopoulou, 2006).

Tidd and Bessant (2009) suggest that **perceptions of performance and quality** are of a higher importance when it comes to services. They consider five criteria which need to exceed the customer expectations to create a positive perception for the customers: (i) tangible aspects (Appearance of facilities, equipment and personnel), (ii) responsiveness, (iii) competence, (iv) assurance (Knowledge of staff and sense of trust and confidence) and (v) empathy (Caring and attention). The fact that services are produced in **close contact with customers** is another differentiating factor, according to Tidd and Bessant (2009).

A consequence of these characteristics is that the innovations in services are relatively small in scope and entail incremental changes in processes and procedures (Atuahene-Gima, 1996). Another effect is that service innovation is not as R&D and investment intensive as innovation in physical products and there is no need for huge investments on fixed assets in order to enable service innovations (Brouwer, 1997 as cited in Dejong and Vermeulen, 2003). Nonetheless, service innovation demands for considerable investments in process innovation and technology and also in acquiring required competence and methods to fulfill the new requirements of service oriented business (Tidd and Bessant, 2009).

A main consequence of above mentioned characteristics for services is the need for adjustments when designing and managing the organization and processes for new service development business (Tidd and Bessant, 2009). In the following section, new service development (NSD) process and its distinctive characteristics when compared with Product development process will be discussed.
4.2. New Service Development Process

New service development (NSD) for the purpose of this study is defined with a broad perspective as set of stages, activities and task in a form of a development project which starts with ideation and ends with deployment and termination (Cooper et al, 1994). It has been argued that most of the previously developed NSD process models are widely based on product development processes with some extensions (Perk and Riihela, 2004). However, as it is explained by Johne and Storey (1998), different characteristics of services which were discussed in previous section may result in a need for strategic focus on new service development and adaptations in NSD process.

An important differentiating factor between NPD and NSD processes can be interpreted as the need for having an iterative process for service development instead of a linear stage gate processes. Kindström and Kowalkowski(2009) have put forward two main reasons for this argument:

a) The need for continuous efforts from the companies to gradually develop service through the iterative process (or incremental innovation) rather than one revolutionary approach (or radical innovation)

b) Possibility for a feedback mechanism from the later phases (sales and delivery) to the earlier phases of NSD process.

![Figure 4-1 NSD process framework](image)

Figure 4-1 NSD process framework (Adopted from Kindström and Kowalkowski(2009))

Figure 4-1 depicts the circular process and its components as suggested by Kindström and Kowalkowski(2009). This framework provides a good basis for comparison between NPD and NSD. This is mainly because of the fact that this framework highlights the services context and its specific requirements. In the following section, a number of these requirements will be discussed.
4.2.1. Cross functional teams

Service product development relies on inputs from an extensive value chain of development and delivery and Involving people across different functions to influence the service products from the early development stages requires an organic approach which cuts across the bureaucratic structure (Tidd and Hull, 2010). Terril(1992) suggests that a multifunctional team should be formed during the conception stage of NSD process and held responsible for the new service for some time after market introduction. He further argues that this team should have a goal to determine internal operational capabilities and to ensure availability of feedback from the market concerning new services.

While multifunctional teams are important for NPD process in general, it is mostly back end (mainly R&D and Manufacturing) which takes care of development of physical products. However, NSD process requires involvement of several functions; including those in front end (Kindström and Kowalkowski, 2009). The other differentiating factor with NPD is that cross functional teams work not only during development of new services but also afterwards and until sales and delivery of developed service (Johne and Storey, 1998). A very difficult task is defining the right level of involvement, because blindly involving all functions in all stages of NSD process can cause frustration and disagreement between functions (Perk and Riihalla, 2004). Furthermore, involvement of people from different areas makes communication between team members and management of development project quite complicated and this will lead to the necessity of appointing a project leader with the skills to lead, coach and develop team members (Edvardsson et al, 2007)

4.2.2. Formal but flexible process

Perk and Riihalla (2004) argued that although new service development process tends to be highly iterative, non-linear and rather informal, there is a need for formalization and centralization structure to ensure proper level of governance for NSD process. According to Kindström and Kowalkowski(2009), the need for flexibility stems from complexities associated with service innovation which means that it is necessary for the firms to be capable of identifying and seizing novel innovation opportunities in a rather informal manner. Hence, although a formal NSD process sounds to be vital, too much formalization and structure may inhibit exploration in NSD and consequently endanger the success of the process (Kindström and Kowalkowski, 2009). It should be mentioned that the involvement of cross-functional teams which will take more responsibility in the NSD project may lead to the requirement for less rigidly enforced stage gates in the NSD process (Tidd and Hull, 2010). The focus of the process would be on “structured experimentation” and “supporting good practices” rather than controlling behaviors by means of formal routines (Hales and Tidd, 2009)
Terrill (1992), while promoting a formal but flexible NSD process, prescribes three factors for creation of an effective NSD process: (i) Consistent adherence to formal NSD process, (ii) Continual monitoring of new service objective in connection with customer needs while flexibility during the process to utilize new concepts that may satisfy the objectives, and (iii) having two or more versions for NSD process in connection with service development task complexity or novelty. The latter factor implies that for development of services which are rather simple or are related to quality improvement or concept extensions fewer steps in the process is required, whereas for more innovative and novel service, following the full length process is essential.

4.2.3. Customer involvement/interaction

Ensuring a high level of customer/need fit is believed to be among universal success factors in new service development (De Brentani, 2002). In the context of services, customers are no longer considered as only the receiver of NSD output and they are rather described as ‘co-producer[s] who influence the outcome of the service’ (Sanden et al., 2006). Hence, in depth knowledge about customer problems and needs is considered to be crucial for service innovation, no matter how incremental or radical the nature of under development innovation is (Droege et al, 2009). It should be emphasized that both internal and external customers are valuable sources for successful new service development process (Menor and Roth, 2008). While interaction with customers is an important factor in NPD processes in general, advance services are more demanding when it comes to customer involvement and integration (Kindström, 2010). Intensity and degree of Customer involvement in serviced development can range from passive reception of “customer input and feedback on specific issues” to full participation of the customer in the NSD project (Alam, 2002). However, determining the amount, form and frequency of this involvement is a challenging task and these factors need to be defined in advance in connection with degree of service novelty and with participation of selected internal managers, broad base of employees, strategic partners, loyal customers, former customers and customer segment representatives (Terrill, 1992).

There are a number of tool and techniques for customer involvement in NSD process. According to Johnsson (1998, cited in Sanden et al., 2006, p43), these techniques can be classified into reactive (aimed at understanding customers’ attitude toward existing service offerings) and proactive (trying to find out customers’ future needs). Clearly both reactive and proactive approaches are crucial for achieving a successful NSD process. An important aspect of customer involvement is related to measurement of quality through customer satisfaction and against specific criteria which are developed according to market feedback (Terrill, 1992). Tidd and Bodeley (2002) have argued that focus groups, partnering customers and lead users are the most effective customer involvement tools when dealing with a high degree of product(and service)
innovativeness. Using structured methods for translating customer needs into requirements is a critical consideration when designing the NSD process (Tidd and Hull, 2010). However, there are some difficulties associated with customer involvement and among these factors are the relatively high amount of demand for organizational resources, difficulty and complication, and lack of appropriate methods within the organization (Sanden et al., 2006).

4.2.4. Formal and planned launch program

Due to critical importance of image and identity for service offerings, Terril (1992) suggests that in planned and high quality initial introduction of new service offerings to the customers. Launch program is crucial because it can provide the possibility of service concept adjustment in a timely manner (de Jong et al, 2003) and it help companies maintain their strong brands by a gradual launch of new service offerings (Kindström, 2010). De Brentani (2001), identifies “implementing a formal and planned launch program” as a key success factor for NSD process. She further suggests a number of key NSD functions that occur as parts of formal testing and launch such as: “undertaking pre launch test marketing, extensive training of service personnel, internal marketing of the new service to the front line, and planning a formal promotion and launch strategy during the commercialization phase”.

While formal and planned launch program is important for products and services, increased interactions with customers during launch of service offerings makes it more complex process than launching a new product (Kindström, 2010). For a successful launch program, sufficient amount of preparation and pre-launch activities sound necessary. Ottenbacher and Harrington (2010) suggest that market study, financial study and developing a detailed service concept (which may result in a “service blueprint”) should be considered for this purpose. Melton and Hartline (2010) address the same issue of requirements of launch preparation by suggesting (i) preparation of expert and motivated front line staff, (ii) building commitment of employees for high quality service delivery and (iii) extensive testing of service, processes and related IT systems and commercial programs.

4.2.5. Multiple sources for market sensing and idea generation

According to Kindström and Kowalkowski (2009) Market sensing is about “a thorough scanning of customers, the installed base, competitors, and also internal organization before addressing specific promising ideas in development stage”. This initial phase exists for both product and service development efforts, however there are some characteristics which makes this phase distinctive for services. As Kelly (1999) has explained, ideas for new service offerings are likely to be generated in many ways, arising from inside and outside of the firm or through formal and
informal search processes. Despite the fact that the input from front line employees is very important for the sake of idea generation (Dejong and Vermeulen, 2003), a low percentage of ideas come from this source in practice and it has been suggested that formal NPD process which promotes this contribution should be in place (Kelly, 1999; Kindström and Kowalkowski, 2009). Managers have an important role in this stage, because they should encourage creative behavior and development of ideas (Dejong and Vermeulen, 2003).

The research findings suggest having frequent external interactions (e.g. with customers) as one of the best ways to stimulate idea generation and innovation (Alam and Perry, 2002). Another source of external contact is known to be the sources for competitor related information and considering the rather easiness of service imitation, this factor is exceptionally important for NSD process (Hooley and Mann, 1988).

4.2.6. Increased focus on sales and delivery as parts of NSD process

Kindström and Kowalkowski(2009) have pointed out that whereas conventional product development processes where rather focused on initial stages, new service development projects are more weighted toward final stages of the process, i.e. sales and delivery. Companies need to make their products look differentiated from the customer perspective and people who are responsible for services sales and delivery are the ones who make this happen and trigger the clients switching decision (Dejong and Vermeulen, 2003). This will lead to a need for specific actions for commercialization and boosting new service, since there is no value for service development if it does not fulfill sales targets.

It can be argued that that the degree of realization of financial targets is among the main criteria for assessing ultimate success of a given NSD process (Kindström and Kowalkowski, 2009). There is a requirement for more complicated sales tool for services, in part due to the fact that it is not always possible to measure or assign monitory values provided by services (Ramirez, 1999). For the same reason, companies have to focus more on value propositions and value-in-use arguments to sell services where these argumentations target cost reductions or performance enhancement for the customers (Kindström and Kowalkowski, 2009).

Delivery is suggested to be the most evident difference between NPD and NSD processes (Kindström and Kowalkowski, 2009). High degree of localization and production during delivery are the fundamental differences between product and service delivery (Kindström and Kowalkowski, 2009). The need for service structure for a long period of time is another differentiating factor (Kindström and Kowalkowski, 2009).
4.2.7. Knowledge sharing

It is believed that service innovations need more knowledge sharing when compared to conventional product development (Tidd and Bessant, 2009). Organizational learning which covers the knowledge sharing concept is a crucial part of innovation process (Sundbo, 2007). While knowledge is equally important for developing of product and services, the knowledge from demand side is more crucial when it comes to service innovation (Tidd and Bessant, 2009). As it is explained by Sundbo(2007) both employees and managers play a key role in the learning process which is aimed at two different areas:

(i) Which areas call for innovation and what would be the best innovations to address these areas? Knowledge in this context refers to those connected with customer's needs and wants, technological developments, new managerial and organizational models, etc. This type knowledge provides inputs to innovation process and includes sharing the knowledge about the service offerings address customer problems so that reproducible innovations come to reality.

(ii) How to organize the innovation process? This includes success factors of innovation process and related barriers, experiences about the innovation process and formal methods of organizing innovation process in the firm.

Figure 4-2 – Seven areas which need to be treated differently in the context of NSD (compared to NPD)
It is very important to make individual knowledge available to the organization to do so, people should share their knowledge and experience with others and these knowledge and experiences should be stored in way that can be used by the others whenever needed (Sundbo, 2007). Sundbo (2007) further explains that achieving these aims is a quite difficult take because neither employees are not motivated enough to share the knowledge nor development of suitable IT tools for storage of knowledge is an easy task.

Figure 4-2 depicts the aforementioned seven areas of concern in the new service development process of manufacturing firms.

4.3. Classification of services and service innovation projects

While presented NSD framework provides a high level understanding of the process of service development, it is insufficient to make recommendations for service providing firms. As it is highlighted by Ganz (2007), in the context of service development, it is quite inappropriate to take an undifferentiated approach toward services. Services are heterogeneous by nature and it is essential to treat their development process accordingly. Furthermore, even for a given type of services, development process can range from “a minor improvement in a non-significant component of the service” to “introduction of revolutionary new services”. To address this requirement for contingency approach to NSD process, a discussion on service typology will be presented and then development typology will be discussed.

4.3.1. Typology of services

In this section we investigate how different characteristics of the services can result in different requirements for service development process. We try to find out how identified critical areas in previous section should be handled for the context of different types of services. A thorough literature review led into three main factors for differentiating services.

1- Nature of customer relationships

The nature of relationships with the customer is one factor that has been considered by quite a number of researchers as a major differentiating factor between services. Barth et al (2000) considered the intensity of contact as an indication of nature of relationships with customer. They believed that high level of contact intensity will require more input from customers in development process.4

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4 It should be mentioned that these authors have considered combined effect of contact intensity and Service variability.
Fitzsimmons (2006) considered a difference between the services which are being provided based on a formal relationship and those which are being provided on a transaction basis and in an informal manner. Similarly, Olive & Kallenberg (2003) differentiated “Transaction based” services in contrast with “Relationship based” services. They suggested that service like installation, product oriented training, or consulting are transaction based, while services such as preventive maintenance, condition monitoring, spare part management and managing operations (managed services) are relationship based.

It can be argued that the longer term relationships and more intense contacts with customers will require more customer involvement and interaction. Furthermore, longer term commitments probably urge for more customization in the services. While in business to business type of relationships and more specifically in the context of this study (professional telecommunication services) short term relationship with clients is rare, we are considering the scope of each individual service as the basis for considering a relationship as either short term or long term.

![Figure 4-3- The relationship between nature of customer relationships and NSD process](image)

**2- Standardizability of service**

There are number of reasons which indicate whether or not a service can be standardized. In this section, we will investigate what factors allow a service to be standardized and what factors prohibit extensive standardization (*i.e.* Variety, Complexity, Customizability):
i) Variety of services: According to Barth et al (2000), one influencing factor is variety of services. The authors define variety as the number of determined manifestation of services. They argue that when variety is high it is not possible to standardize the services and when it comes to contact intensive services (which we described in previous section), standardization is even more difficult. For these services, typically vast amount of customization by delivery team and extensive customer interaction are essential.

ii) Complexity: There are quite a few items which can be interpreted as service complexity factors. Saaksvuori and Immonen(2008) have defined five groups of services according to different levels of simplicity, repeatability, and transaction volume. These five categories are: (1) Definable, (2) Repeatable, (3) Configurable, (4) Partly automatable and (5) Automatable services. The authors suggest that for the first level of this hierarchy (i.e. Definable services), it is only possible to define the services on high level. Since this type of services are not delivered in the same way and with the same contents all the time, there is a strong need for customization and therefore standardization is not effective. For the other services in this typology, there is still a room for customer inputs to different degrees, but the main suggestion of the authors is that hose services should be treated as products and be standardized as much as possible.

Yet some other authors have categorized the services with the constructs related to the complexity. For example, Hipp and Grupp(2005) provide four criteria for classification of services across industries which are “knowledge intensity”, “network basis”, “scale intensity” and “supplier dominance”. Similar approach can be observed in some other research reports (e.g. Hertog(2000), de Jong and Marsili (2006)). In short, we consider (1) scale of the services (in terms of required resources and value), (2) Knowledge intensity, and (3) reliance on external resources (for knowledge and other resources) as complexity factors.

iii) Customizability during delivery: Some services are highly dependent on the service delivery personnel and some are not so. Fitzsimmons (2006) has discussed the possibility (and requirement) for customization by service delivery personnel as a differentiating factor for services. He has suggested surgery as a clear example of the services in which many of the actions are according to decisions and judgments of the person who delivers the service (Surgeon). This factor is a major determinant of the possibility for standardization of services.

One may suggest considering customizability during delivery as a complexity factor, however we define them as separate constructs. The main reason for doing so is that it is quite possible that a non-complex requires a high level of customization during delivery. For example a helpdesk is not necessarily complex, but there is not much possibility for standardization in this type of services.
3- Integration/Separation in relation to products

This factor is the most specific for the context of manufacturing companies which move toward more service orientation. It seems that there are fundamental differences in development process of product related services and that of product independent services. This issue has been addressed by a few research projects. For example, Oliva and Kallenberg (2003) divided the services in manufacturing companies into “product oriented services” and “end-user’s process oriented services”. This is in line with typology of service offerings provided by Windahl and Lakemond (2010) who classified services into “product oriented” and “process oriented” offerings. In this point of view, services like installation, product related training and customer support are considered product oriented services. In contrast, business related training, business or process consultation and managed services are perceived as end-user’s process oriented services.

Similarly, Gebauer et. al. (2008) have divided services into “integrated” (those services which are developed as a part of product innovation process) and “separated” (those services which are developed and introduced to the market after product is already developed and introduced to the market). Gebauer and his colleagues found significant differences beside similarities between development processes of these categories of services. In short, they concluded that while there are many similarities in the ways by which integrated and separated products should be developed and managed, there are significant differences between these two. Similarities include involvement of frontline employees, need for information and knowledge sharing and presence of multifunctional teams. Differences are indicated as the need for a role called “service champion”, more autonomy for frontline employees, and market testing and research.

Figure 4-4 – Factors affecting Standardizability of the services
It can be suggested that separated services can be considered as pure services businesses which their success and failure are independent of traditional core competencies and capabilities of a firm. Furthermore, for the same reason, firms have to put more effort to position these services in the market and there is higher chance for market failure.

**Concluding points on service typology**

The summary of above discussion on implications of aforementioned service typology is provided in table 4-1. It should be noted that this table explains how the need for consideration of service specific requirements. When the services are relationship based and the amount of contact with the customer is significant, customer involvement and focus on sales and delivery is arguably become more important parts of NSD process.

The services which have a high level of variety cannot be developed by means of an overtly formal process. Furthermore, sales and delivery of diversified services are critical because it is not possible to develop all of the services in detail before market launch. Overcoming the complexity needs receiving inputs from all the relevant organizational units, including sales and delivery personnel. In many cases complexity urges for more communication with the customer and for the same reason customer involvement and interactions become more important. A formal and planned launch program may assist in overcoming future complexities by focusing on building a first successful experience. Inputs from all possible organizational units may assist in finding appropriate solutions to confront different types of complexity. While customizability during delivery also may require increased cross functional and customer involvement, too much details and formality in the process is probably counterproductive, because sales and delivery teams require sufficient degree of freedom to customize the services.

Finally, product independence urge for presence of service champions which act in close relation with the customers as parts of sales and delivery teams. Furthermore, they should be less constrained with too detailed and formal processes. More customer interaction is required for product independent services, because unlike product dependent services they cannot be fully developed in isolation and outside customer premises. Lastly, a formal and planned launch program is needed to avoid uncertainties associated with market success of separated services.
4.3.2. Typology of Service innovation

Gadrey et al. (1995) differentiated four types of services development activities in the context of financial services: i) Innovation in services, ii) Architectural innovation bundling (or unbundling) existing services, iii) Modification of existing services, iv) Innovation in delivery process or organization of an existing service. According to Gallouj and Weinstein (1997) service innovation can be classified into six categories: radical innovations, incremental innovations, improvement innovations, combinatory (architectural) innovations, formalization innovations, and ad hoc innovations (Gallouj and Weinstein, 1997). “Ad-hoc innovations are defined as the interactive (social) construction of a solution to a particular problem put forward by a client”, (de Vries 2006, p. 1039)

Den Hertog (2000), suggested four categories for service innovation which are: (1) Conceptual innovation, (2) client interface innovation, (3) service delivery innovation/organizational innovation and (4) technological option. Some other authors have taken a higher level perspective to this matter and suggested for example classic product innovation and process innovation (Sirilli and Evangelista, 1998) or Technological innovation and organizational innovation typologies (Van der Aa and Elfring, 2002). Sundbo (2003) considered four
dimensions for service innovation, namely Product innovation, process innovation, organizational innovation and market innovation.

De Brentani (2001) considered the levels of “technology newness” and “market newness” as the factors which affect service development endeavors. Based on this study, for high levels of innovativeness a formal stage gate service development process is not essential. This unexpected result is suggested to be possibly a consequence of perceived counter productiveness of an overtly bureaucratic development process in situations of the fuzziness and ambiguity in the market and/or technology. Yet, the author has argued that this result may be inaccurate because it is based on the opinions of executives in service firms which do not still taking full advantage of a formal and well planned NSD approach. More recently Sundbo et al. (2007) suggested 6 types of service innovation based on a cross industry research which are (1) Product(=Service) innovation, (2) process innovation, (3)market innovation, (4) organizational innovation, (5) technological innovation and (6)widened(or extension in) service.

Avlonitis et al (2001) have provided a typology based on the degree of innovativeness which is quite relevant to the context of our study. They have argued that each type of service requires adaptations in NSD process activities, NSD process formality and Cross functional involvement. Below table provides a summary of their findings:

Table 4-2 – Service Development typology (Avlonitis et al, 2001)

<table>
<thead>
<tr>
<th>Service type</th>
<th>NSD process focus</th>
<th>NSD process formality</th>
<th>Cross functional involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>New-to-the-‘market’ services</td>
<td>Increased emphasis on idea generation and screening, business and marketing strategy analysis and testing</td>
<td>Moderate</td>
<td>Ensuring the involvement of different functions, especially during business analysis and marketing strategy development, technical development and launch</td>
</tr>
<tr>
<td>New-to-the-company services</td>
<td>Emphasis on analysis of competitive offerings and strategy and setting marketing strategy</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>New delivery processes</td>
<td>No significant requirement</td>
<td>High</td>
<td>Limited</td>
</tr>
<tr>
<td>Service modifications</td>
<td>No significant requirement</td>
<td>Moderate; while keeping formality for cross functional meetings</td>
<td>High</td>
</tr>
<tr>
<td>Service line extensions</td>
<td>Increased attention to initial stages and launching</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Service repositioning</td>
<td>Moderate</td>
<td>Limited</td>
<td></td>
</tr>
</tbody>
</table>

It is important to point out that service innovation is closely related to capabilities of the organization in effective management of knowledge with regards to its customers, market trends,
employees and their capabilities that can be analyzed and leveraged into the emergence and development of new services. Other studies considered services innovation in relation to dynamic capabilities of the firm in knowledge management (Shang, et.al., 2008). Following sections will provide a background to the existing literature in this area.

4.4. Knowledge management and new service development

Service development requires involvement of a large number of stakeholders and specialists who carry knowledge and understanding about customer needs, market trends as well as technological perspectives and internal capabilities of the organization in introduction and development of new services. Moreover, complexity of service-systems themselves and the dynamicity of organizational and the ICT environments place knowledge management as a top priority for the service firm in order to successfully handle service development processes (Sorathia, et.al., 2010). Other studies also showed that service success is related to the management of knowledge from three different sources: Customer, Firm and Employees (Teblou, 2006; Constanti & Gibbs, 2005 in Shang, et.al., 2009).

4.4.1. Organizational knowledge transfer

The Knowledge Spiral Model developed by Professor Nonaka & Takeuchi, illustrates how knowledge (either in the form of tacit or explicit) can be converted/transferred within the organization through different modes that are: Socialization, Externalization, Combination, Internalization (SECI). According to Nonaka & Takeuchi (1995), transferring tacit knowledge from one person to another is done through socialization, which occurs through social processes, personal, informal and often face-to-face communication. Converting tacit knowledge into explicit knowledge is done through externalization which refers to documentation and codification. Once knowledge is explicit, it can be transferred through combination which uses formal means of communication such as documentation, rules, norms, formal processes and standards. This is the area where IT/ICT and virtual telecommunication can play a significant role, since codified knowledge can be rapidly transferred using different communication technologies.

Figure 4.5 depicts an organizational knowledge spiral adapted from Nonaka & Takeuchi (1995). The model also defines internalization as the process of absorbing and digesting explicit knowledge within individuals who embed and hold it in the form of tacit knowledge, which again need to be transferred through socialization. Thus the four building blocks of knowledge sharing (SECI) are viewed in a continuous process that forms a knowledge spiral within the organization. The spiral not only enables transfer of knowledge, it also facilitates creation of new knowledge through knowledge accumulation that is happening in a vigorous process, as shown in the model.
Based on a similar typology of organizational knowledge, Leiponen (2006) examined the effects of knowledge management practice on innovation performance in business services. According to this typology, organizational knowledge is classified in two dimensions: 1) the degree of tastiness vs. explicitness 2) the degree of individual vs. collectiveness. More specifically, the study investigates how new service introduction and business service improvements are related to the firms’ approach in managing organizational knowledge with respect to this taxonomy. Results showed that collectively held tacit knowledge (e.g. codified service solutions or team-based competencies and procedures) can positively affect both new service introduction as well as business service improvements, while explicit collective knowledge can only enhance improvement of existing services. This also shows that tacit knowledge has a conducive nature that results in creation of new services. On the other hand, study revealed that relying merely on individual tacit knowledge will hinder innovation in the organization. Thus, firm’s knowledge management approach needs to be adjusted according to strategies and prioritization for new service introduction or improvements on existing services.

Another study by Storey & Kahn (2010) also found relations between firm’s knowledge management strategies (codification and personalization) with its ability to execute NSD activities (NSD proficiency) and NSD innovativeness. In particular, the study revealed that “a
system based on documentation exemplifies a codification strategy and will drive NSD proficiency, [while] a system emphasizing interpersonal communication exemplifies a personalization strategy and will drive NSD innovativeness. However, authors pointed out that knowledge about NSD is primarily tacit in nature and loses its value when codified, thus combining the two strategies would have more positive implications for service companies to sustain long term competitive advantage.

4.4.2. Knowledge Lifecycle

Lifecycle of knowledge is defined as an ongoing cycle of creation, preserving, dissemination and application of knowledge in the organization (Salisbury, 2008). The emphasize here is on the knowledge that is central to the organization and provides core competency. Figure 4.6 illustrates lifecycle of knowledge an iterative process which initiates by creation of a piece of knowledge, when for instance a new unique problem or part of a larger problem is solved in an ongoing project within the organization. Lessons learned from this project need to be preserved in order to be shared with other members of the organization or even third parties involved (customers, stakeholders, other organizations, etc). Diffused or disseminated knowledge can be then reused or applied into a new problem, resulting in the creation of new knowledge and experience, thus progressing in an accumulative process.

![Figure 4-6 Life Cycle of Knowledge adapted from Salisbury (2008)](image)

4.4.3. Knowledge sharing and its influencing factors

Nevertheless, sharing and dissemination of knowledge is an important aspect of knowledge management, which is influenced by many factors such as organizational culture. Hatala & Lutta (2009) for instance, pointed out that effective information\(^5\) sharing is positively related to three

\(^5\) NOTE: We are aware that there are fundamental differences between knowledge and information that one should consider while conducting research in this context. However, in many documents and papers, even in the academic literature these words are used interchangeably. Thus, for
key factors, namely: 1) Top management support, 2) Trust among individuals and workgroups, 3) Shared vision among the parties involved in information sharing.

Other studies found that members with higher network intensity are expected to have greater access to the information in comparison to their colleagues in the same organization (Parker et.al., 2001; Sinkula, 1994 in Hatala & Lutta, 2009). Likewise, Haythornthwaite (1996) and Liebowitz (2005) also showed that information sharing is to a large extent dependent on relationships and organizational structure (Ibid). While relationships mainly refer to the social networks and informal type of knowledge sharing, organizational structure is more looking to the formal procedures and systems that are designed (mainly by the headquarters) to manage and control flow of information in the organization. Other barriers to hamper flow of knowledge and information are perceived as politics, regulations, security, individual positions and lack of equity (or perceived equity) among employees, use of organizational systems, personal differences as well as demographic factors (Hatala & Lutta, 2009).

Other studies considered voluntary involvement of employees in knowledge sharing in comparison to mandatory management systems that require employees to share their knowledge and ideas on how to improve their tasks as part of their job requirements (Avison & Fitzgerald 1988; Tillquist 1996 in Petri, 2000). Studies in this field also identified a number of reasons explaining why employees may not be encouraged enough, or resistant to use IT systems designed for information sharing (Jiang et.al., 2000 in Ibid).

4.4.4. Roots of resistance against information sharing; active or passive choice?

Different reasons are found to explain why there is resistance in employing information sharing systems. Petri (2000) classified them in three main categories as below:

1) **People-oriented factors:**
   - Lack of knowledge, fear or not knowing how to utilize the system

2) **Systems-oriented factors:**
   - Problems related to the design of the system, its interaction with users and interfaces, etc.

3) **Contextual-oriented factors:**
   - Contextual and social aspects of which the information sharing system is surrounded by such as political factors, relational aspects, lack of encourage and motivation, or the fear of losing power, etc.

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the sake of keeping transparency and fidelity in our work, we employed the same wording as it was used in the original publications by the reference authors in their papers, although we think they are different both in nature and in their level of analysis. We will further consider this in our analysis when we use different wordings. For more information and discussion about this topic please refer to Bellinger, et.al. (2004).
Presence of any single or combination of the above factors can lead to a situation where resistance to information sharing might be considered as an active choice by the users. Adding to the above factors, Petri (2000) suggested another dimension for not involving or committing in information sharing, that here we call it as a passive-choice resistance on information sharing:

4) Passive-choice resistance:

“The increasing diversity of responsibilities does sometimes require the employee to choose between different duties, where either – not both – of the alternatives must be chosen” (Petri, 2000). That is, the employee has to choose among a number of alternatives of which one of them is sharing information, but engaging in one of the alternative activities will bind the employee to be able to engage in any other one at the same time. Thus, the activity with the highest priority must be chosen, which usually does not cover information sharing among the top-priority choices for the employee!

In a personal interview with C.J. Petri (2011), the author described that such phenomena also appeared as a typical problem in other organizations that he studied. The problem was related to the data registration tasks of an anonymous express delivery company (e.g. TNT, DHL, FedEx, etc.). Personnel were supposed to utilize a barcode scanner while moving packages from certain points within the delivery path. Such a simple activity would then enable the company to register movements of any single item within its international delivery network through a centralized information system that consequently enables both the company as well as the customer to keep track of posting items at any point of time/location through the delivery journey of the parcels from start until they reach final destination.

All these good results, however, are highly dependent on data registering behavior of the delivery employees, whom themselves are working under conditions where they have to shift the items quite rapidly in the parcel delivery means of transportation (e.g. cargo planes, charter flights, international cargo vehicles, etc.) that very often set them in a situation where they have to choose between data registration or fast physical movement of the parcels. In such speedy conditions, where the most important task ought to be the delivery of parcels at the right time, data registration is most probably a second choice for the personnel who are supposed to quickly move the objects in order to avoid delays.

However, in the eyes of users of such information (company’s central function or the customer), an unregistered movement of the parcel might be interpreted as delay, or missing item through the delivery journey and thus can lead to potential problems or a chain of problems. The interviewee described situations where disappointed customers visited company’s delivery sites with a printed version of their posting delivery information resisting that their parcels must be dropped somewhere in the company’s warehouse and is forgotten to be handled according to the registered information, while in fact, the item has been already sent out but simply without
registering movement information, or an appropriate registration. According to Petri (2011), such working conditions must be considered once we investigate information sharing behavior of employees, and should keep in mind that passive choice resistance might be as much influencing as other factors (e.g. active resistance choice including motivation, inspiration, commitment, etc.) in sharing information within the organization.

4.4.5. Knowledge sharing- pull vs. push approach in service innovation

Innovation in services is discussed within the context of large top-strategic organizations by Sundbo (2007), emphasizing on the role of employees and their knowledge/experience sharing in providing spontaneous ideas which are produced or inspired through their close and often daily interaction with the customer. Such innovation is pull-oriented, indicating that it occurs in reaction to a customer need, or the possibility to sell or introduce a new service, or even a new way of delivering or producing existing services. Such innovation is different from a push-oriented or systematic approach that more often happens in manufacturing firms, which also encompasses expert R&D and centralized innovation practice.

In contrast, innovation in services is non-systematic and more practice-based, which in turn mandates a very important mission for the employees to share their knowledge and experience which they gain from market and in close interaction with the customer. In an employee-driven innovation process, sales and delivery personnel are the ones who generate new ideas; because they are the ones who meet the customer, know the problems in existing processes as well as having knowledge about what is happening in the market and the society which potentially enable them to come up with ideas, solutions or even proposals for the introduction of new services.

The employee-driven innovation is also considered as a collective process as it evolves through discussions, relations and dialogue with the customer, colleagues and coworkers (Sundbo, 2007). Supportive role of IT/ICT and knowledge management systems in providing required infrastructure to communicate and share knowledge and experience found to be imperative in this context. Nevertheless, such knowledge and experiences should not only be shared collected, and stored, but also accessed, re-used and utilized to facilitate employee-driven innovation in the organization. This is also parallel with the earlier discussions in this chapter describing lifecycle of knowledge through a continuous process of creation, preserve and dissemination/application (Salisbury, 2008) as well as organizational knowledge spiral that was related to knowledge transfer in different modes of socialization, externalization, codification and internalization (Nonaka, Takeuchi, 1995).
The dual principle

The augmentation of such paradigm which assumes service innovation more as pull-oriented rather than push-oriented can potentially lead to the discussion around differences between these two approaches and which strategies to be adopted by the organization. Other studies have also considered employee-driven vs. management-driven or similarly bottom-up vs. top-down approaches in the innovation process (Hallgren, 2008). There could be also both pros and cons with each one of the approaches depending on the context of the industry, nature of the business, organizational capabilities, etc. That is, there are advantages and disadvantages for both approaches; for instance, adopting an employee-driven approach in an organization which is not capable of knowledge sharing or effective re-use of knowledge may not lead to more superiority since the knowledge which is created locally (e.g. in the local market) could not be successfully leveraged in other parts of the organization. It can be also related to other influencing factors such as size of the organization and adoption of high-involvement innovation approach (for instance in SMEs) as discussed by Hallgren (2008).

In the context of large top-strategic organizations, Sundbo (2007) argues in favor of a dual organization of innovation, which combines advantages of the both approaches. He explains that both structures can simultaneously exist in a mutually stimuli relationship. That is, not all ideas are generated through a bottom-up approach, although it could be the case for many innovations in services, but a top-down hierarchy should also exist in parallel to the bottom-up structure. The role of top-down structure is mainly, but not limited, to defining the strategy and the direction of which innovation have to take place. Reasoning for the existence of a dual organization is that ideas that are generated in an employee-driven approach might not be immediately practicable and there needs to be organized and developed in a more strategic level.

In this case, the top-down strategy may function as a funnel, collecting knowledge from the lower levels of the organization, developing the ideas and structuring the innovation according to the corporate strategies and objectives. Based on this proposition, Sundbo (2007) argues that the role of top management then is to make balance between these two structures in the organization and making sure that innovation is taking place according to the overall policies. For this purpose, he suggests formation of innovation departments as centers for repository and development of new service ideas. Innovation departments are different from the conventional notion of R&D in manufacturing firms which centralized the innovation processes in headquarters or centers of excellence. In contrast, there’s no research and development as such within services. Service innovation departments are rather considered as communication hubs to make sure that new service initiatives are generated, developed and then disseminated throughout the organization. Even the development of ideas can be delegated to development groups, which are employees with deeper knowledge about customers or market conditions in certain areas.
5. Empirical findings

5.1. Service development process at Ericsson

As explained before, Ericsson has three major business units, namely BNET (Business Unit Network), BMUM (Business Unit Multimedia) and BUGS (Business Unit Global Services). BNET and BMUM own all products within Ericsson’s portfolio while BUGS holds ownership for all the services, whether they are independent from the products or they are related to a product of software within BNET and BMUM. We refer to the services with a direct relationship to products and software as “Product dependent” services and we call the rest of the services as “product independent”.

Market units, which are Ericsson’s units close to different customer markets, make use of individual services or products or more often a mixture of them to make proposals to the customers and if successful, to sign and deliver contracts. While the market units are responsible for profit and loss for each contract, it is product owners who are responsible for profit and loss for any individual product or service. Service owners within BUGS are the ones who are responsible for development of different types of new services within BUGS and they own the processes and other tools and methods for development and delivery of services.

Ericsson currently uses life-cycle management process on a generic level in order to handle development processes for both products and services. Same process description with somewhat different requirements on decision material throughout the process is being used for service development. This alignment is aimed at coordination between service and product design units when developing product-related service offerings. However, the effectiveness of this approach is not clear for process-oriented services.

The process is focusing on decisions related to investment and strategy throughout the life-cycle. Decision criteria are defined by templates for documentation. According to the comments from process owners, service innovation and knowledge sharing within the service organization are not integrated into the process. Also actual guidance in developing decision material is outside the process description today.

There are eight decision points after opportunity analysis which is being considered in the context of five phases of product lifecycle. Defining business opportunity, defining service content, market launch, increasing the sales and phasing out the services are the five phases. Eight decision points start after an opportunity analysis which is not considered to be in the scope of Product Life-Cycle Management (PLCM) process. Below figure depicts five stages and 8 decision points of Ericsson’s PLCM process as it is now:

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6 In Ericsson the term “product near services” is more common instead
This process is being used only for development of the new services and activities such as monitoring and improvement of the services are considered to be outside of the scope of this process. Hence, it is expected from the service owners to continually monitor and evaluate the services and ensure that they are in line with company objectives and customer requirements all the time. Furthermore, according to our discussions with Ericsson experts, decisions 6-8 which are related to the time those products becomes obsolete and needs to be phased out, are extremely unlikely for the context of services. The only possibility is that when a product reaches its end of life and consequently product-dependent services need to be restructured or adjusted for totally new products which will replace the old ones. In this section, we will look into the different decision points and discuss how they are being handled by service owner at this stage of the time.
1- Definition of opportunity

The *opportunity analysis* concerns investigating if the opportunity for development of a new services fits well with strategic options of the firm and also whether it is likely to be sufficiently valuable for the business. A brief analysis on the strategic fit and commercial aspects of the new opportunity are the main components of this stage. This stage is being understood merely in connection with the new services, and improvement in existing services is not being considered as service development opportunity as such. As we mentioned earlier, this is the responsibility of service managers to continuously monitor and improve services and this is not part of the PLCM process as it is now.

A very important concern in our research was the way in which the inputs to opportunity analysis are being gathered. Ericsson has quite a number of sources to gather the possibilities for introduction of new services. Customer requests are a very important source of ideas and opportunities for development of new services. These requests are often being handled by local organizations in different regions and if they look to be promising enough, service managers will incorporate them in the service portfolio. Competitor movements are also carefully being monitored by Ericsson and an interesting new service which is being introduced by the competitors will be a candidate for inclusion in the portfolio. Finally, inputs and ideas from Ericsson’s employees in different organizational units are a natural source of ideas and opportunities. However, as we discussed previously, none of these inputs are being gathered as part of PLCM process.

The other important aspect of opportunity analysis is the fact that since Ericsson is renowned as a technology leader in telecommunication industry, many of the new products are extensively relied on internal exploration and R&D activities. For the services, however, we were not able to identify an R&D department as such. This holds true for both services and tools by which services are being developed.

It can be concluded that the input to service development (and service innovation) is not a systematic process and furthermore, the scope of new service is defined very broadly so that in most of the service areas introduction of totally new services is considered to be quite rare. For example, customer support is always considered as the same service which is being updated when a new version of product or software is on the way. However, introduction of an updated tool for delivery of customer service is not being handled as development of a new service. In short, we observed the preliminary stages of opportunity identification process as brief, informal and unstructured. The process is designed for the products for which Ericsson has an exceptional R&D department and based on the same reason an obvious gap can be identified for its application to the context of Ericsson’s services portfolio.
There is a decision point by the end of this phase in which a go/no go decision will be taken in relation with the identified opportunity. This is the starting point of a feasibility study to evaluate the opportunity further. A complete strategic and commercial analysis and a brief financial analysis on the profitability of services are the requirements for this decision.

2- Development of the contents

In this phase two decisions are being made. After developing the contents of the service and completion of the financial analysis, it would be the time to decide whether or not to include the product in the portfolio. The results of the feasibility study are a main input for the workshop to make this decision. At this point, the product owner will be assigned and will take the lead thereafter. And the second decision concerns the decision about actual investment on the provisioning of new services. A complete business plan and business case are among main inputs of this decision making process. Technical analysis and requirements for project and delivery of services and required capabilities are other essential inputs for this phase. After this decision point, the marketing activities for the new services will be initiated.

It can be argued that a very sound structure for evaluating the opportunity is in place here. This kind of evaluation is very helpful for development of new products which require heavy investment and a mistake in their evaluation can be very costly. However, services typically do not require huge amounts of investment before development. The main source of cost for professional services is arguably related to securing the competence required for delivery, but this is not essential before the service is adopted by a number of customers. Furthermore, the first cases of introduction for many new services are being done by regional units and in interaction with customer, and thus it is only then that service managers consider including those services in the portfolio. Hence, the content of the service is already well developed and there is no need for extensive development activities about the service contents.

3- Market Launch

In this phase marketing activities are being performed and decision is to be taken about performing sales activities for the newly developed services. At the first decision point of this stage, a selected number of market units or customer accounts receive the permission to start selling the new services. Upon initial success and possible modifications in the content, the next decision will be taken to make the product generally available for all of the market units.
This phase is believed to be very important for Ericsson according to our discussions with service managers. The success or failure in the first cases of new service introduction affects not only the success and failure of that particular service, but also it may harm company’s reputation and overall success. Unlike products, services cannot be tested in laboratories and customer sites are the only places in which many of the service can be properly tested and finalized in terms of contents and delivery methods.

As for previous phases, according to existing process, many of product-dependent services rarely need to go through this stage. Their portfolio of services is rather established and they do not introduce new services frequently. However, some product-independent services, such as system integration or consultation services introduce new services very frequently. The problem is that service owners in these areas believe that many of services do not worth inclusion in the service portfolio, unless they are successfully sold and delivered to a number of customers and a prospect for more sales is foreseeable. They suggest a number of successful launches as the prerequisite of further development activities for incorporation of the services in global portfolio.

4- Increasing the sales

This is the longest phase in life cycle of Ericsson services and its duration is practically infinite. For product-dependent services success and failure of this phase is closely related to the status of corresponding products, while simultaneously these services can affect success rate of the products in many ways. For example customer support provides service level to customers and this criterion is one of the most important considerations for buying a product from telecommunication vendors. Hence products and product-dependent services go pretty much hand in hand in this phase. However, product-independent services are much more relied on their own marketing and sales activities.

Our interviews with owners of service development process revealed that the sales process entails a lot of customization and modification in the contents of services. In other words a lot of development activities occur at this point of time. This holds true for both product dependent and product independent services, while product independent services typically encounter a higher degree of customization. At the same time, during delivery of services, many things may lead to requirement to modification of service contents. Examples are a new customer requirement, a possibility for cost saving, a possibility for improved quality, customer decision to change third party equipment, etc. However, apparently there is no support for inclusion of these parts of service development process at Ericsson and as we explained in previous pages, these matters are considered parts of service owner’s responsibility to take care of these matters.
5- Service phase out

This phase deals with the hypothetical situations in which a service is no longer needed. However, as we explained before, there is no end of life for services as such, because they are evolving through the time and not being replaced by a new and upgraded version of services. This situation is totally different from the product context, where technological innovations provide the possibility to introduce totally new products which replace the old ones and provide the same functionalities and more. As stated by the service development process owners and users, this phase is almost irrelevant to the context of services.

5.2. Current status and Challenges

Gradual improvements have been ensured over last 10 years, but the logic is basically unchanged. The overall view of the process is that it works reasonably well. However, it seems that there is room for improving the actual use of process in different service product areas. It can be argued that this belief has two major sources: in one hand, increased importance of services for Ericsson’s business calls for more attention to this area. In the other hand introduction of some new services (such as business consultation) in their service portfolio seems to highlight the necessity of improvement even further.

The extent to which formal process fulfills the needs and matches the actual behavior is clearly a matter of concern. Ericsson managers in services unit are keen to understand whether possible gaps between formal process and actual behavior are motivated from a business perspective or not. They wonder if there is a possibility to simplify the existing formal process and make the process usable in practice for all process users. Having a suitable methodology for service development is considered to be a clear improvement area for their way towards service orientation.

5.3. Findings from Interviews

The interviews started with the strategy and portfolio team, which is a department within Ericsson’s business unit global services and among other activities, they are responsible for the processes for development. These initial interviews paved the way toward identification of problems and challenges.
Having a common language and processes is valued within Ericsson and for the same reason there is a tendency to avoid having many different processes for the relatively close functions. However, the process for development of new services shows symptoms toward the opposite direction. As one of the interviewees suggested:

“Product Areas (PAs) are operating differently and for example SI and Consultation teams have ambitions for tailoring the processes according to their needs. An area of concern is how to split the processes according to different PAs and maintain the alignment in services organization at the same time”

It was interesting for us to understand what the main reasons for necessity of improvement are, according to the perception of Ericsson employees and the requirements of service development in their area of responsibility. They believed that fundamental differences in the nature of development of physical products and that of services are a main source of the need for adaptation of development process. Another expert in the department of “strategy and portfolio” formulated this issue in this way:

“... the difference between product development and service development is a source of problem in existing service development processes. This is because in product development process, first all customer data are being collected and then the product is being developed inside the company and after development it would delivered to the customer. However, in the context of services meetings between customers and local teams and agreeing upon the scope of services and then delivery are major parts of the process. There is a possibility for similar opportunities in some other parts of the world and company may try to reuse whatever has been done for a number of new customers. Afterwards, the product manager may realize that this service can be included in global product portfolio. This is the desired way of working with service development at Ericsson and although it is possible to use the existing process for the same purpose, the linkage between the process and wanted way of working is not obvious and easy to see(For example, starting the process with customer, reuse and sharing of knowledge, etc “

Another interesting point is the emphasis in aspects from which services within Ericsson’s portfolio are different. Services are not of the same or similar value, not delivered in comparable durations and number of sales or delivery personnel, and do not have the same complexity. For example, one of the experts in the department of strategy and portfolio suggested:

“... in areas like managed services there are few but very large contracts whereas in other PAs (e.g. consulting and SI) there are typically many small contracts. So for managed services product managers can even afford to take part in all of the sales processes and they are very close to the customer and to the market and they adjust the offerings accordingly. While in managed services there a quite few people involved in the sales process, knowledge sharing and
related matters are rather easy, but when it comes to service delivery, many people are involved and how to reuse and knowledge share between them becomes an issue.”

The discussions suggest some important limitations for the existing service development process. First of all, the existing process does not supporting innovation process at all and everything starts from the decision points to incorporate an existing service into global portfolio. Secondly it does not consider the development of tools which are being used in delivery process of services. Thirdly, the process does not ensure consideration of inputs from customers, competitors and different players within internal organization.

According to the discussions, the process does consider different levels of newness by presence of a light version of process which is being used by areas which have many small and less complicated service development projects(such as learning services). This approach is perceived to be quite helpful by process users in a way that the manager of learning services argues that they do not have any major problem with existing version of service development process.

However, the process does not consider fundamental differences among services within Ericsson’s portfolio. This leads to a situation in which some service areas are apparently having no problem with the service development process, while the others claim that it is not helpful for them at all. One of managers in the department of system integration has explained an aspect of this situation for us:

“At Ericsson we do have a lot of different services, ranging from product-near services that require people on the ground to deliver the services who should also have the required competence already when we launch the services (such as network role out). That’s one side of our services, but my area is on the totally opposite side; that we develop our services in front of the customer (service development and service delivery happens at the same time). Our development and delivery is a process for application that we do a project once with a customer, and we try to replicate that when we find it happening several times (referring to iterations).”

He further highlighted the general shortcoming of a product oriented process in the context of services from a specific perspective:

“In the PLCM process from Opportunity Analysis up to the market introduction there are lots of processes, documents and investment decisions that need to be taken in order to develop new services, however, in stand-alone services, the Start of Sales is actually where the development process starts! While this is different in the product side, where they are not allowed to sell anything before they have done all these previous steps, which makes perfect sense for the product business because if they haven’t done these then they will run a system that doesn’t work!”
Nonetheless not all service areas feel the same problems with the service development process, although they may not clearly benefit from that as well. The manager of customer support discipline, for example, argued that “... for the purpose that we use, PLCM works fine, but it does not give us the whole picture”. However, it is interesting to consider that this service area are barely developing totally new services and may use the process only a few times in a year, while system integration has many instances of new services every month.

In short, it seems that the service areas which can be considered as heavy process users are the ones which have the most problem with the existing process. For the other groups of services, while the managers do not actively report issues with the process, it is very difficult to find evidences that they are benefiting from existing process.

5.4. Data gathering through Close-end questionnaires and survey

The gathered data from the interviews were quite insightful, however due to the rather broad scope of study areas, some parts were addressed only briefly. Furthermore, some of the interview data were quite interesting for us, but we needed more support for the data so as to make sure that the findings are not merely a personal and non-common idea from individual employees. To address this issue, we developed a questionnaire and arranged brief interview sessions in which each question was being described for the interviewee to receive his or her opinion on a Likert scale.

Gathered data concerning different areas of service development process were addressed in this questionnaire (Appendix). In following paragraph, we will discuss each of these areas.

1- Nature of service development in different areas

The first two questions were aimed at understanding the dependency of different service areas within Ericsson’s organization to the service development (PLCM) process. The assumption was that some of the service areas do not offer totally new services frequently and for the same reason they may have less problem with that. In other words, few usage occasions per year makes it feasible for them to use it, but it is not necessarily mean that the process has no flaws. Whereas, some other service areas introduce many totally new services every month and for the same reason they feel deficiencies more intensely.

The findings were more or less in line with our expectation. While in all of the service areas the introduction of totally new services is not very common, there are differences among these areas in terms of the nature of modification of the services. In areas such as consultation and managed
services, new services are designed for each customer and according to the context and customer needs. Whereas NRO, customer support, and learning services are modifications based on upgrades in Ericsson’s products and solutions and require less customization and interaction with the customers. Delivery personnel had a major role in almost all of the service areas. There is a high level of dependence on IT tools for delivery of all service products.

2- Linear (stage-gate) versus iterative process for service development

The linear approach (non-iterative) is mostly opposed by the areas of consultation services and managed services. In other words, they believe that the stage gate model is not appropriate for their respective areas. However, they do not express this as a critical problem. This can be related to the fact that PLCM is being used for totally new services and not for improvement in the services. The iterative approach is needed when a feedback loop is essential for improving the services and at this point of the time, such a mechanism does not exist.

Concerning the documentations and guidelines, most of the service areas stated that they feel the existing amount of formalities and guidelines is sufficient. The documents are being updated once in a while to address the current needs and service areas develop their own documentations according to their needs. Some of the service areas (Consultation services, System integration) have developed and adopted new versions of PLCM process according to their own needs. Overall there is a moderate level of perceived usefulness for the process among the managers. As mentioned earlier, it seems that limited use in some areas and adaptations in the others have provided the opportunity for process to remain in place until now. Interestingly many of the respondents in different service areas stated that they are not using the formal PLCM process. Managed services, system integration and business consultation are the ones with the most reluctance in using the formal process.

3- Process flexibility

Two of the questions were aimed at understanding the perception of managers about process flexibility. We were interested to know if the process supports different scales of service development projects for example by adjusting the requirements and details. According to our understanding, the fact that in some areas the process is not being used frequently and the usage is limited to totally new services is the reason why some departments were not considering this type flexibility as an urgent need. However areas such as system integration and managed services clearly expressed that the process is not helpful when it comes to scale flexibility.
Another question was based on an assumption that when the degree of the innovation is very high (for example for new to the company service), the process should be somewhat different than the times in which only small modification is the subject of project. This calls for flexibility in the process from degree of innovativeness perspective. However, similar to the scale flexibility, many of the departments didn’t report a gap in this area. Only system integration and managed services areas stated serious gap in the process concerning flexibility according to the degree of innovativeness.

4- Cross functional involvement in the service development process

One question was devised to understand how well involvement of stakeholders is supported by the formal process, according to perception of the managers. We were mainly interested to find out if sufficient involvement from sales and delivery teams in the local organizations is supported by the process. Interestingly, almost all of the respondents stated that there is no such an involvement based on the existing process. We understood that there is no formal and systematic mean by which the inputs from sales and delivery team can be gathered and processed to feed the innovation and service development process.

Even though process does require early identification of stakeholders and relevant people in the onset of opportunity analysis, the stage-gate mentality and absence of a systematic innovation mechanism leads to limited consideration of inputs from sales and delivery at the initial stages of the process. While according to our observations, in later stages and when the service product is launched, the process is not widely being used.

5- Formal launch program

Based on an assumption that new services need a formal and planned launch program, we asked the respondents about current approach by which the address the same issue. We generally found out that having a launch program is not a matter of concern for most of the service areas, mainly because they do not offer totally new services very frequently. It was only consultation services area which indicated that they have sort of launch program for their services. We understood that this is the only area which there is a rather high risk of market failure for its services, because their portfolio is not a direct add-on to Ericsson’s successful products and solutions. In the areas of customer support and network rollout, there is a need for launching the services according new versions of products and solutions, but this type of modification is not being considered as a new service and currently not being handled through PLCM process.
6- Multiple sources for idea generation

Four questions were in place in order to provide and understanding of how different sources of ideas for service innovation are being considered. Competitor information, customer feedback, and feedback from internal employees were three areas that we assumed each can provide significant input for the service innovation and new service development process. In general, all the service areas receive the information from all three sources by means of different tools and processes. Competitor movements are constantly being monitored by Ericsson’s market intelligence experts and the reports are being communicated to the interested parties on a regular basis. Customer feedbacks are constantly being gathered and register in different forms, such as customer satisfaction from projects, yearly satisfaction measurement, etc. Feedback from internal employees is supposed to be gathered via a few knowledge sharing tools which some of them are still under development and improvement. Hence, one may suggest that Ericsson is generally competent in acquisition and accumulation of data from different sources. Nonetheless, the fact that there is no innovation process as such in place for the services casts limitation on the possibilities to make proper use of gathered knowledge.

The answers to our questions by the respondents revealed that they are indeed considering the inputs from different sources. But our discussion with them pointed out that they do not gather customer data for the sake of new service development and innovation processes. Customer satisfaction is a core value at Ericsson and for the same reason monitoring this criterion and corrective actions when needed is a long lasting tradition within this company. But these data does not feed the service development process in a formal and clear manner. Furthermore, although the knowledge management tools are being used for service improvement and development process, we did not find clear links to service development process in the way they are being used currently. In short, it seems that many good things are in place, but there is a gap in terms of absence of innovation processes and R&D for the services.

7- Support during sales and delivery of services

We were wondering if the process provides sufficient guidelines and support for the times that services are out in the market. In general, due to the nature of the PLCM process, there is a possibility and requirement for manage service product throughout their lifecycle. Based on this fact, one may assume that this should be a clear strength point for the service development process. This interpretation holds true to some extent, because according to PLCM process, it is indeed possible to manage the services after the launch.

In reality, however, the process is rarely being used when the service is launched and delivered to the customers. The stage-gate mentality of existing PLCM process does not allow for
iterations in the development process of services and if a service is not going to be modified and improved after being launched, there is no point in using the service development process. In fact, one of our interviews revealed that service are being modified and changed according to the market conditions and customer requirements during sales and delivery, but these adaptations are not being closely monitored by the product owners (as long as they are in line with company policies and directives). Additionally, sales and delivery team do not use the PLCM process for these types of adaptations.

8- Knowledge sharing and knowledge management

Our findings from interviews and questionnaire showed that knowledge sharing is a major concern for managers at Ericsson. Respondents are aware of the fact that service innovation and new service development are to a high extent dependent to effective management of knowledge. With regards to the means of knowledge sharing, there is quite a wide range of tools and platforms available at the company. However, the main concern is that to what extent people are willing to share their knowledge and experience. With regards to the institutional aspects, there is a collaborative culture dominating Ericsson’s knowledge sharing atmosphere and that is perhaps due to the fact that communicating, teamwork and joint-efforts are the constructing elements of Ericsson’s way of working. Communities of practice and virtual forums to help out specialists with specific problems in their fields have been in place for quite a long time at Ericsson. However, with all communication infrastructures and ICT systems specifically designed for knowledge sharing, there are still concerns that some employees or parts of the organization do not share information to the extent they are expected to share. Managers expected that sharing knowledge by the ones who are experts in their fields can to a large extent help other employees located in other parts of the world to improve quality of their services by reuse of experts’ knowledge and experience. This is particularly important when it comes to the development of new services, since replication of a new service offering from one market into other parts of the world can help the development of new services to be done faster benefiting from previously generated knowledge and experience and thus reduce time to market and time to customer.

Findings from knowledge sharing survey also showed that majority of respondents (77% out of 272) believe that there are unexploited opportunities for improvement or introduction of new services to provide more values to the customers. With regards to their willingness to share information, most of respondents expressed their concern that if they had more time they would share more information. This corresponds to 87% of respondents which was quite remarkable. This shows a clear message that knowledge sharing is not perhaps defined among routine tasks of people, since people do not find time to share information. We will further elaborate on this aspect in our analysis chapter.
6. Analysis

In this section, previously presented literature will be analyzed against acquired data. First, we look into the framework of seven areas in which services urge for different treatment. Then we apply literature on classification of services and innovation to the context of Ericsson. Lastly an analysis on service innovation and the effect of applying innovation technology will conclude this part.

6.1. Service innovation – challenges for manufacturing companies

Manufacturing firms, especially in hi-tech industries, have long traditions of having heavy investments on research and development of products. Their activities range from collaborations with academic institutions to collaborations with other companies and to internal patenting activities. Consequently, these companies possess sort of innovation factories through which new concepts are constantly being generated and feed the product development process. Whereas for many years services were considered as a compliment to the physical products and software and for the same reason, they didn’t have such an organization for the sake of innovation. It was not until recently that services started to enjoy an ever increasing attention thanks to significant direct and indirect share in the firms’ profitability. This leads to a situation in which a given company has well-developed and advanced structures, processes and routines for their products, while they are not necessarily addressing the specific needs of services. The so called research and development unit for services is among the missing parts of transition toward service orientation in manufacturing companies.

As we mentioned earlier, innovation in services has more diversified dimensions when compared to that of physical products (cf. Gallouj, 2002). One main differentiating factor can be considered as the strong presence of non-technological and social types of innovation beside well known technological innovations in terms of tools for service delivery. In other words service content, delivery procedure, delivery tools and behavioral aspects of sales and delivery personnel are all among the areas which urge for innovation. However, the ideas are not being generated automatically and there is a need for a systematic process and a formal organization to undertake research and development for the services. While service area managers at Ericsson are responsible for this mission, the allocated resources and the nature of their tasks do not promote research activities and a separate unit for service research is possibly more effective.

Results from our interviews showed that there is no formal innovation process in place for services at Ericsson. While some departments have launched some initiatives toward taking the drive in development of new services, to our knowledge the very early steps of idea generation and evaluation is not included in any of the processes.
Another important point concerns the very important role of front-end employees in the innovation process for the services. While in physical products most of innovations are being realized in research laboratories, many of ideas for innovation in services are attached to the context and these possibilities can be observed only through the eyes of experienced sales and delivery personnel. While managing knowledge is important for all types of the products, services are more heavily dependent on an organization-wide knowledge management system. We will discuss this topic in more detail later in this chapter.

6.2. New service development process – requirements and challenges

In this section, we aim at defining a general framework of the development process for new services in manufacturing firms. There are certain characteristics which are applicable for all service areas within Ericsson. However, there are some differences among these areas which will be addressed in the next section (6.3).

Due to the different nature of innovation in services, which is mostly incremental, an iterative process is the essential characteristic of an effective service development process. Our interviews revealed that recommendations from prior research findings are quite in line with the perception of practitioners in this regard. New to the world or new to the firm services are not being introduced frequently and for this reason gradual improvement is the essence of service development activities within manufacturing firms. The lifecycle management seems to be an appropriate approach for management of these incremental innovations, while the stage-gate interpretation of the process is not appropriate. While it is possible to define differentiable releases of products and manage them through a linear process from cradle to grave, service are being evolved over the time and virtually never become phased out.

Among people with whom we conducted interviews, apparently there is a consensus on the appropriateness of an iterative model in service development process. Especially those who are in need of developing new services, feel more urgency in adapting the process towards an iterative approach. Yet, if the process was supposed to be used for cases of incremental improvement (which we believe it should be), more requirement was expectable for such a modification in the existing process.

Now we will analyze the seven identified critical areas in order to come up with generic recommendations for all service areas.

Cross functional teams:
There is a need for incorporation of ideas and knowledge from the very large service organization within a corporation in the scale of Ericsson. While there is a requirement to ensure
involvement of all stakeholders in the existing process, the distance between sales and delivery teams in the regions and service management in the headquarter still makes the involvement complicated. Furthermore, in some areas there are many sales and delivery personnel and without using appropriate IT tools, it is somewhat impossible to incorporate their inputs in a global level.

**Formality and flexibility of the process:**
The amount of documentations and guidelines were not a matter of concern in the existing process. A process model with some guidelines and checklists for each stage of the process seems to be quite appropriate in order to provide the required framework. The process should not be too detailed so that each service area can adopt it for their specific purposes. Nonetheless, it is not recommended to avoid having a common framework, since it is believed that in the long run having a common language in the corporation is beneficial for all stakeholders.

**Customer involvement/interaction:**
Services are being produced at customer sites and a lot of development activities are reflections upon customer requests. The customer orientation in service development is a well-accepted concept within Ericsson organization and an effective service development process should reflect the same. The existing formal process has some deficiencies in this regard, because much of the development activities is supposed be completed before introduction of the new services to the market. An iterative process can provide a good support for this dimension as well.

**Formal and planned launch program:**
Since introduction of totally new services is not common in some service areas, they do not feel a huge necessity for this dimension. However, those areas which introduce new services more frequently, and their services are more risky concerning acquiring market acceptance, are clearly in need for such a mechanism. Not only they are able to ensure customer buy-in by putting all the efforts to provide the best possible quality of services, they will have a possibility to develop required assets and competence for general market introduction. Hence, the forthcoming service development process should provide enough support for having a formal and well planned launch program.

**Multiple sources for market sensing and idea generation:**
As we discussed earlier, customer data, competitor information, feedback from internal employees and the inputs from a service research and development unit can provide the perfect
foundation for new service development. Incorporation of these sources of data should be considered in the service development process. While this mission is already being handled by service area managers, it is not considered to be an integrated part of service development process. However, we believe that securing essential inputs is a critical part of process definition.

**Increased focus on sales and delivery:**
This area is among the most critical deficiencies of existing formal process, according to our understanding. Much of the development activities are happening outside headquarters and by sales and delivery teams. An effective service development process should support these activities after market launch. Without an iterative model, however, it is impossible to focus on sales and delivery as parts of service development process. This is because of the fact that according to existing formal process sales and delivery are being considered as after development stages of service development process.

**Knowledge management and knowledge sharing:**
As mentioned in chapter five, empirical findings showed that regardless of different means of knowledge sharing and the collaborative culture already in place, managers expected more contribution from employees to share their knowledge, ideas and experience to be used by other parts of the organization, especially when it comes to New Service Development. On the other hand, survey results showed a dominant trend that people do not find enough time to share information.

We previously addressed roots of resistance among employees in chapter four, and it seems that the case of Ericsson is similar to the findings of Petri (2000) regarding passive resistance. That is knowledge sharing and information provision is not integrated as part of the process for service development and also people mainly say that they do not find enough time to codify and put their information into the system. Taking into consideration the example from the express delivery company also shows that it is a common symptom that may appear in service organizations. Thus it seems crucial that knowledge sharing is formally recognized as part of the formal process for service development and employees are encouraged to share their information that could lead to improvement or introduction of new services. Our findings from ABB-FM benchmarking case also shows that dissemination of knowledge and flow of information should be wisely designed to enable the company to leverage potential opportunities, service improvement ideas or proposals for new service initiatives to be managed more efficiently.

**Lessons learned from ABB-FM case; Challenges and opportunities for Ericsson AB**
Enhancing employees’ respond in utilizing the system to generate re-useable material was a challenging task. Petri (2000) describes that people should also realize that their suggestions are taken seriously and actions are taken within an appropriate time span in order to commit themselves to information sharing.

With regards to the organizational structure at ABB FM, the author describes that there was a dichotomous structure namely Centralized and Decentralized that have been simultaneously employed at the company. This dichotomous arrangement facilitated a better-responding structure for handing improvement proposals. This is also consistent with the dual organization of innovation that was earlier discussed in the literature review (Sundbo, 2000).

In the centralized structure, every documented request was directed to a system owner who took the role of dispatcher in the system. Dispatchers supposed to be persons with higher intensity in the network (Hatala & Lutta, 2009) who had worked for a long time at the company or had connections in different parts of the organization and knew where to forward the suggestion or whom to contact in the network of connections. In other words, the dispatchers were the single point of connection between the employees and the system (or the portal). However, collecting proposals by one dispatcher in large organizations with hundreds or thousands of employees around the world may limit appropriate implementation of this strategy in a huge organization such as Ericsson. Obviously, this puts a heavy responsibility on the dispatcher’s shoulders to make quick decisions, but we think that there could be two different strategies to alleviate the increasing pressure on the central dispatchers:

- **Segmentation:** To increase the number of dispatchers and segment their responsibilities according to different fields to a certain level that is expected to reach an optimized overall respond time.
- **Delegation:** Second approach would be to delegate the dispatching responsibility to the local regions/sub-regions to make appropriate decisions on the incoming ideas from their own region, with exceptional cases to be forwarded to the headquarters.

In addition, more flexible conditions or remote-access to the system for the dispatchers may also let them to increase their efficiency in responding incoming requests from anywhere and at any time. In the ABB FM case, a 14-days interval period was defined as the maximum time taken to respond any incoming proposal, with the corresponding employee receiving a note in the system that let him/her as well as any other interested party to know that to whom the proposal was forwarded and where it can be followed. It also engraves a digital footprint of these threads on the system, so that the information can be used for future evaluation and analysis as well.

Once the dispatcher forwarded the proposal to the appropriate person for a decision, the recipient should make a decision within a certain amount of time (corresponding to the level of workload, complexity of the process, the number of receiving proposals, etc.) or pass it on to another
person with deeper knowledge of the subject matter. In the case of ABB FM this was called the *decentralized* processing that ideas were distributed to the *right persons* for decision making.

However, in the case of Ericsson, we believe that having some adjustments would make it more smooth and responsive to the incoming proposals; for instance when the recipient is not relevant and doesn’t know where to forward the request, or might not be sure even if the second recipient is again relevant to receive the forwarded request. In such situations, the proposal can be forwarded back to the dispatchers (together with a note to the originator) letting them know that recipient was not the appropriate person for the subject matter, thus correcting the dispatching-route for the future coming proposals. Such feedback mechanisms might be time consuming in the beginning. But in the long-term when more and more requests are put in place and forwarded to different nodes/connections within the network, by collecting and aggregating those feedbacks from the recipients, the dispatching-route process would become more capable of self-maintenance and auto correction, making the whole process more swift and reliable.

6.3. Classification of Ericsson's portfolio of services

As we mentioned in chapter 5, the reflections of Ericsson’s professionals upon existing service development was not similar. Clearly, different service areas had different concerns which most probably stems from differing nature of services which they are responsible for. Hence, providing any recommendations for NSD process without careful differentiation between these services seems inappropriate and unhelpful. Therefore, in this section we try to classify Ericsson’s services through the lens of typologies which we identified and presented in theoretical framework (Section 4.3).

Nature of customer relationships in Ericsson portfolio of services

Ericsson aims at long term relationships with virtually all of its clients and hence it has no one-time customer as such. However, there are still major differences in the nature of relationships within Ericsson’s portfolio of services. We are going to elaborate these differences in terms of *intensity of contact* and *nature of interactions* in the following paragraphs.

Some of Ericsson’s services are being developed, sold and delivered in close contact with customer, while this is not the case for some other services. Business consultation services are an extreme example of the services with a very high degree of customer interaction during service lifecycle. System integration services are also highly relied on the inputs and cooperation from the customers and can be classified as a contact intensive type of service. Whereas services network rollout and training are not being developed in close interaction with customers.
Managed services and customer support is in the middle of this range where customers have some influence on the scope and component of services.

When it comes to the nature of relationships, almost all of the Ericsson’s services are being delivered through formal contractual agreements. However, consultation services, system integration, network rollout and training services are mainly short-term oriented and transaction based. Whereas customer support and managed services are relationship based services and they have long durations of delivery.

After this discussion, one may suggest that customer involvement is more required for relationship based services and for services with high level of customer contact intensity. Below figure depicts this classification more clearly. This classification has roots in prior research findings which we discussed in our theoretical framework (cf. Fitzsimmons, 2006; Olive & Kallenberg, 2003)

![Figure 6-1 Classification of Ericsson’s services according to the nature customer relations](image)

**Standardizability in Ericsson’s portfolio of services**

As we have defined in section 4.3.1, in this section standardizability of Ericsson’s services will be analyzed in terms of **variety, complexity and customizability during delivery** for each of the services. The consequences of these variations will be discussed at the same time.

Degree of variety in services (Barth et al, 2000) is clearly differentiable within Ericsson’s portfolio of services. Services such as training, network rollout and (to less extent) customer support are limited to a number of predefined tasks which are being applied to physical and software products of Ericsson, whereas cases of consultation and system integration services are...
unique and with virtually unlimited number of variations. In the case of managed services also there is a high degree of uniqueness while similarities are also observable.

The degree of complexity (Saaksvuori and Immonen, 2008) is another factor that affects standardizability of Ericsson’s services. As we explained in chapter four, scale of the service (in terms of duration and value), Knowledge intensity (with special attention to reliance on external knowledge), reliance on external resources (for development and delivery of the services) are three main criteria for evaluation of complexity for the purpose of this thesis.

Below table summarizes how scale, knowledge intensity and reliance on external resources are dissimilar among these services.

Table 6-1 Summary of analysis- Degree of complexity in Ericsson’s portfolio of services

<table>
<thead>
<tr>
<th>Service</th>
<th>Scale</th>
<th>Knowledge intensity</th>
<th>reliance on external resources</th>
<th>Overall degree of complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer support</td>
<td>Medium-High</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Managed services</td>
<td>High</td>
<td>Medium</td>
<td>Medium-High</td>
<td>High</td>
</tr>
<tr>
<td>Network rollout</td>
<td>Low-Medium</td>
<td>Medium</td>
<td>Low-Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Training</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>System integration</td>
<td>Low-Medium</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Consultation</td>
<td>Low-Medium</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

Degree of integration/Separation with physical products

Finally, the degree of integration or separation of services with physical or software products is the other criteria that we consider for classification of services (Gebauer et al, 2008). This classification is already identified and well respected in Ericsson service organization. Independent services urge for factors such as service championship, more autonomy for frontline employees and market testing and research. Training, customer support and network rollout are integrated with products, while consultation, managed services and system integration are separated (independent) from products to different degrees.
This classification can serve as a guideline for adaptation in service development process at Ericsson. According to the insights from prior research and the interviews, we can suggest that a high level standard process with very few details can provide a high level and flexible framework for all service areas. While the life-cycle management approach does not look inappropriate for the context of services, the specific stage-gate interpretation of it is not suitable for this purpose. This is because of the fact the linear approach to NSD process cannot fulfill the requirements of incremental innovation in services. Therefore, an iterative model needs to be applied while providing guidelines for managers to decide what types of details are applicable and needed for their services.

6.4. Service innovation and the effect of Innovation typology

After classifying services within Ericsson’s portfolio, we have a good ground to blend theoretical framework and empirical findings to come up with recommendation for the desired to be service development process. Certain gaps have been identified during the analysis and there are recommendations according to prior research findings to address them. As we discussed earlier many of the shortcomings are related to the fact that a process which is designed for the context of physical products has been applied to a different context, i.e. services. It does not necessarily mean that product life cycle management is not appropriate for the context of services. Indeed it seems to be quite helpful in order to address the requirements of services in the later phases of development, i.e. during sales and delivery. However, the specific interpretation of life cycle model, as a linear stage-gate model appeared to be problematic. It is not in line with the research findings on the requirements for an iterative process for service development and it does not fulfill the requirements of process users in practice. Below we will discuss the reasons behind this problem.

Ericsson has extensive R&D activities for their products and this provides the main input for the product development process. However, there is no such a unit in place for services. Services are being developed all the time throughout the world, but it is not in a way that feeds service development process in the expected way. It can be argued that there is a need for a formal and structured mechanism to sense market opportunities and initiate innovation in services. This mechanism should ensure that inputs from customers, competitors and firm’s employees are systematically being gathered and processed and by that required input for service development process is secured.

However, not all the possibilities for developing new and improved services can be find by means of above mentioned sources. The tools and methods by which services are being delivered need R&D activities similar to those of physical products. Today, development of some of these
tools is not being handled by service managers. Additionally, there are possibilities for considerable improvements in product-dependent services via modifications in the products or even redesign. Today, only requirements of services are being considered as an input to the product development process and projects are not normally initiated by service managers.

As research findings in our theoretical discussion suggested, process improvements types of innovation in services do not put a lot of demand on the process. We do not see any reason in our case that why existing PLCM process should not be applicable for development of tools for service delivery or modification of products for improved services. The only issue is related to the fact that products are owned by product managers and they have different profit centers than those of service managers. In short term, proper communications between service managers and product managers is likely to minimize the impact of this conflict. At any case, service managers should consider all possibilities for improvement in service delivery as an input for initiation of service development process.

Differentiating between different levels of innovation in services is also a very important consideration in design of service development process. The most important consideration for the context of Ericsson is the recognition of different types of service innovation. Today, only new to the company services are being considered as the subjects of service development process, however other types of service innovation (cf. Sundbo et al, 2007) need the process to different extents.

Furthermore, the research by Avlonitis (2001) clearly indicated that new service development process should be adjusted in terms of focus and contents for different types of innovations. For example, services which are new to the market need more thorough process to ensure market success through consideration of all required criteria whereas modifications in existing services may only need a more flexible process which serves as a guideline. One may argue that innovations in tools for service delivery (Hardware and Software) can follow the existing processes for the development of products and software.
7. Conclusions

This research was aimed at answering three interrelated questions. The differences between requirements of NSD and NPD processes and the reasons behind them was the first matter of concern. Secondly, given that different services are usually treated the same way, we wanted to investigate to what extent it is possible to manage different types of services and different levels of innovativeness with the same process. Beside other resources, answer to this second question was likely to provide important insights into the third question which concerned the characteristics of an effective service development process in a manufacturing company. Answering the third question also provided managerial implications on how to improve service development process to increase its effectiveness in addressing specific requirements of service users.

The answer to the first question has roots in the fundamental differences between services and physical products. Intangibility, inseparability, heterogeneity and perishability cast a lot of complications in the ways by which services can be produced, sold and delivered. Innovations in products are typically being realized without intense interactions with the customers and influence of sales and delivery personnel. Furthermore, radical innovations in products are more common, while services are being developed gradually and with an incremental nature. For the same reason, while products are likely to be phased out and replaced by new generations, services only evolve as time goes by toward improvement and excellence.

These differences create a situation in which it is not appropriate to assign a linear process model to the new service development context. The importance of iteration in the process offsets the fact about incremental innovation in services. Furthermore, seven critical identified areas should be carefully considered for the context of and be treated accordingly. Among these areas, knowledge sharing and knowledge management needed to be considered as a high priority ones. There should be a climate in which people share their knowledge through well designed IT systems which is properly being managed and handled by service managers. We stressed that the development process of services includes sales and delivery stages and that the process should support these parts properly. This is even more important for product independent services where sales and delivery personnel have much more influence on the service contents and there is less possibility for standardization.

The other important outcome of this study, which was answer to the second research question, is highlighting the importance of emphasis on essential differences between service types which needs to be reflected in the development process. Degree of Standardizability, nature of interactions with customers and relationship with the products are all among the factor that may alter the effective pattern of service development process. Without differentiating between the services, defining a process which addresses all service types at the same time is highly unlikely.
At the same time we addressed a number of issues to be considered in service development process which mainly aimed at improving existing processes to make them more responsive in answering the needs of process users. Therefore, we believe that existing service development process can be improved by making adaptations according to the requirements of service users and the crucial aspects of service innovation to be considered in this process. Later in this chapter (under section 7.2) we will elaborate further on how existing service development process can be improved by providing our suggestions and recommendations as managerial implications for increasing process effectiveness.

7.1. Academic contributions

This study was an attempt to address the research gap on a service specific development model (Johne and Storey, 1998). The need for further elaboration on differences between the development process of services and that of physical products was clearly highlighted by Drejer (2004) and we addressed the same need through the gathered empirical data. Classifying new service development activities according to differences among services and different degrees of innovativeness were also targeting the gap in the literature (Johne and Storey, 1998). Moreover, seven areas that we identified as critical aspects in NSD process was an attempt to synthesize existing literature on service development.

Nevertheless, service innovation has been previously addressed in the literature (c.f. Dejong & Vermeulen, 2003; Drejer, 2004; Coombs & Miles, 2000; Gallouj, 2002 and Droge et.al., 2009), which was considered as a crucial aspect in this study since it potentially leads to the introduction of new services that in long term can maintain sustainable competitive advantage for the firm. We tried to cover different aspects of innovation in services by discussing different typologies for services and their level of innovativeness.

While due to the exploratory nature of the research and embryonic state of research on services, generalizability of the findings are limited, it seems that the highlighted aspects are all relevant factors to be considered by practitioners in designing their NDS processes. The need for iteration, research on services, knowledge sharing and differentiating between services can be helpful for all companies which are dealing with knowledge intensive services in a way or another. In this chapter, we will further address a number of research areas that can be considered as potential research subjects for future studies.
7.2. Managerial implications

By answering to the third question, about characteristics of an effective service development process, we came up with a number of suggestions that have been gathered through our findings from literature review and empirics together. Here we shortly list them as our recommendations for an effective service development process:

- There is a need for an R&D unit for services in which innovation process for the service is being managed and required input to NSD process is being realized.
- The incremental nature of innovations in the services urge for an iterative model in which market sensing, development, sales, and delivery are included.
- Inputs from sales and delivery teams should be an essential part of any development activity.
- The process should provide sufficient flexibility while keeping the required level of formality.
- Inputs from customer should be clearly recognized and valued in service development process.
- There should be a consideration in the process for formal and planned launch programs whenever there is a need for them due to complexities and uncertainties of a given new service.
- Internal knowledge, customer data and competitor information should be monitored and evaluated constantly to provide the required input for service development process.
- Knowledge sharing is the key to provide possibility for service excellence and the loop in the iterative process is incomplete without enough consideration to this aspect. Knowledge sharing process must be considered as a part of new service development process.
- Services are different and they need different types of the processes to be managed effectively. However, the process should possess more or less the same fundamental as described in previous lines.
- Different scales of service innovation (ranging from simple modifications in contents of the services to new to the world services) should be considered as subjects of development process.
- NSD process should be adjusted for different levels of innovativeness of service development projects.
7.3. Recommendations for future research

Throughout the research we came to realize a number of related aspects that could be beneficial to be considered for future research in this area. Below, these areas are shortly presented:

- With intensifying knowledge practice and expertise in service development, knowledge management is playing an increasingly important role in this area. We have covered a number of areas related to knowledge sharing and knowledge management that we considered crucial in our study. However, we were mainly bounded within the scope of the research and thus could not address this area more exclusively. Future studies in this field may perhaps formulate KM/KS as an integral part of the research scope.

- Another important aspect in service development is customer experience and the involvement of customers in the process of service development. Since services are mainly designed to address customer values, involving them in the process of service development is helpful to address these values. Direct customer involvement might be a good approach in a business to customer (B2C) environment, since users’ experience and customers’ taste and desires are of utmost importance in such context. However, within a business to business (B2B) setting direct involvement of customers might not be considered as an advantage, rather increasing the already exiting complexities of service development. That was the main reason we did not pay much attention to this aspect in our study. Nevertheless, customers’ feedbacks and customization of services according to the customer needs are still important in a B2B setting that we tried to cover, but future studies can specifically investigate this aspect.

- Service innovation and diversification of services seem to be developing areas of research that perhaps need more explorative studies in the future.

- Human factors, organizational settings, as well as social aspects could be interesting areas of study for future research in this area. Taking into consideration that services usually consist of intangible and social elements, they might be highly affected by their specific organizational/social settings that are embedded in.

- Nevertheless deploying quantitative approaches to measure the effectiveness of NSD processes could be also helpful in the development of standard measures/indicators in services. Moreover, implementing industry-wide studies might be also helpful in finding similar challenges among companies shifting towards services. The results of such studies may help to define general aspects of NSD processes in an industry-wide context. We truly benefitted from benchmarking cases in our study, but if perhaps more industry-wide studies had been done, we would had access to more information in relevant areas.

- Last, but not least, longitudinal studies (considering NSD process effectiveness in a relatively large span of time) would be helpful to analyze companies’ success in employing effective processes for service development.
8. References


Hallgren, E.W. (2008), "Employee-driven Innovation; A Case of Implementing High-Involve...


Petri C-J. (2011), Personal interview, 26 January 2011, Stockholm-Sweden


9. Appendixes

A- Interview guide

The interview process consisted of open-ended questions, which was followed by an interview guide in order to let the interviewees express themselves in a descriptive manner while still remaining in the framework of the study.

Following questions were usually asked by the interviewers during personal/telephone interviews:

- Please let us know about your position in the organization and your areas of responsibility
- Please describe your areas of responsibility with regards to service development
- Please walk through a general case of new service development and describe how NSD is handled within your area
- Do you see any challenges in this process?
- Are there any differences between what has been formally described in the process, and what you usually face in reality within your organization?
  - In that case, how you deal with such differences?
  - And how your organizations get adapted to such differences?
- What areas you think could be improved in this process?
- How do you deal with knowledge and experience sharing in your area?
- Do you have any general points regarding service development process?
- Do you have more comments to add?
### B- Interview catalogue

Following is a complete list of interviews/sessions that have been done throughout the three phases of data collection. For confidentiality reasons only a general title of interviewees are mentioned.

**Phase I: First round in-depth interviews**

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Interviewees’ area of responsibility</th>
<th>No. Participants (including interviewers)</th>
<th>Duration</th>
<th>Means of interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>den 26 november 2010</td>
<td>Process improvements</td>
<td>3</td>
<td>50:00 min</td>
<td>Telephone</td>
</tr>
<tr>
<td>2</td>
<td>den 29 november 2010</td>
<td>Knowledge Sharing</td>
<td>4</td>
<td>35:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>3</td>
<td>den 29 november 2010</td>
<td>Business Information</td>
<td>3</td>
<td>20:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>4</td>
<td>den 30 november 2010</td>
<td>Strategy</td>
<td>3</td>
<td>30:00 min</td>
<td>Telephone</td>
</tr>
<tr>
<td>5</td>
<td>den 16 december 2010</td>
<td>Customer Support</td>
<td>5</td>
<td>69:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>6</td>
<td>den 16 december 2010</td>
<td>Consulting and Systems Integration</td>
<td>3</td>
<td>36:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>7</td>
<td>den 16 december 2010</td>
<td>Managed Services</td>
<td>3</td>
<td>55:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>8</td>
<td>den 22 december 2010</td>
<td>Learning Services</td>
<td>3</td>
<td>45:00 min</td>
<td>Telephone</td>
</tr>
<tr>
<td>9</td>
<td>den 14 januari 2011</td>
<td>Network Roll-Out</td>
<td>3</td>
<td>30:00 min</td>
<td>Face-to-Face meeting/Phone</td>
</tr>
</tbody>
</table>

**Total duration of interviews ≈ 6 hrs**

370 min
C- Second round wider-scope interviews

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Interviewees’ area of responsibility</th>
<th>No. Participants (including interviewers)</th>
<th>Duration</th>
<th>Means of interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>den 12 januari 2011</td>
<td>Process Improvements</td>
<td>3</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>2</td>
<td>den 14 januari 2011</td>
<td>Service Delivery</td>
<td>2</td>
<td>60:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>3</td>
<td>den 21 januari 2011</td>
<td>Learning Services</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>4</td>
<td>den 25 januari 2011</td>
<td>NRO - Service Delivery</td>
<td>2</td>
<td>60:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>5</td>
<td>den 25 januari 2011</td>
<td>C&amp;SI</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>6</td>
<td>den 26 januari 2011</td>
<td>Business Management</td>
<td>2</td>
<td>20:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>7</td>
<td>den 27 januari 2011</td>
<td>KM/KS (CSI)</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>8</td>
<td>den 24 februay 2011</td>
<td>Managed Services</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>9</td>
<td>den 1 mars 2011</td>
<td>Knowledge Management</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>10</td>
<td>den 3 mars 2011</td>
<td>Service Delivery</td>
<td>2</td>
<td>60:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>11</td>
<td>den 26 januari 2011</td>
<td>Knowledge Sharing (Case of ABB FM)</td>
<td>2</td>
<td>60:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>12</td>
<td>4 march 2011</td>
<td>Service Development (Swedish Truck Manufacturer)</td>
<td>2</td>
<td>60:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>13</td>
<td>den 7 april 2011</td>
<td>Solutions/Engagement</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>14</td>
<td>den 7 april 2011</td>
<td>Engagement Practice</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
</tbody>
</table>

Total duration of interviews ≈ 9 hrs 560 min
### D- Questionnaire-based interviews

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Interviewees’ area of responsibility</th>
<th>No. Participants (including interviewers)</th>
<th>Duration</th>
<th>Means of interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>den 2 maj 2011</td>
<td>LS</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>2</td>
<td>den 2 maj 2011</td>
<td>MS</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>3</td>
<td>den 2 maj 2011</td>
<td>LS</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>4</td>
<td>den 3 maj 2011</td>
<td>MS</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>5</td>
<td>den 3 maj 2011</td>
<td>Customer Support</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>6</td>
<td>den 3 maj 2011</td>
<td>SI</td>
<td>2</td>
<td>45:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>7</td>
<td>den 3 maj 2011</td>
<td>MS</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>8</td>
<td>den 10 maj 2011</td>
<td>Consulting</td>
<td>2</td>
<td>45:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>9</td>
<td>den 13 maj 2011</td>
<td>SI</td>
<td>2</td>
<td>60:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
<tr>
<td>10</td>
<td>den 2 maj 2011</td>
<td>LS</td>
<td>2</td>
<td>30:00 min</td>
<td>Face-to-Face meeting</td>
</tr>
</tbody>
</table>

**Total duration of interviews = 6 hrs 360 min**
E- Service Development Survey

1- In which product area (PA) are you working?
   Customer support  Network rollout  Training  Consultation  System Integration
   Managed services

2- For how long you have been involved with development of Ericsson services?
   Less than 1 year  1-2 years  more than two years

3- How many new services are being developed in your product area in each year?
   Less than 10  10-30  30-100  more than 100

4- In your PA, how many delivery employees are involved in each service contract?
   Less than 5  5-20  20-100  100+

### Nature of the services in PA

<table>
<thead>
<tr>
<th>Nature of the services in PA</th>
<th>Strongly disagree</th>
<th>Neither</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>In my Product Area...</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5 Service portfolio is stable and introduction of a totally new service is quite infrequent.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Service development mostly concerns modification of existing service descriptions according to a new physical product (or software)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 There is a considerable amount of customization in offerings according to customer requirements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Services are being delivered with intense interactions or collaborations with customers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Each service contract is a long term delivery commitment (more than 1 year)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Each service contract is of high monetary value (expensive) compared to other service offerings of Ericsson</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Service delivery personnel has a major role in customization of services during delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 It is extremely hard to find required competence for development of service contents (technical matters, descriptions, etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 It is extremely hard to find required competence for delivery of services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 3rd-party Suppliers have an important role in delivery of services.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 There is a high risk for failure in our new service offering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 Many services are being developed and used only once (or a few times), but incorporating all of them in global portfolio is not necessarily useful</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 We are highly dependent on IT and other tools and equipment for service delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Effectiveness of PLCM process and general issues

<table>
<thead>
<tr>
<th>Effectiveness of PLCM process and general issues</th>
<th>Strongly disagree</th>
<th>Neither</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the context of my Product Area...</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18 Existing linear approach (Decision point model) in PLCM process is well</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
aligned with the requirements for service development

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Existing supporting documents for PLCM process (Checklists, etc.) are sufficient and helpful</td>
</tr>
<tr>
<td>20</td>
<td>It is easy to find a guideline for PLCM process whenever needed</td>
</tr>
<tr>
<td>21</td>
<td>All of the PLCM stages can be applied productively and without any mismatch</td>
</tr>
<tr>
<td>22</td>
<td>We clearly benefit from existing PLCM process</td>
</tr>
<tr>
<td>23</td>
<td>Stages in PLCM process do not have overlap and can be clearly identified</td>
</tr>
<tr>
<td>24</td>
<td>PLCM process is helpful for some of the services, but for some other has shortcomings or is not necessary</td>
</tr>
<tr>
<td>25</td>
<td>We are following the existing PLCM process and its requirements</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Formality and Flexibility of PLCM process</th>
<th>Strongly disagree</th>
<th>Neither</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the context of my Product Area...</td>
<td>1 2 3 4 5 N/A</td>
<td></td>
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<tr>
<td>26</td>
<td>The process provides sufficient amount of flexibility for dealing with different scale (Small Vs. Large projects) of services.</td>
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<tr>
<td>27</td>
<td>The process provides enough flexibility for dealing with different levels of change (minor Vs. major) modification in service.</td>
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<table>
<thead>
<tr>
<th>Customer involvement and interaction</th>
<th>Strongly disagree</th>
<th>Neither</th>
<th>Strongly agree</th>
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<tbody>
<tr>
<td>In the context of my Product Area...</td>
<td>1 2 3 4 5 N/A</td>
<td></td>
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<tr>
<td>28</td>
<td>There is a systematic and clear process in place to collect, analyze and interpret customer insights</td>
<td></td>
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<tr>
<td>29</td>
<td>PLCM allows and plans for customization and improvement of services in reaction to customer feedbacks and requirements</td>
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<tr>
<td>30</td>
<td>Customer satisfaction is measured and the results are being used to improve the services during their life cycle</td>
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<table>
<thead>
<tr>
<th>Cross functional teams</th>
<th>Strongly disagree</th>
<th>Neither</th>
<th>Strongly agree</th>
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<tr>
<td>In the context of my Product Area...</td>
<td>1 2 3 4 5 N/A</td>
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<tr>
<td>31</td>
<td>The process ensures consideration of inputs from sales and delivery teams during service development process</td>
<td></td>
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<tr>
<td>32</td>
<td>The process ensures consideration of other involved parties (supply, IT, etc.) during service development process</td>
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<tr>
<td>33</td>
<td>The composition of the team in charge for PLCM process is fairly good as it is now.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Formal and planned launch program</th>
<th>Strongly disagree</th>
<th>Neither</th>
<th>Strongly agree</th>
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<td>In the context of my Product Area...</td>
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<tr>
<td>34</td>
<td>Launch program for newly developed services is provisioned in PLCM process</td>
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<tbody>
<tr>
<td>Multiple source of idea</td>
<td>Strongly disagree</td>
<td>Neither</td>
<td>Strongly agree</td>
<td></td>
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<td>In the context of my Product Area...</td>
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<td>35</td>
<td>Competitor data is being systematically analyzed and considered as an input to PLCM process</td>
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<tr>
<td>36</td>
<td>Service delivery data is being systematically analyzed and considered as an input to PLCM process</td>
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<tr>
<td>37</td>
<td>Suggestions and ideas from Ericsson employees are being systematically analyzed and considered as an input to PLCM process</td>
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<tbody>
<tr>
<td>Increased focus on sales and delivery</td>
<td>Strongly disagree</td>
<td>Neither</td>
<td>Strongly agree</td>
<td></td>
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</tr>
<tr>
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<td>3</td>
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<td>5</td>
</tr>
<tr>
<td>38</td>
<td>The PLCM provides guidelines and formalities for sales and delivery stages of the service development</td>
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F- Knowledge Sharing Survey

Multiple Choice Questions
• In which of the Ericsson's service areas are you predominantly working?
• For how long you have been involved with service delivery within this area?
• During sales or delivery of services I usually notice that there are unexploited opportunities for improvement or introduction of new services to provide more values to our customers

Ranking Questions (Likert Scale)
• OPPORTUNITIES for improvement or introduction of new services to provide more values to our customers
• In which areas do you see such possibilities? (Descriptive Area)
• In my opinion, there are adequate and effective guidelines (formal processes) to show us how to improve our services when there is a possibility for improvement in our services in order to provide more values to the customer.
• Possibilities for such improvements in services can be effectively communicated to the central functions/service owners if needed.
• I know where to turn or whom to contact if I have a suggestion about improvement of our existing services, or an idea about the introduction of a new service
• In my opinion, feedbacks from regions/delivery on improvement of services are taken seriously when they are communicated to the central functions/service owners
• It is easy to find support from knowledge sharing communities when I see an improvement possibility in our services and need directions/guidelines about it
• I am quite familiar with knowledge sharing tools within my areas of responsibility
• Possibilities for improving our services are documented and made available to be re-used at communities within my area of competence
• It is easy to make use of communities when I’m looking for solutions to improve our services. (i.e. knowledge and experience of others about that specific area can be searched and found easily at communities)
• I would share more information and experience if knowledge sharing tools were more user-friendly
• I would share more information and experiences if I had more time
• I would share more information and experience if there was more motivation
• In my opinion, existing knowledge sharing tools are generally effective in my areas of responsibility. If possible, please also describe why you are agree or disagree (Descriptive Area)

Descriptive Parts for Feedbacks
• You may freely share your ideas about any of the above questions here
• You can also add your name or contact information if you would like the survey owner to stay in touch with you for further information