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Developing a Practical Process to Help IT Consulting SMEs to Design New Services

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The studies in the Industrial Management program have really broadened my mind business-wise and have changed my perspectives towards many issues in life. Even though from time to time it has been tough to combine the studies and day job, at the end it is really rewarding to see how much I have learned.

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The objective of this Thesis is to develop a process for small and mid-sized IT enterprises (IT SMEs) to design services. The research approach used in this Thesis was a qualitative case study. The process has been developed for the case company and suggested as a model for IT SMEs. It is expected that the process should be cost-effective, easily implementable and adaptable to changes.

The current state analysis of the case company finds many shortcomings in currently used process. There is a lack of cooperation between the company and customer. The communication between team members is not sufficient. The roles and responsibilities of personnel are not properly defined. In this regard, various best practice and literature were explored.

The data collection techniques used in this process is qualitative. Data was collected by semi-structures interviews, questionnaires and workshops. The study was conducted in real-life context focusing on solving a contemporary challenge in the case company. Also, the various best practices and tools used in different industries are found from literatures The findings from current state analysis and literature survey has been used to build a proposal for service design process.

This Thesis proposes a four-step process which combines the concepts of Double Diamond Approach, Stage-Gate model and Scrum. The proposed process is both stage-based and iterative-incremental. This proposal suggests use of several design tools at different stages of process. The process model and use of design tools helps in defining roles and responsibilities of personnel and describing activities and tasks in comprehensible format. The proposal specifies the channels of communication between members at different stages. The outcome is a process which helps the company in cost-effective and high quality service design. The process is also easy to learn and implement.

Keywords	Service Design Process, Four-stage Process, Double Diamond Approach, Stage-Gate Model, Scrum, Design tools

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1   Introduction

Service industry is one of the fastest growing industries in the world. It makes about 65% of global business by market share and revenue. Generally service industries are of various types, for example, hospitalities, consultancy business, IT solution development, research and development, call-centres, etc. Among other service industries, IT industry is a highly claimed sector (Miroudot, S. and Cadestin, C., 2017: 58). Since IT is becoming an important part of modern business world, IT is becoming a highly successful sector of service industries. It is also a very dynamic and fastest growing sector. IT solutions and services are becoming an important part of operation, strategy and marketing of any industries. This is due to that fact that industries are becoming dependent on IT services for better and quicker development and delivery of own solutions or products. The IT services capitalize on customer satisfaction, quality of service, use of technology, focus on efficient service delivery, and commitment of service provider. (Ruutu et al., 2017: 119-130)

The quality of service can be measured in terms of acceptance of services by customers. The high level of service acceptability is assumed as high service quality. The better quality of service makes it highly acceptable to customers. In the current business world there is a tough competition in service sector. A slight difference in quality of services can attract a large number of users, and make the service provider popular. The quality of service can be improved with use of modern technologies and selection of better process for design. A proactive approach from the service provider to use technology, customer experience, commitment, and effective process can help to improve the quality of service. (Ruutu et al., 2017: 119-130)

The biggest challenge in service industry is to design better services for customers. For better service design, the service provider has to rely on customer requirements initially, which can differ as per need of customers, their culture and geography (Howcraft and Richardson 2016: 11-30). In this regard, the service provider needs a better process that can help in service design. This model can use various tools, processes and customer-centric concepts for better service design, and ensure the wider acceptability of service. Such a process would require proper inclusion of all participants in service design, for example, customers, employees and subcontractors. The tools, processes and concepts used in service design often differ from that of design of goods because services are intangible.

One example for service design can be explained with the case of an IT company. Due to its fully service-oriented nature, IT industry can be considered as a prime example of service industries. This industry is very dynamic and needs innovation continuously. The main pillars of IT industry are customers, service provider and technology. There can be influence of culture and geography of human resources and customers on outcome. The better marketing strategy can help the industry to succeed. This industry needs continuous innovation in service design practices.

The case of small and mid-sized (SME) IT companies is often challenging and demanding. Often, the service designer in a SME has to rely on new and agile processes for better service delivery. Hence SMEs, generally, needs such process which should allow it to become agile, innovative and explorative in service development. Generally, SMEs rely on agile business processes for better service design, and there are many agile business processes in practice which is used by SMEs. But these processes also have many disadvantages which affects service quality and delivery. A better service design process for a SME needs better understanding of business context and problems existing in that particular sector, discussed below.

1.1   Business Context of This Study

In this study, the business context is a SME company working in IT sector. The company aims to use a process which should fit well to the need of a dynamic enterprise. The customers of such business environment are mostly small and mid-sized enterprises whose requirements change often. If the customer is a big corporation, its working model also very flexible and dynamic. Customers of such companies have specific need of business and are quality-conscious. To deliver quick and quality services the company seek innovative business process.

Presently, the firm needs to focus on service design as per need of customers. This business environment needs better coordination between the customer and the company. The better interaction between the company and customer helps in value co-creation. Value co-creation benefits both customer and the company. The company delivers high quality services to customer and the customer helps the firm to improve its business process with his feedback.

Therefore, there is a great need for effective service design for service design where coordination between company and customer is better. The business process should use best management practices and offer customer-centric services. The all stake-holders (customer, employees and other partners) should feel ownership of service. This will create a strong bonding between customers and companies.

1.2 Business Problem, Objective and Outcome

In this Thesis, the focus is to solve a problem faced by an IT small mid-sized enterprise (SME). The intent of the case company is to deliver high quality service quickly. Often their productivity suffers due to lack of an effective process for service development and delivery. They need to be adaptable to changes in customer's requirements. Hence the main business problem is lack of a useful process which can help the case company to design cost-effective and quick service development and delivery process. They expect that the process should help in strengthening coordination and communi-cation between team members. The process should be helpful in defining clear roles and responsibilities of personnel of company. The service development and delivery should be quick and customer-centric. The process should also focus on other criteria such as customer expectations, employees' motivation, culture, and personalization. Such process can help them to cope with the impact of personalization, localization and globalization, combine better management practises, technology and tools.

The objective of this Thesis is *to develop a practical process which can help a SME case company to design better services.* The aim is to design a lightweight process which can be adopted quickly and training cost should not be very high. The process should also benefit the organization in many ways. It should promote coordination and communication between customer and organization. It should be cost-efficient, agile and adaptable to changes. Thus, the main research question of this research is "what could be a practical process which can help a SME company in its service design**".**

The outcome of this study is a service design process for used in the case company, a SME, which should be agile and user-centric. The process should adopt best practice of both multi-staged and agile processes available in literatures, be easy to implement and cost-effective.

1.3   Outline of This Thesis

The Thesis has been divided in seven sections. Section 1 introduces the topic of this Thesis. Section 2 discusses the methods and materials used in this Thesis. Section 3 provides and overview of case company and analyses the current state of process used in service design in the case company. The CSA shows the strengths and weaknesses of the current practices in the case company, and shows clearly that current process needs improvement. The concepts of service and service design, approaches, tools and processes are explained in Section 4. This section contains the information gathered from various literatures. The information can be applied in various industries. The information is used to design a conceptual framework for case company. In framework design, the researcher has to focus on CSA and findings of literatures. In Section 5, the CSA and conceptual framework are discussed with respondents from case company. This helps to develop an initial proposal for process. This process is validated with feedbacks from key participants and delivered as final proposal in Section 6 Finally, Section 7 discusses and concludes the finding s of this Thesis. In this section, the outcome is also evaluated against the objective of the Thesis.

2 Method and Material

This section of Thesis focuses on research approach and research design used for the study. Also, several data collection and analysis techniques have been discussed which can be used for this study. The last subsection describes validation techniques in details.

2.1 Research Approach

The case study method has been applied as research approach in this Thesis. The case study method is a detailed analysis of events gives stress on several factors used for specific context or event. This approach can also be defined as a research strategy which can be applied in real life happenings. It can use single or several cases in consideration that studies problem associated with the event. This approach can include both quantitative and qualitative evidences which rely on multiple sources of evidence. The sources can be literatures, real life situations, pilots, tests etc. Based on evidence, a theoretical model is constructed. The process of building theory or models from case studies is defined as case studies approach. The research approach is used when the focus of study depends on answers of questions such as "Why" and "How". The research approach explores the happenings related with real life scenarios when the boundaries between happenings and real life environment are not easy to define. (Yin 2009: 2) Figure 1 below illustrates the case study research:
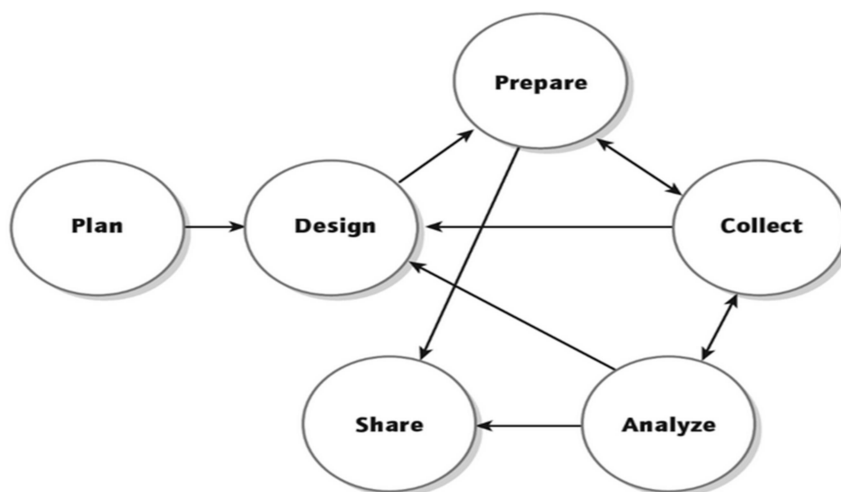
Figure 1. Case study research approach (Yin 2009:1).

The case study approach shown above is a linear but iterative process. The data type for this study is qualitative in nature. In qualitative research the data is mainly in free-

text format compared to quantitative research in which the data is mostly in numerical format. In qualitative research, the data collection techniques are questionnaires, interviews, observation, and survey. The analysis is based on interpretations of data. In qualitative research the views are expressed in words. In case of qualitative research the data is richer and allows more in-depth analysis of data. (Creswell 2013: 18)

Further Baxter and Jack (2008: 544) define the qualitative research technique as follows:

> *"A qualitative case study is an approach to research that facilitates exploration of a phenomenon within its context using a variety of data sources. This ensures that the issue is not explored through one lens, but rather a variety of lenses which allows for multiple facets of the phenomenon to be revealed and understood."*

This study uses several qualitative data collection techniques such as questionnaires, interviews, observations of processes, and internal documents. The research design also uses brainstorming with internal stake holders or working groups of the project for theoretical model design. The theory or model can be validated using feedback from customers of the case company.

2.2   Research Design

The research design of this study is described in Figure 2 below.
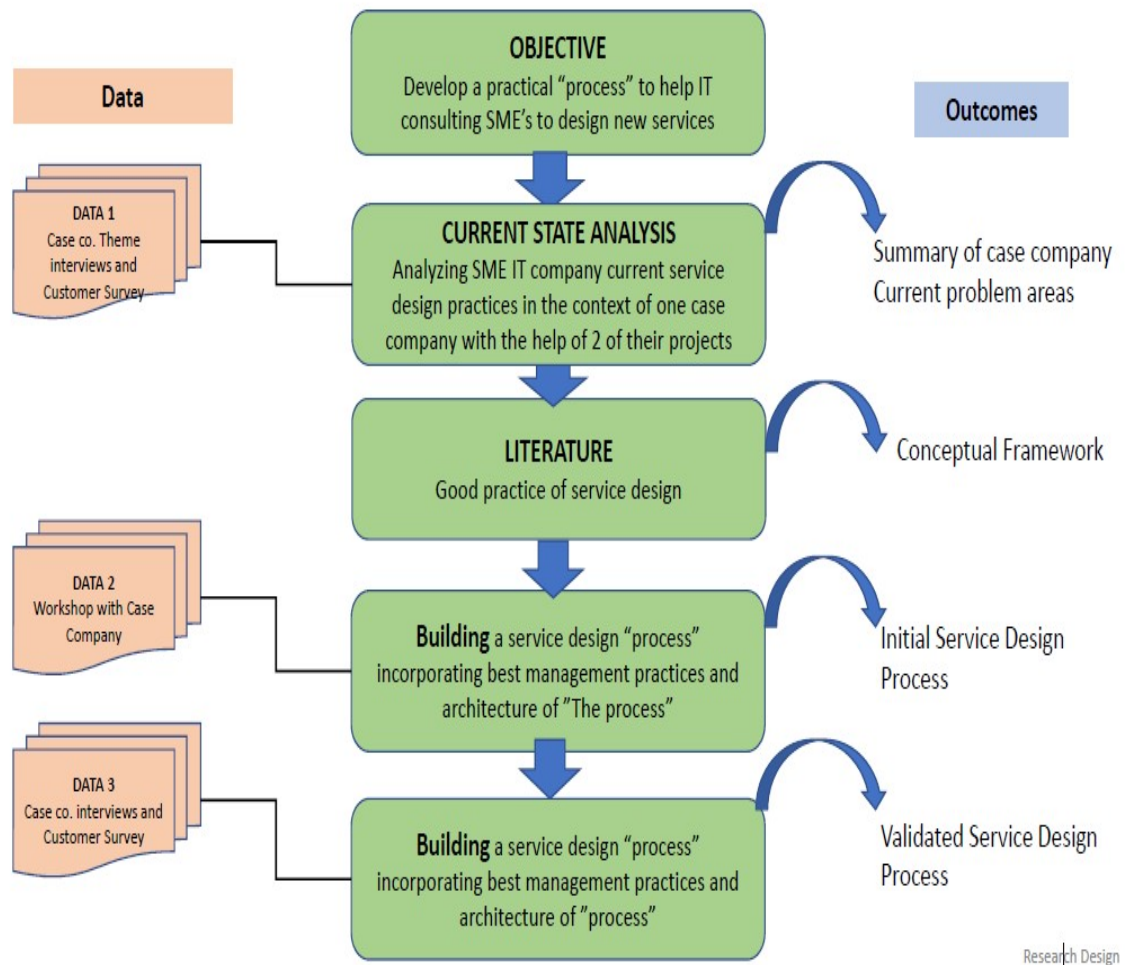
Figure 2. Research design for this thesis.

As shown in Figure 2, the first step is identification of problem and making objective of the Thesis. This step includes formulation of the problem. It provides a better vision for the researcher to direct his efforts and specifies limitations. Thus, it provides a better understanding for the project.

The second step involves analysis of multi-case projects by the case company. This step further helps to define the problem and secures the ground for further analysis. In this step, data are collected from different case projects qualitatively and quantitatively. This step also helps to identify the variations in problems and possible solutions, and it helps to ensure in the subsequent application of theory.

The next step is Literature survey. This step includes the collection of relevant data from literature. In this case, the information related to various service design frame-

works, management practices for customized service design, and factors e.g. customer and employee experiences in service design has been collected from various literatures. This step aims at building a conceptual framework for agile and innovative process for service design. The information collected form literature represents best practices and frameworks used in service design and later synthesized into conceptual framework. It results into an agile and innovative process for service design and architecture of service design framework.

The next step is building a service design concept using information from internal stakeholders of the project. In this regard, the data is collected from various stakeholders. The working group is comprised of researcher, key personnel from case company and key persons of their customers. In this regard theme interview is conducted. Theme interview includes the step of feedback from key personnel participating in project. The interview is about the various processes used in service design and different service design frameworks found from literatures. The personnel discuss the relevance of the findings against their requirements. The conclusion helps to formulate a practical process that can help in service design for the case company.

The last step is the evaluation of the theory by the key participants mainly personnel from customers and key employees of the case company. The evaluation is based on the feedback from personnel who will access the theory against their needs. The outcome is a generic theoretical suggestion for SMEs for service design and delivery.
The theory is a list of processes and service design frameworks for the case company to design services specific to customer's needs. It may provide a guideline to implement such process in practice for the case company.

2.3   Data Collection and Analysis

In this Thesis project qualitative research techniques are used. The important data collection techniques such as observation, interviews, questionnaires, and action group have been used in this project. Some other techniques used in this project are action planning, performance monitoring, and measurement techniques such as learning, implementation, impact and consequences. Among these variations, this study follows a current and retrospective approach of data collection. The data collection methods are qualitative in nature. It is in the form of semi structure interviews, questionnaires, and observations of tools, processes and internal documents of case company. Based

on data collected from various stakeholders of the project and literatures, the study suggests a theory or model as a process for service design. The summary of data collections are presented below.

Table 1. Summary of three rounds of data collection.

Data	Purpose	Data Type	Data source	Analysis
Data 1	Strength and weaknesses of customer	Customer Survey	Customers	Current State Analysis
	Strength and weaknesses of employees of case company	Interviews	Team leaders Project Managers Solution Architect	
Data 2	Building the Proposal	Workshop session with stakeholders	Researcher Team leaders Project Managers Solution Architect	Building the proposal
Data 3	Validating the Proposal	Interviews and questionnaires	Team Leaders Customers CEO	Proposal Validation

It is clear from Table 1 that the data collected from sources mentioned in the table is of qualitative type. That's why qualitative data collection techniques such as interviews, group discussion and questionnaires were used for this research. The interview can be structured, semi-structured or unstructured. In this research the semi-structured interviews were used for data collection. The data was collected over a period of time. The focus of first stage of data collection was to do current state analysis of the company. Also, the internal documents, processes and tools were studied for better understanding of working model of case company.

The second stage of data collection used group discussion with employees of case company for model design. This step was organized and structured. During data collection data was recorded in audio format and field notes were prepared. It was ensured

during data collection that data is collected from various sources to improve reliability and validity by data triangulation.

The last stage of data collection was done with senior managers of case company and customers. The format of data collection used customer survey and questionnaires. And finally the proposal was discussed CEO of the company who approved it.

Detailed description about each data collection stage is described as follows

Data 1 was collected in the current state analysis phase by exploring the result of interviewing case company employees and customer surveys. An overview of data 1 is shown in Table 2.

Table 2. Details of interviews in Data collection, Stage 1.

	Informant	Data collection Type	Content	Outcome	date and Duration	Documentation
1	Client Executive (Project 1 – employee A)	Semi-structured interview	current state of process	strengths and weaknesses	22.03.2017; 1.5 hr	Audio, field notes (Appendix 1)
2	Team lead (project 1 – employee B)	Semi-structured interview	current state of process	strengths and weaknesses	22.03.2017; 1.5 hr	Audio, field notes (Appendix 1)
3	Program Manager (project 1- Customer A)	Survey	current state of process	strengths and weaknesses	25.03.2017	e-mail, Questionnaire (Appendix 3)
4	project Manager (project 1- Customer B)	Survey	current state of process	strengths and weaknesses	25.03.2017	e-mail, Questionnaire (Appendix 3)
5	Client Executive (Project 2 – employ-	Semi-structured interview	current state of process	strengths and weaknesses	24.03.2017; 1.5 hr	Audio, field notes (Appendix 2)

	ee C)					
6	Team lead (project 2 – employee D)	Semi-structured interview	current state of process	strengths and weak-nesses	24.03.2017; 1.5 hr	Audio, field notes (Appendix 2)
7	Project Manager (project 2-Customer C)	Survey	current state of process	strengths and weak-nesses	29.03.2017	e-mail, Ques-tionnaire (Ap-pendix 4)
8	Head, IT Dept (project 2-Customer D)	Survey	current state of process	strengths and weak-nesses	29.03.2017	e-mail, Ques-tionnaire (Ap-pendix 4)

The purpose of the interview was to investigate whether any process is used in company currently and how it is being done. The aim was to examine current state of process used by company. The interviews were mostly semi-structured. The respondents were allowed to express their view in their own words. In case of customer survey also, the respondents were allowed to express their opinions freely. The structure of customer survey was also semi-structured. Field notes were prepared based on recordings of interviews and answers by e-mails. The field notes are presented in Appendix 1-4.

In *Data 2,* a workshop was conducted between the key stakeholders in the case company. The details of the workshop can be seen in Table 3.

Table 3. Details of the workshop in Data Collection, Stage 2.

	Participants	data Collection Type	Content	Outcome	Date and Duration	Documentation
1	Client Executive (Project 1 – employee A)		Ideas for: Conceptual framework (CF) presentation			
2	Team lead (project 1 – employee 2)					
3	Client Executive (Project 2 – employee C)	Work-shop	Analysis of CF against CSA	A process model for service design for case company	04.05. 2017	Audio recording: Field notes
4	Team lead (project 2 – employee D)		Feedback about strengths of CF		2.5 hrs	Appendix 5
			Suggestions for improvement about CF			

As it can be clearly seen the participants are senior managers of case company. The participants were chosen according to their roles in case company. First, researcher presented the findings of CSA and conceptual framework. Then client manager started the discussion. The group discussed various aspects of conceptual framework and analysed the proposed process model. They also gave some suggestions to improve it further. The field notes of the workshop are documented in Appendix 5.

Data 3 was collected in validation phase of this Thesis. The data was collected, first, by discussion the proposal with Team Leads and Projects Managers of both case projects and their customers. Based on their feedback, the proposal was improved further and finally presented to CEO for approval. The details of data collection 3 are presented in Table 4.

Table 4. Information about Interviews in Data Collection, Stage 3.

	Informant	Data Collection Type	Content	Outcome	Date and Duration	Documentation
1	Team Leaders & Project Managers	Discussion face-to-face	Validation of Initial proposal	Validation of initial proposal and suggestions to improve	11-05. 2017 1 hrs	Field Notes of interview (Appendix 6)
	Customers	Survey				e-mail, survey (Appendix 7)
2	CEO	Presentation; face-to-face	Validation of proposal	Approval of final proposal	16.05.2017 1hr	Feedback by mail (Appendix 8)

The purpose of this data collection was to discuss and review proposal with senior managers and customers of case company. Based on feedback, some changes were made to the proposal. Then it was presented to CEO for final approval.

During this course, the presentation to each party followed the same pattern. First, an overview was introduced to participants and then each aspect was discussed in details. Then, they were allowed to express their opinion. Based on discussion and survey the final model was created.

This study has several sources that provide complete representation. In this regard the representation has been balanced by inclusion both from personnel from case company and its customers in equal strength. This helps in better data validation. The interviews, questionnaires, group discussion, survey, and observation of tools and processes helped the researcher to analyse the needs of the case company. The data was collected for two case projects. Each case is represented by two employees and two customers of case company. The two case projects can give an overall view of practic-

es of case company. The observation details of two case projects can be explained as follows.

Table 5. Details of observations collected from key personnel.

	Case	Duration	Contents	Observation log
1	Project 1	22.03.2017-25.03.2017	semi-structured interview, survey	audio, field notes, questionnaires
		04.05.2017	Presentation, Group discussion	audio, field notes
		11.05.2017	survey, feedback	questionnaires
2	Project 2	22.03.2017-25.03.2017	semi-structured interview, survey	audio, field notes, questionnaires
		04.05.2017	Presentation, Group discussion	audio, field notes
		11.05.2017	survey, feedback	questionnaires

In this study, the researcher has worked as an external consultant to propose a model of process for service design to the case company. For this purpose, the researcher conducted various activities such as collecting data from key personnel of the case company and its customers and relevant information from literatures. The researcher also presented a view on processes and service design frameworks used in service design of other SMEs. Also, the researcher discussed the influence of several factors such as customer experiences and employee experiences on service design. In the end, the proposal was validated by senior managers of case company and customers.

2.4   Validity and Reliability

Research design, a plan to conduct study, is core of academic research. The aim of research is to deduce logic or inference from a multitude of data and establish relevance.

Logic is inference from two or more premises. It is basically a systematic study of any topic in the form of arguments. It helps in establishing a systematic relationship between assumptions and conclusion. It links the data to propositions in a research activity. Logic should be consistent, valid, complete and sound. There are various techniques available to establish linking between data and prepositions. These techniques can be pattern matching, explanation building, time-series analysis, logic models and cross-case synthesis. (Mossakowski et al. 2007)

Relevance is the concept of one topic connected to another topic in such a way that second topic becomes meaningful if first topic is selected (Hjørland and Christensen 2002: 960-965). Relevance is an important point while deducing logic in research.

Next, validity and reliability ensure deduction of logic and finding relevance in a research. In research design, the researcher must consider validity and reliability for better logic and reliability (Yin 2009:26, Maxwell 2013:4). Validity and reliability is conducted throughout the research.

Validity refers to authenticity of data. It can be ensured by collecting data in various ways such as interviews, survey, questionnaires, observation, statistics, and study of internal document. It increases if data is collected from various sources. It also increases with application of replication of logic and bias deduction. Validity increase if a researcher relies more on pattern suggested by data rather than making his own judgments. (Yin 2009: 30-34) Yin (2009) suggests three steps to ensure validity of data. These are construct validity, internal validity, and external validity.

Reliability is checking the uniformity of data in all conditions, and getting the same result if any change in personnel happens during research process. It includes the trustworthiness and authenticity of data. It can be improved with data triangulation, increasing data richness, and piloting and testing. Reliability of data can be increased by involving all stakeholders in the research. This can reduce researcher's bias and increase purity of data. Different data sources, data collection tools, data collection timing, many participants and application of a well-tested theory from one area to another can help in improving the reliability of data. (Yin 2009: 42-44)

3   Current State Analysis

This section discusses the current state analysis (CSA) of case company. In this section, the researcher collects information about current process being used in case company. The aim of this section is to present an overview of current process for service design of case company and its strengths and weaknesses The data collected in this section corresponds to data collection 1 of Thesis.

3.1   Overview of Current State Analysis (CSA)

The CSA for the current service design practices used in the case company has been done for its two running case projects that refer to two big units of case company. In this situation, the researcher works as external consultant. The selection of two projects or units of case company help in broader data collection. This can help in getting a wider view of processes used in case company. Hence, it gives a broader picture of strengths and weaknesses of process used in case company.

The purpose of the current state analysis is to present a holistic view of the current situation and problems of two case projects. The CSA has been done by face-to-face structured interviews and surveys about current processes of the case company. The interview and survey are based on Turner's model of qualitative interview (2010: 754-760). Based on findings, the strengths and weaknesses of the current processes are summarized. The CSA can be used for literature survey which will further help in building the proposal.

The current state analysis is the first stage of data collection. It refers to data collection 1. This stage of data collection and analysis presents an overview of current processes and its strengths and weaknesses of case company. At this stage, data is collected by semi-structured interviews and survey with key participants of this stage. The participants of this stage are mostly senior managers of case company and its customers as mentioned in Table 2. The findings of this stage are mostly related with current practices and process used by case company in service design. The participation of customers in this stage helps to find the customer-centricity of current process. The data has been collected from respondents in the month of March 2017. The data has been collected for two case projects of case company as mentioned in Table 5. The collected data is qualitative type and expressed in text form. The data collection was based on

observation of respondents and they were allowed to express their views. The data from two projects helped the researcher to authenticate and validity the data. This further helped the researcher to get a broader view of current practices used in case company. The results of the interview from respondents can be found in Appendix 1-2. The results of customer survey can be found in Appendix 3-4.

The objective of data collection was to collect views of respondents about current process and tools used in case company. The current process streamlines activities and helps the company in identifying problems, and service development and delivery. The data collection also helped to get an idea of various activities and personnel in a process. The CSA can help to get an idea about use of tools in service design. The tools can help to develop activities and share information among personnel of design team. Hence it can help in clear communication and better team collaboration. The questionnaire template used in interviews and survey is based on Turner's model of interview (2010: 754-760). This model helps to gather data related with views of both employees of case company and customers.

3.2   Overview of the Case Company

The case company for this study is a small IT consulting firm headquartered in Helsinki. This firm provides services in the domain of CRM. The firm was established in 1999 and has presence in two locations – Helsinki and Järvenpää. The firm offers its services in different areas of CRM e.g. Siebel, Salesforce, Microsoft Dynamics, Business Intelligence and Customer Experience Management (CEM). It also builds and sells products based on CRM. Currently 70 people are working in this company. The company is Oracle and Microsoft certified gold partner. The company works with several known customers of Finland. The known customers are Kone-Cranes, Varma, Outotec, Kesko, VV-auto, DNA, Elisa, F-secure, YIT, HELEN, Algol, ABC etc. The company is one of the best in its area of expertise due to its best customer services. The structure of the firm is domain- specific. The firm has been divided into different units such as sales and marketing unit, accounting section, Siebel business unit, Salesforce business unit, Microsoft Dynamics business unit, Customer Experience Management services unit, BI unit, and product teams (Marketing automation team, and CDM team). Due to its high quality services the growth rate of firm is considerably good with each passing year. The structure of the case company can be shown in Figure 1 below.
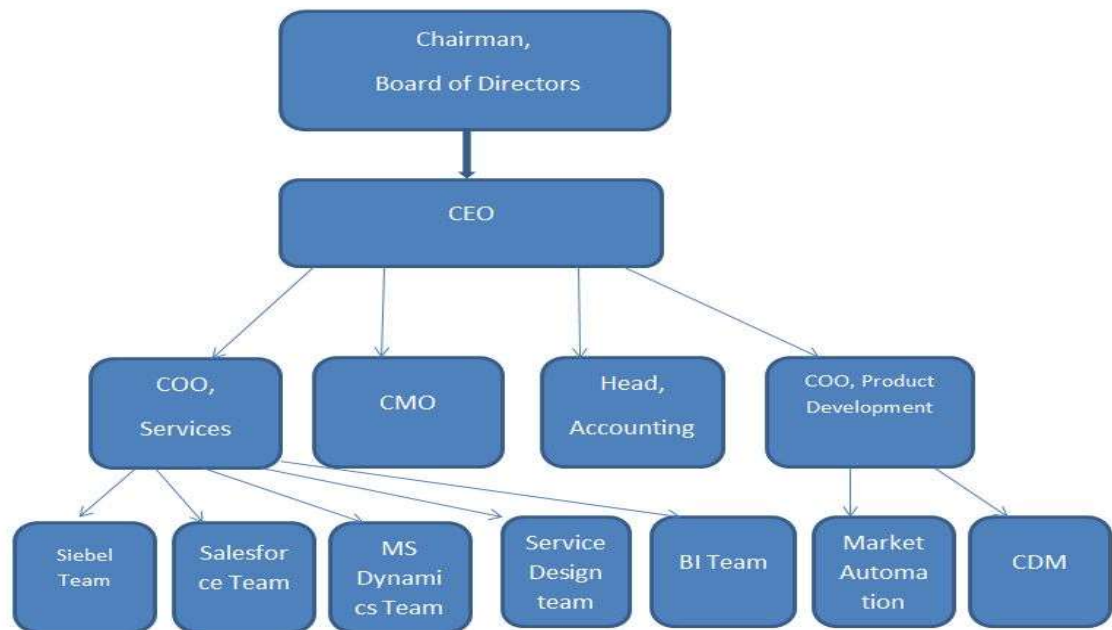
Figure 3. Case company structure.

The company provides its services in technical consultancy, products and supports. The Services of the case company can be shown as:
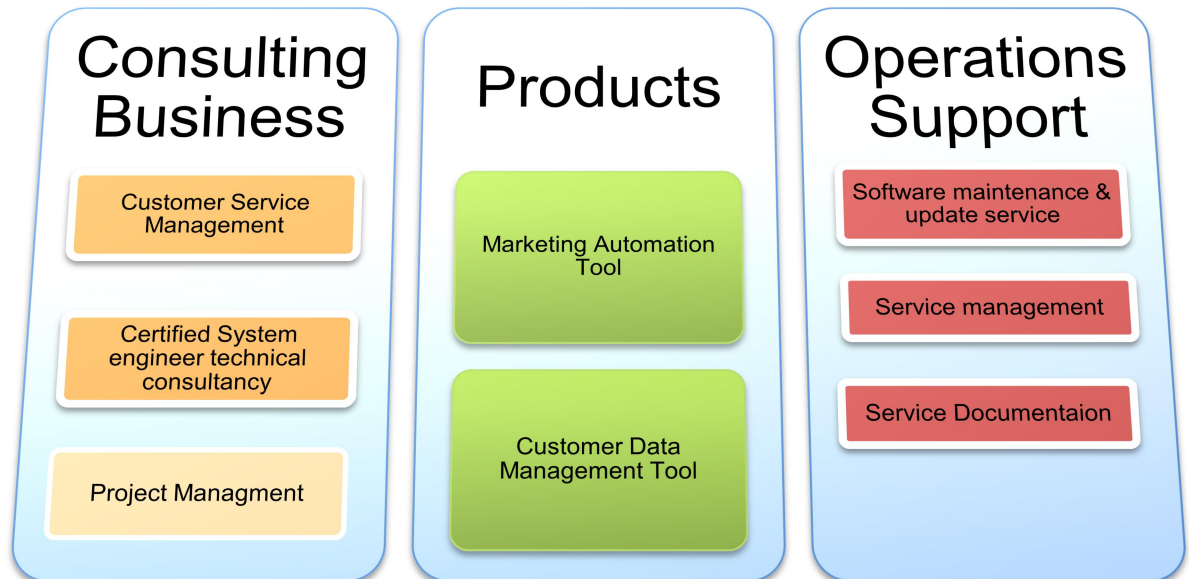
Figure 4. Services of the case company.

3.3   Project 1 (Description of the Current Practices)

The project 1 of CSA is about activities of Siebel Business Unit of the case company. In this project, two key employees of case company (employee A and B) and two customers (customer A and B) participated in data collection. Since the participants of this project are senior managers of case companies and customer organizations, they are able to make decision on behalf of their organizations. The primary aim of CSA is to explore various properties of current process related with team collaboration, sharing information, handling customer feedback, value co-creation, clarity in roles and responsibilities etc.

Interviews with employees and customer surveys give a complete picture of current business process of case company. The pictorial view of process is as follows.
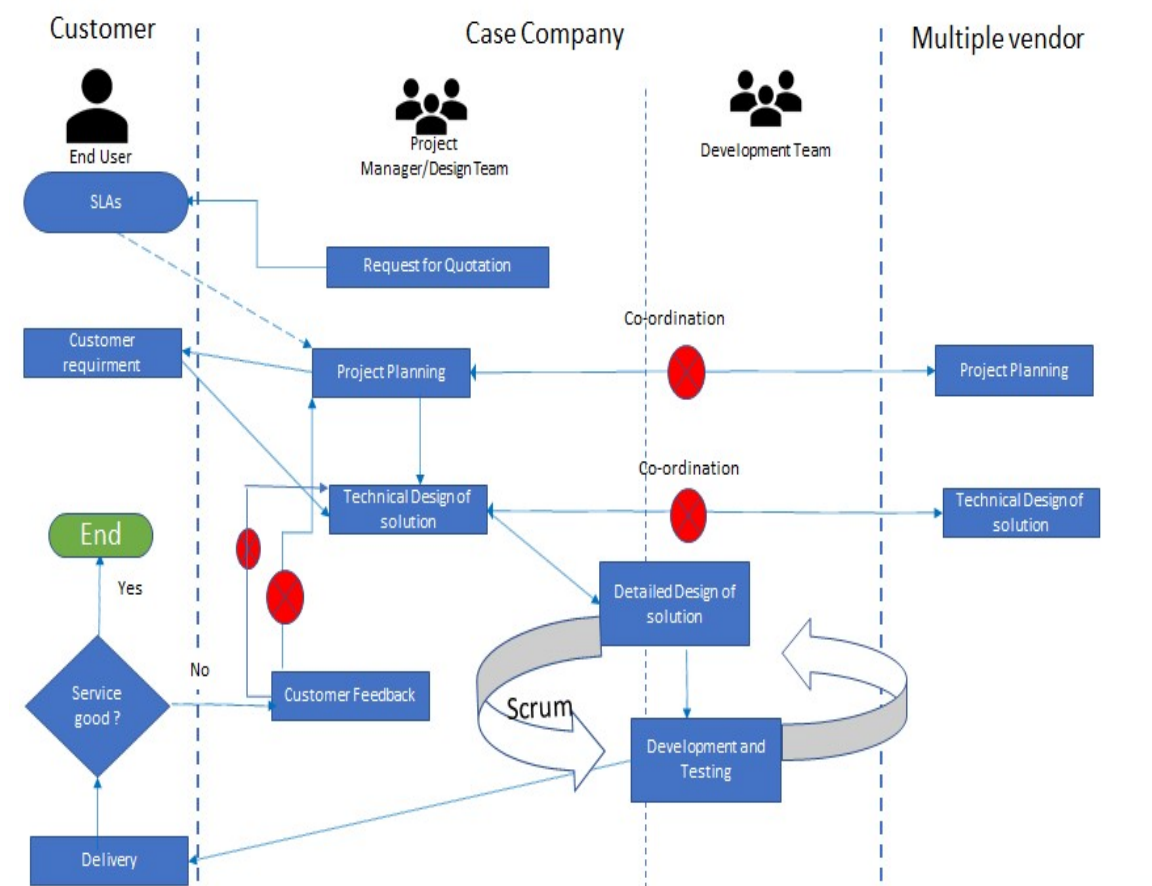
Figure 5. Current practices for Project 1 of the case company.

The process used in case project 1 is applicable in both single vendor and multi-vendor projects. Customers of project 1 are mostly big corporations. Hence there is likelihood

of multi-vendor projects in such scenario. Commonly there are three main players in current business process: Case Company, Customer and other Vendors. The aim of CSA is to get an overview of business process of project 1 and analyze its strengths and weaknesses. The CSA presents a holistic view of team collaboration, clear communication, customer-centric service development, value co-creation and clear roles and responsibilities of personnel in the process. The CSA focuses on expectations and experiences of customer, employee and other vendors in the project. The CSA also explores a mechanism to develop and share information regarding activities and personnel using appropriate tools.

The project begins with customer asking request for quotation (RFQ) from vendors. RFQ is generally a standard business process whose purpose is to invite vendors in a bidding process to bid for specific services. It contains cost, effort, time, scope, quality standards, and contract length for service. Then, customer carefully reviews RFQs from several vendors. After review, the most suitable company is selected. Then customer signs a Service Level Agreements (SLAs) with selected vendor. An SLA is an official commitment between customer and service provider which covers service aspects such as quality, availability and responsibility.

The business process for the case company begins with gathering requirements from the customer. This is the stage where customer requirements is gathered and analyzed. This stage leads to the identification of problems. Often this is done by project managers of the case company. Customer is here just a provider of information. In a multi-vendor projects, the project managers of different vendors are gathering information from customer differently as can be seen from Appendix 1 and 3. The drawbacks of this stage are lack of combined effort for gathering of complete requirements and identification of problem in a bigger scenario. Hence all stakeholders van get a complete picture of business problem.

The second stage of business process of this project is Project Planning. Project Planning is related with plan of activities and reporting of progress within project environment. This is related with task scheduling, scoping and resource planning. It also defines roles and responsibilities. Often Gantt chart (Gantt, H. L. 1974: 182) is used as a reference in project planning. In this case, case company senior employees such as project managers and team leaders do project planning. The data from Appendix 1 and 3 reveals that the plan is developed and used within case company projects. The find-

ings of CSA of this stage reveal many shortcomings. Customer is not aware of project plan of case company. So, he is not aware of progress of project. There is complete lack of communication between customer and project manager of case company. In case of multi-vendor projects there should be synchronization of activity of this stage. All vendors should be aware of project scheduling, scoping and resource planning. Lack of synchronization between different vendors may result into subprojects progressing in different direction that can be realized at the time of service delivery. The customer always wants delivery of complete solution at a time. In this case, also, there is a lack between planning of different vendors as explained in Appendix 1 and 3. A vendor is unaware of plans of activities and resources of other vendors. This leads the different in activities of different vendors from start.

The third stage is Technical Design of solution also called technical specification. The activities of this stage are listing requirements, designing functionality of solution, creating user stories, designing graphics mockups, studying usability, creation business process diagrams, and specifying data models. This stage gives an overview of complete solution being delivered to customer. The participants of this stage are project managers and solution architects. The finding from CSA at this stage as found in Appendix 1 and 3 reveals that there is lack of co-ordination between customer, case company and its partners. All stakeholders are not able to see complete picture of solution delivered to customer at the end. Although, the case company claims to be customer-centric, but the technical design activity refutes the claim by not giving complete picture of solution to customer. There should be a combined effort of case company, its partners and customer to design technical specification of solution.

The next stage of this case project is Detailed Design of solution. This is the stage where the design is refined and plans, specifications and estimates are created. This is the stage where full cost of the project is identified. The participants of this stage are project managers, solution architects and lead developers. Although customer and participants from other vendors are not required at this phase completely, but they need to be communicated the time estimation of the project. This can help in synchronizing each other activities. This stage can also usher the beginning of Scrum. Sprint planning can be started here. Sprint plan ensures that how solution can be developed in short sprint cycle. Hence there is a need for presence of the representative from customer.

After detailed design, the development and testing of solution starts. The CSA reveals that the case company uses Scrum at this stage. This helps the case company to develop the solution in short sprint cycle. It helps in developing customer-centric solution and maintains high quality. This is a complete internal activity of case company. In this stage, Project manager, Scrum master and development team participates. The strength of case company is use of Scrum.

The last stage refers to delivery of solution. This stage also follows Scrum practice. The sprint review and retrospection is done at this stage. At this stage customer and other vendors participates in sprint review. They review the solution and compare the delivered solution against specified time and quality. Here, customer expects complete solution delivery from all vendors. Hence, there should be a combined effort from all vendors to deliver unified solution. If the solution does not meet criteria, then the customer feedback should be addressed in planning and technical design for other sprint. The CSA reveals that customer feedback often goes unnoticed, because in current process there is lack of personnel with defined roles to handle it. Hence the clarity in roles and responsibilities are also a major drawback of current process.

The CSA for case project 1 discusses many strengths and weaknesses of current processes. Those strengths and weaknesses are discussed as part of CSA analysis here. First, an overview of strengths of case project 1 is discussed here. Employees of case company are experts in technical domain – Siebel CRM know how. It is also acknowledged by customer and visible in design of solution. The priority of case company is to deliver customer-centric solutions. In this regard Scrum is used as process. Scrum is iterative-incremental process where solution development and delivery is focused on customers. The process helps the company to adapt to the need of customers and focus on team work. The solution is delivered in short sprint cycle which is easily managed.

Some weaknesses of case project 1 can be derived from CSA findings too. The problem of current business process is over reliance on Scrum which is suitable for solution development and delivery. The service design can have two parts. First, identifying and defining of problem, and second developing and delivering solution. Hence the current process focuses more on second part. In case of multi-vendor project, the process needs a specific stage and personnel with defined roles to work with customers and other partners where problems can be defined clearly for project. Also in that stage the

people should jointly discuss the possible solution for it. That stage can be helpful also to discuss customer feedback after service usage. Here, the current process is mission few things clearly. First, customer experiences are not properly handled and other vendors does not get an opinion about complete project. Hence it affects both service delivery and service quality. The reason for this problem can be unspecified stages for identifying and defining problems and unclear roles and responsibilities for those tasks.

Second problem is to discuss the roles and responsibilities of personnel, customer needs and experiences, and activities with other partners and team members in comprehensible format. The format can be text or visual. Hence, there is need of tools for service design activities. The tools can help to create a format to chare and store information related with activities which helps the members of project to understand it clearly.

Hence the current process needs some improvement. It needs a multistage process for identifying and defining problems, and developing and delivering solution. The process should also incorporate best practices of Scrum in solution development and delivery. It also needs tools to make roles and responsibilities clear and explain activities of various stages in comprehensible format.

3.4   Project 2 (Description of the Current Practices)

The Case project 2 refers to the business activities of Salesforce Business Unit of the case company. In this case project two employees of case company (employee C and D) and two customers (customer C and D) have participated in data collection. Often customers of this case projects are small to mid-sized companies, hence the nature of projects are single vendor in most cases. For most customers, case company is sole service provider. The participants in data collection for this project are senior level employees from case company and its customer who are able to make decision on behalf of their organizations.

Similar to case project 1, the researcher interviewed employees and surveyed customers in this project. The findings of CSA of this project are similar to that of case project 1 with few exceptions. In this case, the projects are single vendor projects often. The case company is often sole service provider to customers. The project needs better coordination between customer and employees. The case company needs to be more

customer-centric. Customer should participate in all activities of service development. He should be aware all the activities carried out by companies. But the CSA reveals a different picture of most projects. The business process used for case project 2 can be shown as follows in Figure 6.
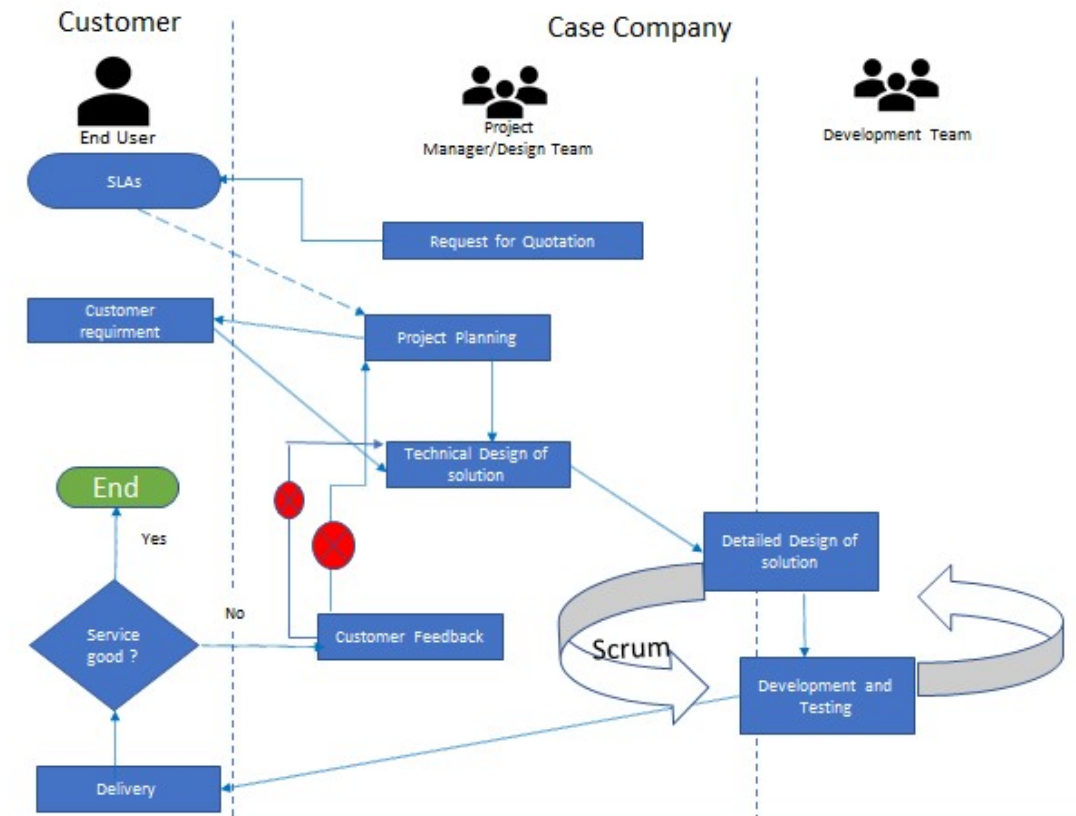
Figure 6. Current practices for Project 2 of the case company.

As seen from Figure 6, that the process mostly resembles a particular scenario of Figure 5 where projects are mostly single vendor. Based on CSA, an overview, strengths and weaknesses of different stages can be explained as follows.

The steps of RFQ and SLAs are similar to that is case project 1. The requirement gathering and analysis stage is slightly different than that of case project 1. In this case only two major players are participating in this stage: Customer and project manager of case company.

The second stage is Project planning. The main participant of this stage is project manager. As per CSA, the information is passed from project manager to development team. The CSA reveals that project manager does not inform or involve customer in project planning. The customer lacks information about project scope, scheduling and

resource allocation. Hence, customer may not be able to help the development team with his inputs. This may not result in value co-creation for both customer and case company.

The third stage is technical design of solution. In this stage overall specification, functionality and usability of solution is designed. The participants of this stage are project manager and solution architects. The CSA finds out that the outcome is delivered to the customer at the end of this stage. The drawback of this stage is that customer does not completely participate in this activity. Hence, he is not aware how the solution has been developed completely. He is also not aware of responsibilities of personnel in design and development of team. If the customer is having some ideas about solution, his suggestions will not be incorporated in design.

The next stage is detailed design of solution. Here the details of solution and estimates are developed. The main participants of this stage are project manager, solution architects and lead developer. The advantage of this stage is introduction of Scrum. Sprint planning can start at this stage. Hence, the estimates of development activities of short sprint cycle can be created here. The customer may or may not participate in this session. But he is notified about the outcome of this stage.

Next stage is development and testing of solutions. Here, development team is the main payer. Project manager and Scrum master monitors the progress of Scrum and project.

The last stage is delivery of solution. In this stage, the solution is delivered to customer. Hence, the presence of customer is absolutely necessary. The CSA reveals that this stage is handled as a part of Scrum. The Sprint Review and Retrospective Session are done at this stage. The customer participated in sprint review where he reviews the end solution. The CSA reveals that the customer feedback often goes unnoticed because of clearly defined roles of personnel who can handle it.

The strengths of this project can be Scrum, technical competence in CRM area, good reputation among customers, a large pool of customers and customer-friendly employees.

The weaknesses can be overreliance on Scrum for service development and delivery, not paying too much attention on defining business problem, no clarity for a stage where business can defined and customer feedback can be handled, no clear roles and responsibilities of personnel to handle customer feedback and sort it, delayed service delivery and poor service quality, lack of value co-creation in the project, and lack of any use of effective design tools in service development. The project is too much focused on solution development and delivery. Hence it does not focus on complete service design.

Hence there is a need of multi-stage process that can use the strengths of current process also. It should incorporate use of Scrum. The roles and responsibilities of personnel should be clear. The information of activities of different stages and participants of project can be created, shared and stored in comprehensible format.

3.5   Summary of Key Findings from the CSA

The current practices for service design used in both projects are having similarities. There are few differences and that can be due to nature of project. In case project 1, most projects are multi-vendor projects. Hence the project is big and more diverse. The second project is mostly single vendor projects. Hence there are mostly two participants in this project – customer and case company. But both projects needs similar types of process for complete service design.

The CSA discusses many strengths and weaknesses of process of case company. The strengths of case company are technical expertise, good use of Scrum in solution development and delivery, a large pool of customers, and customer-friendly employees.

There are few weaknesses of current process which can be summarized as follows. There is lack of focus on complete service design. The current practice focuses on solution development and delivery, but does not focus of business problem identification and define. In this regard there is too much reliance on Scrum as process. There also no clarity of roles and responsibilities of personnel in the project. The communication with other vendors and customers is also missing. The customer feedback is not adequately handled. The activities of each stage of process are not discusses and presented in details and comprehensible format. Hence the current process lacks a set of tools that can design and discuss activities in text or visual format. The output of design

tools can also be shared among people and stored for future use. In abstract, it can be said that the case company lacks a proper process for service design.

The summary of strengths and weaknesses as found in CSA can presented in Table 6.

Table 6. Summary of CSA of the current practices in the case company.

Strengths	1) Scrum 2) Expertise in Technology know how 3) A large pool of customers in Finnish market 4) Employees are business-oriented and customer-friendly
Weaknesses	1) Too much focus on solution development and delivery. Too much reliance on Scum. Scrum is useful in solution development and delivery only. 2) Lack of focus on identifying and defining business problems. Needs a stage where there should be focus on such area of service design. 3) Lack of coordination with customers and other vendors. Need proper stages to do so. 4) Lack of clarity in Roles and responsibilities or personnel 5) Communication with customer and other vendors are poor due to lack of proper session and personnel with defined roles. It results in lack of information about projects in participants. Hence service delivery and quality suffers. 6) No tools are used to design and share information about different tasks and people in the project. 7) Customer feedback is not properly addressed 8) Value co-creation is absent in process 9) In abstract, there is no process in the case company

These findings of CSA will form the basis of literature survey and conceptual framework design in section four. The CSA findings can again be used in evaluating and building proposal in section five. Hence, the next move of this Thesis is to do literature survey and gathers relevant information. The findings relevant to CSA from literatures will be used for conceptual framework design next section of this Thesis.

4 Available Knowledge and Best Practices in Service Design Process and Tools

This section presents information from literature related to the service design processes and tools used in many industries. The literature survey has been guided by the findings of CSA, in Section 3. This section focuses on understanding of IT services and its service design, processes and tools, applicable to different industries, small or big. These practices provide a guideline for conceptual framework design for this Thesis. The conceptual framework is designed to meet the needs of case company in Section 5. The findings from literature review become the backbone of the conceptual framework of this Thesis which is described in last subsection.

4.1 Overview of IT Services and Service Design

The dynamics of global economy is moving from product based services to digital services. Hence it becomes very important to understand the nature of digital services and digital services design. (Brynjolfsson and Kahin 2002: 10-15) The company's *strategy* for the business leads to the choice of service design frameworks, and provides the basis for strategic requirements for business to succeed. [Levy and Powell, 2004: 62-65]

A second perspective is business *processes*. It focuses on understanding the process used to help in business activities with information flow and to identify the service design frameworks that bring changes in business process and affect the service quality. [Levy and Powell, 2004: 62-65]

Finally, the strategy content embodies the *vision for change* from the perspectives of firm and customer. It involves the assessment of practicality of introduction of strategy to change process and frameworks for the firm and output. [Levy and Powell, 2004: 62-65]

There are three main aspects of process development which can bring innovation in service design and better service quality.

4.1.1   Concept of IT Services

The first task is to understand the concept of "services". ITIL defines a Service as "a means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks." (Office of Government Commerce 2007: 1- 4)

IT services can be defined as the application of business and technical expertise to help organizations to create, manage and optimize access of business information and processes. IT services are categorized into various types depending on the type of skills employed to deliver the services (design, build and run). These are: business process services, application services, and infrastructure services. IT services is a specific case of services in which the service is directly consumed by end user to do his work. This is the service which the end user asks for and recognizes. IT services cannot be used to consume or procure another service e.g. it can be done in case of networking. Once this service is delivered to end user, he will feel happy and consume alone. The IT services are of intangible nature; hence it can be measured in terms of Service level Agreements (SLAs) only. If the IT services if delivered to clients directly, it can also be termed as end-to-end IT service. (Böhmann et al. 2016: 1236)

Two major players are part of IT service delivery process. These are IT service provider and end users. IT service provider designs, builds and delivers services and consumers accept those services. Each IT service banks on several IT provider services. IT provider services are generally technical services that enables IT services. The IT provider services can support multiple IT services. IT provider services can be used to enable IT services to the extent consumers consume services. In contrast, end users only use services for enabling or accessing them. Generally IT provider services are managed by operational level agreements (OLAs). Generally IT service relies on one or many IT provider services and every IT provider services supports one IT service at least. (Häikiö and Koivumaki 2016: 96-124)

Service is a dynamic process that takes place over a period. The rhythm of service design influences the mood of customers. Hence, service design should be a sequence of interrelated actions. IT services are generally of intangible nature. It is recommended that customers should experience intangible form of services also. Generally intangible services can be experienced through physical mediums. Although services are intangi-

ble, they are created in a physical environment using physical artefacts. Customers perceive the service design through this physical environment. Hence to feel holistic aspect of service design, customer should focus on entire infrastructure. (Stickdorn and Schneider 2011: 29-37)

4.1.2 Concept of Service Design

As mentioned earlier, IT services are designed, developed and delivered by an IT service provider. The IT service design follows the same processes as used in other industries. It becomes very important to know the various concepts used in service design. Many service designers have described service design in different ways. Their opinions about service design process can be described as follows.

Stickdorn and Schneider (2011) have described service design as an interdisciplinary approach. It combines different methods and tools from various disciplines. It is considered to be a new way of thinking rather a new way of academic research. It is San evolving approach which focuses on creation of knowledge through experiences of using tangible and intangible mediums. The better service design process helps the end user with better experience of services. It is generally resulted from design of systems and processes aimed at providing the benefit to end users.

The Copenhagen Institute of Interaction Design (2008) terms it an inter-disciplinary area where numerous skills in design, management and process engineering are combined to produce high quality services. It is constantly incorporating new methods and processes. Hence, it is a knowledge driven economy.

The other service designers have defined service design in various ways, for example:

> *"Service Design helps to innovate (create new) or improve (existing) services to make them more useful, usable, desirable for clients and efficient as well as effective for organisations.*
> *It is a new holistic, multi-disciplinary, integrative field."*
> — Stefan Moritz, 2005

Stefan Moritz (2005) describes that service design concept improves the quality of existing service by using new ideas, processes and tools. Service design imports concepts from various field such as management, engineering, humanity etc. and. The

integration of ideas generates an innovative approach. That is why this is considered a multidisciplinary and integrative field.

> *"Service design is all about making the service you deliver useful, usable, efficient, effective and desirable."*
>
> — UK Design Council, 2010

As per UK Design Council (2010), the service design concept should produce service that should be usable, efficient and acceptable to end users.

> *"Service design is a holistic way for a business to gain a comprehensive, empathic understanding of customer needs."*
>
> — Frontier service design, 2010

Frontier Service Design (2010) states the need to understand the requirements of customer for efficient service design. It stresses the importance of customer in service design frameworks.

> *"Service Design is the application of established design process and skills to the development of services. It is a creative and practical way to improve existing services and to innovate new ones."*
>
> — live|work, 2010

Another article Live and Work (2010) describes service design as an innovation application of existing practices used in other industries. The innovation brings creativity and helps in applying knowledge in new way. This helps in improvement of service quality and delivery process.

4.1.3   Service Design Principles

When service design is discussed, it becomes important to discuss the basic principles of service design. Stickdorn and Schneider (2011) have described five basic principles for service design. He mentioned that a good service design framework should be *user-centric*, *co-creative*, *sequencing*, *evidencing*, and *holistic*. These five principles can be described as follows.

Services are generally intangible which cannot be stored in the form of inventory. The main aim of service design and delivery is meet customer's requirements. Services should be judged through customer's eyes. Service delivery needs a certain level of participation of customer. Hence the service design will also improve with certain de-

gree of participation of customer. That's why Service design should be user-centric. (Stickdorn and Schneider 2011: 29-37)

Generally there are many actors e.g. customers, service provider, service designer, stakeholders and technology participate in service design. All participants have different expectations. When all participants work together in service design, they create value for each other. Their collaborative effort helps in exploring and defining service propositions. This effort is called value co-creation. (Stickdorn and Schneider 2011: 29-37)

Value co-creation in service design helps in smooth interaction between the participants during service provision. It is essential for both sustainable customer and employee satisfaction. The co-creation helps customer to feel ownership of service and it increases customer loyalty. (Stickdorn and Schneider 2011: 29-37)

The discussion of service design is not complete without mentioning of service design processes and tools. In the next subsection, most important processes and tools relevant to conceptual framework design are discussed in details.

4.2 Service Design Processes

A better service design needs efficient service design thinking. These service design thinking use various tools, processes and methods. Quite many methods for service design have been discussed in the literatures in this regard. Some of prominent methods found in literatures are identify-build-measure (Engine 2009), insight-idea-prototyping-delivery (live|work 2010), discovering-concepting-designing-building-implementing (Designthinker 2009), Marc Stickdorn's Iterative process (Stickdorn and Schneider 2011), The Double Diamond (UK Design Council 2010), AT-ONE (Clatworthy 2009), Stage-Gate Model, Agile processes etc. Almost all of these methods for service design share the same mindset. . Most of these methods are plan-based and resource-oriented. Hence, some of the service design processes were specially selected and discussed below, since they will become the cornerstones of the conceptual framework in this Thesis. These service design processes are discussed in more detail below.

4.2.1   Marc Stickdorn's Iterative Process

This method has been suggested by Stickdorn and Schneider (2011) also termed as Marc Stickdorn's iterative process. This is four step processes where each step describes specific activities at each stage of service design. It is an iterative process where the improvement in process brought by trial and error. The iteration can help in prototyping and testing the model again and again and deliver the best model at the end. In this method the designer can learn the mistakes of previous steps and iterations. The benefit of using this process lies in its structured approach of service design. The activities at each stage are properly defined which is comprehensible. The activities between two stages can be iterated. If the designer finds a problem in design at any stage, he can go back to previous stage and rectifies it. It is a four step process: *exploration*, *creation*, *reflection* and *implementation*. (Stickdorn and Schneider 2011: 19-25)

These steps are explained with a pictorial diagram first and then discussed in details later.
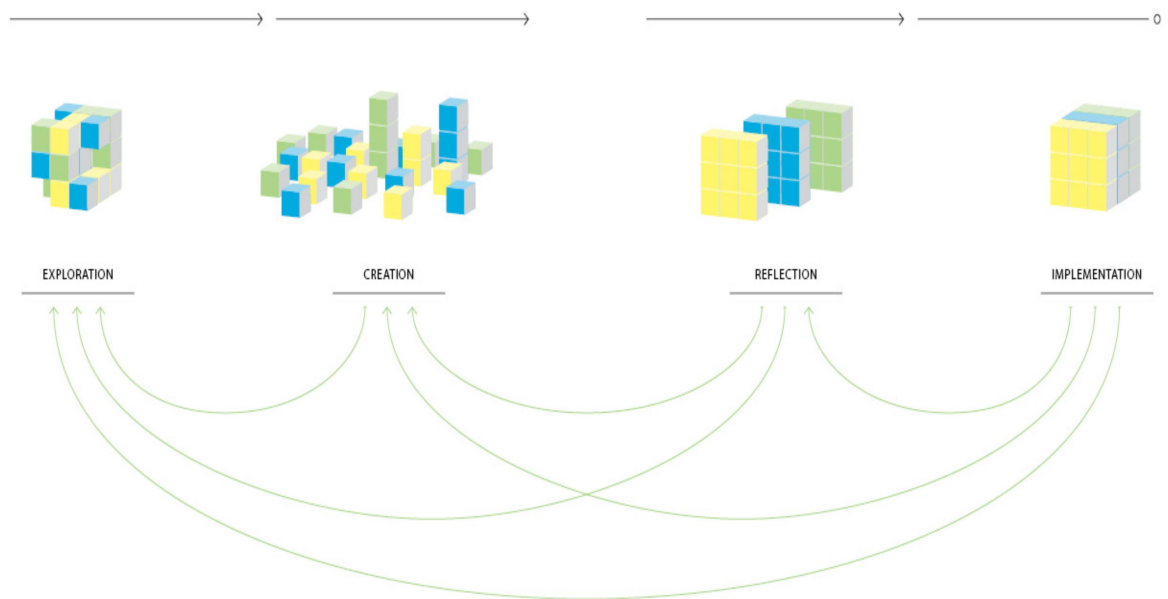
Figure 7. Marc Stickdorn's Iterative process of service design (Stickdorn and Schneider 2011: 21).

The first stage is *Exploration*. In this stage, first, the service designer has to understand the goal and culture of the service provider. Since the service design involves co-creation, hence it becomes necessary to know what extent the service designer has the sovereignty within the service creation process. This starts with identifying the

business problem. Then it becomes important to get clear understanding of the situation from the perspective of current and future customers. The third task is to visualise these findings with underlying structure of the previously intangible services. This helps in simplifying complex and intangible process and motivates design teams. (Stickdorn and Schneider 2011: 19-25)

The second stage is *Creation*. This is linked with concept design. This is a generative stage. One of the characteristics of this stage is not about avoiding mistakes but rather about exploring many alternatives. This helps in making as many as mistakes and learning from them before a final concept is developed and adopted. But there is a need of careful approach in this stage that too much iteration can increase the cost of operation. In order to achieve a holistic approach, all participants (e.g. customers, designers, and other stakeholders) of service design must be included in this stage. The inclusion of all participants in service design helps in achieving the objective of co-creation. (Stickdorn and Schneider 2011: 19-25)

The third stage is *Reflection*. It is about prototyping of the model. In this stage, a model is developed from ideas and concepts from previous section. This stage can have much iteration. This stage involves development and testing of the prototype. This stage also involves customer which shares his views with the service provider which helps in building better prototype. The main challenge of this stage is the intangible nature of services which makes participants of service design to get a feeling about the outcome. In this regard customers should also get a good mental picture of service concept. Generating such picture in the mind of customer is main aim of this stage. Hence the emotions, taste, interest, and behaviour of the service provider and customers plays a huge role in developing the prototype. (Stickdorn and Schneider 2011: 19-25)

The fourth stage is *Implementation*. It is about the implementation of service by a process of change. The basic principle of this stage is change management that needs to be delivered. The theory of change management is applicable to planning change, implementing change, and reviewing change. The change should be based on consistent formulation and testing of service concept during the previous stage. The change management needs a clear communication of service concept inclusion of emotional aspects of service that is customer experience. The employee experience is also a necessity for change management. Hence, in this stage employees and customers are an

integral part of process. While implementing change, management should be aware of service concept and supports implementation. The management should be ready to resolve any conflict arising during change. They should accompany employees during change and should be ready to fix any problem during the process. At the end, management should also review the implementation of change which ensures the success of the process. This is also an iterative process. (Stickdorn and Schneider 2011: 19-25)

4.2.2   The Double Diamond Approach

Similar to Marc Stickdorn's Iterative process, British Design Council has also proposed a model named "The Double Diamond Approach". This is also a four step process. The four steps of this process are: *Discover*, *Define*, *Develop* and *Deliver*. It maps how the path of design process passes from various phases where thoughts and possibilities are as broad as possible to situations. The benefit of using this process lies in separating two activities of solving business problems by two diamonds. The first diamond represents the identification of problem. The second diamond represents the development of solution. The ends of these diamonds are defined as four stages of the process. The process between two diamonds van be iterative like previous model. It also supports the improvement in service design by several trials. (UK Design Council 2010: 1-25)

The Double Diamond approach for service design can be presented as follows.
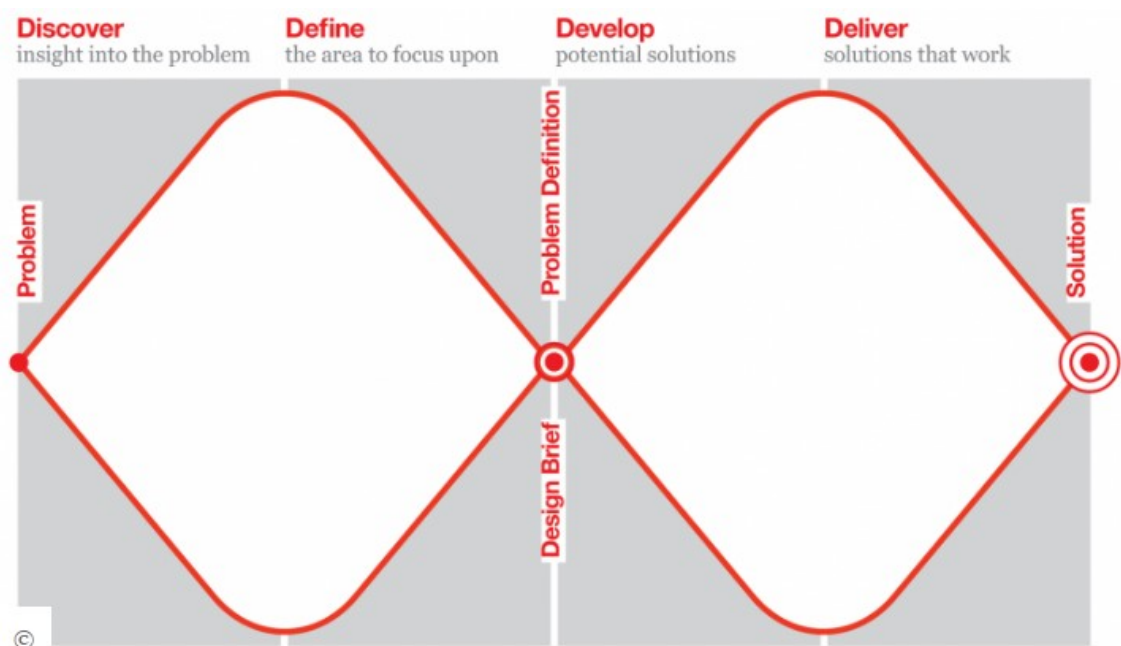
Figure 8. The Double Diamond approach by British Design Council (UK Design Council 2015: 1).

The first stage, *Discover*, of this approach covers the beginning of the project. Service providers always look for fresh ideas and new things and evaluate those ideas. They gather insights, and opinion about what they feel, and decide what is new and inspiring. Key activities included in this stage are market research, customer research, managing information and design of research groups. (UK Design Council 2010: 1-5)

The second stage, *Define*, of this approach represents the definition stage. In this stage, Service providers try to make meaning of all the possibilities found in Discover stage. The goal of this stage is to develop a clear understanding of creative ideas that frames the basic design challenge to the service provider. Key activities of this stage are project development, project management and project sign-off. (UK Design Council 2010: 1-5)

In the third stage, *Develop*, solutions are created, prototyped, and tested. This is an iterative process. The process of trial and error helps the service provider to improve and refine its idea. The key activities of this stage are multi-disciplinary working, visual management, development and testing. (UK Design Council 2010: 1-5)

In the fourth stage, *Deliver*, the service is finalised and delivered. Key activities of this stage are final testing, approval, target evaluation and feedbacks. (UK Design Council 2010: 1-5)

4.2.3 AT-ONE Model

This process assists project teams in earlier phases of service design. This helps in identifying and getting insights of the problem in first two steps of The Double Diamond approach. In this model, the service design process runs as a series of workshops with focus on each letter of AT-ONE. Each letter of AT-ONE stands for elements of Service design process. The workshop can be run individually or in combined form. The goal of these workshops is to stretch and explore the solution in design as early as possible. (Clatworthy 2009: 1-5)

Isaksen et al. (2000) has described three phases of each workshop. In the first phase "*Start*" a common knowledge platform is established for all participants. In the second phase "*Divergence*" ideas and solutions are explored and generated. In the third phase "*Convergence*" ideas are synthesized and prioritized and decisions are made.
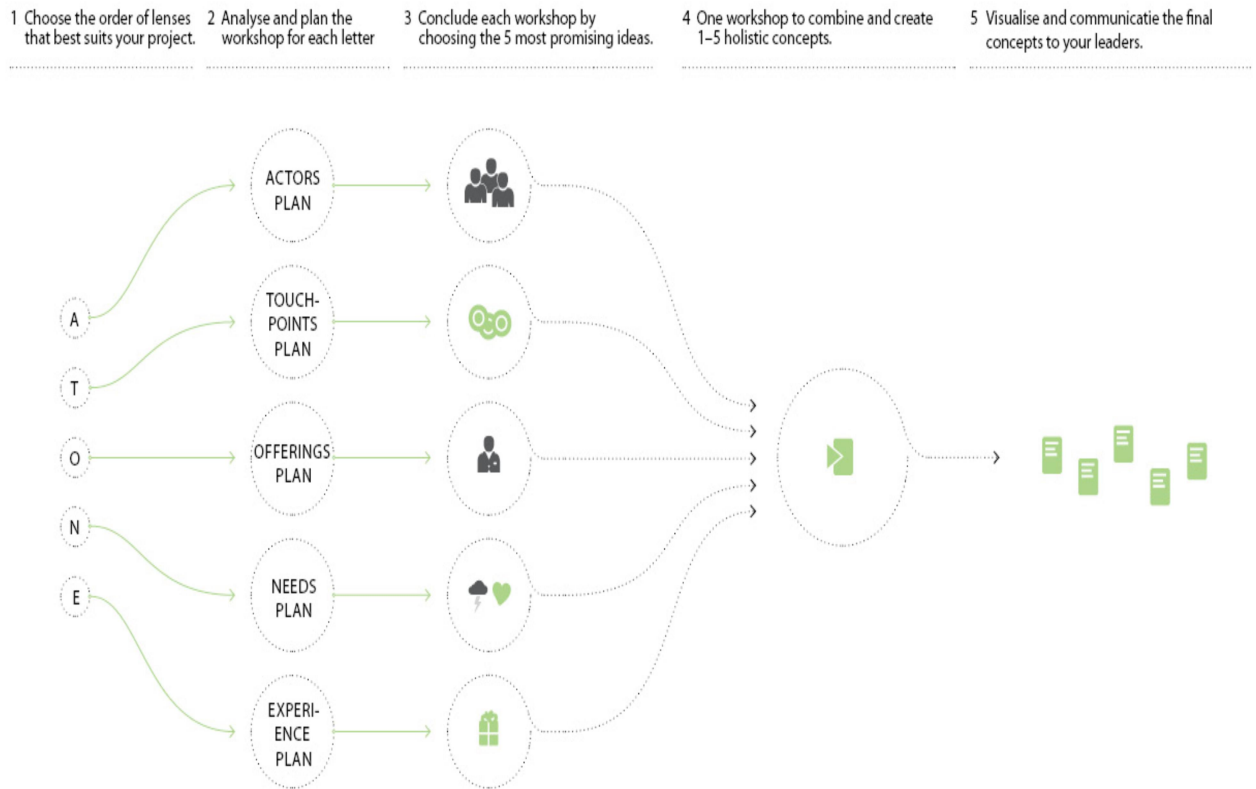
Figure 9. Elements of AT-ONE model of service design (Clatworthy 2009: 4).

A stands for "*Actors*" those collaborate in value network. In modern practices, value is created in networks or collaboration rather than in traditional way to working alone. So, there is a great need of collaboration in service industries. The Actors part of value networks has become an alternative to value chain. The strategic goal of value network is now to create a fit between network's competencies and customers. The Actors section investigates customers as co-creators of value and replace organization's company-centred mapping of actors with customer as the centre of the network. This also investigates how different set of Actors can deliver improved customer value. (Clatworthy, S. 2009: 1-15)

T stands for "*Making touchpoint work as a whole*". In an organization different organizations can be different touchpoints. Service design is about selecting most relevant or all touchpoints for service delivery. A service design process also aims for consistent customer experience across many touchpoints. This may involve introducing new and effective touchpoints and removing outdated touchpoints. It may help in coordinating

customer experience across all touchpoints. This will also help in giving a consistent total experience to customer while using the service. (Clatworthy 2009: 1-15)

O stands for "*The service offering is the brand*". The service branding depends on the perception of customer about services. It is different than product branding. Products are tangible and easy to perceive but service is intangible and difficult to perceive. Hence the branding of services depends on customer experience of services at functional level, emotional level, and self-expressive level. The core of service branding is the creation of a service personality that explains the brand as a person. If the personality is described clearly, then it becomes easier to design various service touchpoints and its behaviour. (Clatworthy 2009: 1-15)

N stands for "knowing the need of customers". Current service design practices need frequent communication with customers. The focus of interaction with customer is to obtain views of customers about services. To know customer better, the focus should be on observation and listening of customers. This will help to know hidden facts and emotions of the customer better. The knowledge of customer experience can help in user-centred service design. (Clatworthy 2009: 1-15)

E stands for "*Experience that surprise and delight*". The customer normally gets experience using services. Customers want both functional and desirable solutions to problems for better experience. They want functionality, usability, and feeling with the services. In this case various combinations of touch-points, organization and tools can assist in service design. (Clatworthy 2009: 1-15)

The above-mentioned methods help a service designer to explore various tools and processes in service design. The use of those tools and concepts in various steps of service design methods can help in developing and delivering quality services. Some well-known processes and tools are being described in details as follows.

4.2.4   Stage-Gate Service Design Model

Stage–Gate model is a product or service management techniques which is used for new product or service development, process improvement, and business change. It is also called phase-gate model. This provides a roadmap for moving a project from idea to launch. It is divided into phases separated by gates. Each phase consists of a set of

cross-functional and parallel activities. They have a proper structure and consist of three elements: *Activities*, *Integrated analysis*, and *Deliverables*. (Cooper 2009: 1-2)

Activities are mainly information gathering of team to reduce uncertainty of project. *Integrated analysis* is done for the result of activities. The result of integrated analysis of each phase that can be used as input for next gate is *Deliverables*. At each gate, a manager or steering committee decides the continuation of project. The decisions can be based on available information at that time such as business case, risk analysis and resources (people, money). A gate meeting can have four results: *go*, *kill*, *hold*, and *recycle*. Gates have a common structure and consist of three elements: *Deliverables*, *Criteria*, and *Outputs*. Deliverables for a gate are what the team deliver to the decision point. Criteria are used to determine the result of a phase and make prioritized decision. Outputs are result of gate review. (Cooper and Edgett 2012: 4-7)

There are a number of advantages in using stage-gate model in product of service development. This project helps in identifying problems early on and assesses progress before the end of project. This model also provides gates at each stage which helps in checking output before moving to next stage. This ensures early removal of problem. It is highly structured approach which divides project activities in different stages, which helps in defining roles and responsibilities of person. Sometimes it's highly structured format can become too cumbersome for small projects. That needs proper attention when implementing this model for SMEs. (Cooper and Edgett 2012: 3-7)

Cooper (2009) has described stage-gate model as five staged process: *Discovery (stage 0), Scoping (stage 1), Business case and plan (stage 2), development (stage 3), Testing and Validation (stage 4), and Launch (stage 5)*. Each stage can be described as follows.
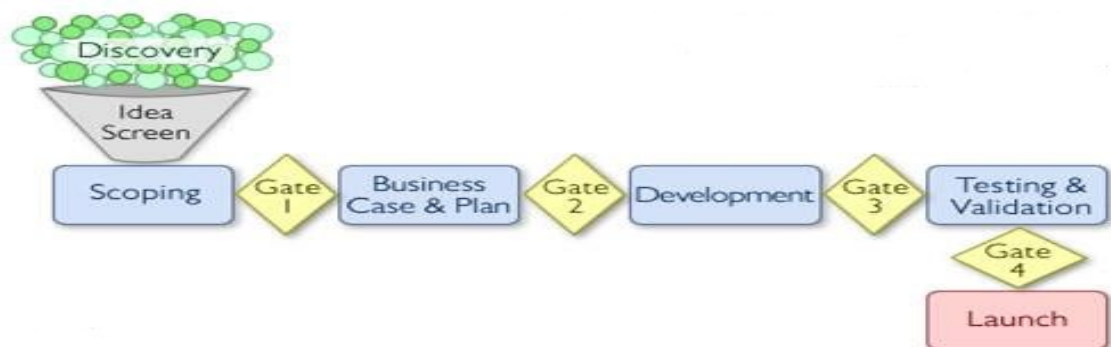
Figure 10. Stage-gate model for service design (Cooper 2009: 4).

At the *Discovery (Stage 0),* companies get involved into idea generation activities. They do several activities such as brainstorming or other group thinking exercises. Once the idea generation team selects a project, it must be passed to the first gate where it is screened by decision-makers. (Cooper 2009: 1-9)

At the *Scoping (Stage 1)*, the main goal is to evaluate the service or against its corresponding market. The task force evaluates the strengths and weaknesses of the service. The competition to this service is also evaluated. (Cooper 2009: 1-9)

At the *Business case and Plan (Stage* 2), the business case and plan are built. It is the last phase of concept development. In this phase it is required a company to do solid analysis before service or product being developed. In this phase the product or service is defined and analysed. Then the business case is developed. Business case defines the product and reason to develop it. Also, the project plan is built. The project plan includes a list of activities, time estimation, cost estimation and effort estimation. The last step is feasibility review. In this step the management reviews the rationale for developing services. (Cooper 2009: 1-9)

At the *Development (Stage* 3), the design and development of product or service is carried out. It also includes some level of testing or early testing. The appropriate time for development is also planned and executed. The outcome of this phase is the prototype which goes for further extensive testing and evaluation. (Cooper, R. G.., 2009: 1-9)

At the *Testing and Validation (Stage 4)*, validation of product or services, development process, customer acceptance and financial requirement of the project. Different types of testing are carried out such as near testing of product, field testing of product and market testing. (Cooper 2009: 1-9)

At the *Product Launch (Stage 5),* the product is launched or service is delivered. The condition for this phase is that product or service should have passed through all previous gates. In this stage the producer must know the market situation very well. He has to launch the product or service as per market requirements. Distribution is also a major part of this phase. (Cooper 2009: 1-9)

4.2.5   Agile Service Development Model

Agile service development model is an iterative incremental model for service design and development activities. It is a umbrella term used for a set of methods and practices based on certain principles mentioned in Agile manifesto. (Kent Beck et al. 2010)

Table 7. Key principles for agile processes. (Kent Beck et al. 2010)

1)	customer satisfaction by early and continuous delivery
2)	welcome changes in requirements
3)	frequent delivery of service
4)	close cooperation between customers and service providers
5)	motivated people are the core of this process
6)	face-to-face communication is frequent
7)	measure of the success if delivery of services
8)	sustainable development
9)	attention to good design and technical excellence
10)	simple process to follow
11)	self-organizing team
12)	team adjusts according to situation

In agile process the requirements and solutions evolve through team collaboration and self-organization. Agile processes are adaptable to changes, and evolutionary. They believe in early delivery, and continuous improvement. The agile process gives importance to individualism and interactions over processes and tools, solution over documentation, collaboration with customer over contracts and negotiation, and response to changes over follow to a plan. It is very helpful for small development teams. Customer can continuously interact with development teams. Customer satisfaction is very high in agile process. (Mitchell 2016; Larman 2004)

Besides its numerous advantages it has few drawbacks also. It can be ineffective in large organizations. Most big organizations adopt a hybrid of plan-driven and agile approaches. Most often agile practices promote same techniques towards all activities and give more emphasis to methods than results. (Larman 2004)

Currently many agile processes are in progress in industry. These practices support activities like requirements analysis, design, development, testing, planning, risk analy-

sis, quality analysis, etc. Some most common agile practices are: Acceptance Test Driven Development (ATDD), Agile Modelling, Agile testing, Behaviour Driven development (BDD), Continuous integration, Pair programming, Scrum, Kanban, Extreme Programming (XP), Rapid action development (RAD) etc. Some of these process which is widely used in service design are discussed as follows. (Mitchell, I. 2016)

A. Scrum

This is an iterative incremental framework for managing service development activities. In this framework the team works as a unit. This process has all the benefits of a good agile practice. The most important advantage of using this process is to adopt unpredictable changes from customers. This process is mostly useful for software product development. There are three core roles in this process: *Product Owner, Development Team*, and *Scrum master*. (Schwaber and Beedle 2002)

The *Product Owner* is representative of voice of stakeholders and customers of the product. His responsibilities are to write customer-centric items, prioritize them, and add to Product Backlog. He should focus on business side of product or service development and spend more time on interacting with other stakeholders of the project. He does not interfere in functioning of development team. (Schwaber and Beedle 2002)

The *Development team* is responsible for developing deliverables. The deliverables can be shippable software or services. The team should be cross-functional and self-organizing. (Schwaber and Beedle 2002)

The third role is of *Scrum Master*. He facilitates Scrum by removing impediments to the functioning of development team. He works as an intermediate between Product Owner and Development team. He ensures that the development team should follow agreed agenda in Scrum framework. He works as team facilitator. (Schwaber and Beedle 2002)

The basic unit of development of a Scrum is *Sprint*. It is time-boxed process. It is fixed for duration which may range from 2-4 weeks. Every Sprint starts with Sprint planning. The aim of this session is to create a sprint backlog. Sprint backlog contains work and its estimated time for the sprint. Sprint ends with review session and retrospective session termed as Sprint Review and Sprint Retrospective. These sessions show the pro-

gress to stakeholders and learned lessons and improvements for next sprint. During sprint everyday progress is discussed in short duration called Scrum. (Schwaber and Beedle 2002)

The different artefacts of a sprint are product backlog, sprint backlog, product increment, sprint burn-down chart, and release burn-down chart. Product backlog contains a list of requirements of product. It contains functional requirements, non-functional requirements and bugs. Sprint backlog is a list of works for each sprint. Product Increment is a set of product backlogs completed in a sprint. It can be shippable product or services. Sprint burn-down chart shows remaining work in the sprint backlog. Release burn-down chart provides visibility and tracks progress towards a release. (Schwaber and Beedle 2002)

B. Test-Driven Development (TDD)

This is an IT service development process where development is driven by testing. It relies on repetition of very short development cycle. Requirements are turned into very specific test cases and software is improved to pass test cases. This process can be highly effective in software development. It can work as complimentary to Scrum. It helps in high productivity of team and high quality of product or services. (Beck 2003: 15-28)

C. Behaviour Driven Development (BDD)

It is an extension of TDD. It applies development in a domain-specific environment. It is also for testing the developed task. It focuses on where to start, what to test, how much to test, and how to test. It makes language of development and testing simpler to other stakeholders e.g. clients, business developers etc easy. It narrates the testing activity as story. It can also be compatible with Scrum and improves quality of service and productivity. (Evans 2003: 13-45)

D. Extreme programming (XP)

This process is also beneficial in service development primarily in software area. The process is intended to improve service quality, and responsiveness to changes in customer's requirements. It also favours service delivery or software releases in short de-

velopment cycles. This favours high productivity and introduction of checkpoints at which customer's requirements have been adopted or not. Other elements of this process are pair programming, extensive code review, unit testing of all codes, avoid unnecessary items, flat management structure and clarity. Extreme also refers to continuity. It helps in reducing cost and short development cycles. Hence it can also be aligned with Scrum and other agile processes. (Beck 1999: 20-30)

4.3   Service Design Tools

An efficient process often needs efficient tools for quality service design. The tools must be appropriate to needs of each stage of the process. Design tools can help the designer to design activities, elements, touchpoints, needs and offerings at each stage. Hence the objective to develop a process for efficient service design will be incomplete without mentioning of relevant design tools. This section discusses some of those design tools that can be incorporated in process as per need. Some prominent tools for service discovery are mentioned as follows.

4.3.1   User Journey Map

This is a visual representation of a person's journey through service usage. It shows all different interactions a user encounters during service use. This shows the parts of services suitable for user and the parts of service needs improvement. The aim of this tool is to identify key elements of a service, to understand links between all elements, and to identify the problem areas in a service that needs improvement. (UK Design Council 2010: 11-12; Stickdorn and Schneider 2011: 151-152)

It draws on the output of design methods such as observation or service safaris. It maps the progress of a user through different service points. In the progress, first a user identifies the touchpoints of each service stage. During this journey various things such as people, information, and specifications are encountered. Links between those touchpoints draws a map. (UK Design Council 2010: 11-12; Stickdorn and Schneider 2011: 151-152)

The output of this tool is a map that identifies key stages or touchpoints that explains the user experience. It can be presented as diagrams, photographs or illustrations. (UK Design Council 2010: 11-12; Stickdorn and Schneider 2011: 151-152)

4.3.2 User Diary

This tool is helpful in gathering detailed qualitative information from user. Users are encouraged to tell their personal experience about service they encounters. The information can be recorded in a diary style format. The aim of this tool is to gather information related with user's needs and get understanding of the people's experiences of service. (UK Design Council 2010: 13)

A good user diary identifies a set of people who can participate in the survey and provide rich information. The election of participants is based on context of project and needs of service design team. The diary should contain three sections. First section should be background information that contains user information (name, age, occupation etc). Second section, Diary Section, contains user experience in a time period. The third section contains additional questions or tasks that can stimulate a user to give more information. (UK Design Council 2010: 13)

The outcome of user diary is rich qualitative information provided by a set of users over time. It may be in text, images or video formats. (UK Design Council 2010: 13)

4.3.3 Service Safari

This is a research method used to understand users. In this method service designers experience the service first hand. This method generally focuses on experiencing a particular service. It aims at gathering information about service in real situation, and identifying the reason for a good service. (UK Design Council 2010: 14; Stickdorn and Schneider 2011: 146-147)

In this method, a relevant and engaging service is identified. This service gives insights and provides inspiration to service designer. Participant of this method records their experiences in text, video or images. Service designer observes users, documents the environment and materials, and helps the participants to identify how services deliver

values to users. By sharing their experiences the team can build a good rapport and defines the meaning of a good service experience. In a large group, the service safari can go haphazard and hence it is recommended to assign roles. (UK Design Council 2010: 14; Stickdorn and Schneider 2011: 146-147)

The output of a service safari is recording of events in test, images or video formats. It helps the service designer and participants to tune into service touchpoints and experiences. (UK Design Council 2010: 14; Stickdorn and Schneider 2011: 146-147)

4.3.4   User Shadowing

It is a research method aims at gathering information about user's needs, getting understanding and empathy about other people's experiences, understanding various parts of service (staging, interactions, touchpoints etc.), and identifying opportunities and threats to service innovation. In this process, service designer observes a user to identify and understand his needs in real world. (UK Design Council 2010: 15; Stickdorn and Schneider 2011: 148-149)

In this method, the service designer needs to identify right people to shadow. Generally a small group is preferred to get information and insights to drive the service design process. Shadowing needs the designer to spend time with people and observing their activities. This may take many sessions or hours. Long observation of people can help the designer to find the opportunities and threats people encounter during service usage. (UK Design Council 2010: 15; Stickdorn and Schneider 2011: 148-149)

The output of this activity is documentation of service user's experiences in text, images or video formats. The document, observations and insights can help in Define phase of design process. (UK Design Council 2010: 15; Stickdorn and Schneider 2011: 148-149)

4.3.5   User Personas

This tool helps in embodying a user research in an identifiable and understandable form. It helps in bringing together lots of information about similar people to create a single representation of the group. This tool aims to package user research into under-

standable format. It helps in focusing on the needs of users during the development stage. It also evaluates service concepts and ideas against user's needs. (Stickdorn and Schneider 2011: 172-173; Cooper 1998: 137-145; UK Design Council 2010: 16)

User personas should be created with varying levels of detailed information. The sketches of user personas provide useful input for other activities such as brainstorming and ideation. They are valuable in creating and sharing information of user research. It is possible to create personas without drawing on user research, but they become valuable and useful if built on qualitative information. Their sketches should be as round as possible. Generally they are archetypes not stereotypes. They can further be improved with visual materials or quotes. (Stickdorn and Schneider 2011: 172-173; Cooper 1998: 137-145; UK Design Council 2010: 16)

In terms of output, they can vary. At basic level they might be sketch with user information. They can provide detailed information if supplemented with in-depth reports or visual materials. They can be useful guide in Develop phase of service design. (Stickdorn and Schneider 2011: 172-173; Cooper 1998: 137-145; UK Design Council 2010: 16)

4.3.6   Brainstorming

This tool is used to generate various solutions and opportunities. It helps in identifying the best possible solution to take forward as part of design process. It is very helpful in breaking out established patterns of thinking and developing new ways of looking at things. In this case it becomes easy for a group to identify problems and provides solutions. The main aim of this tool is to generate a large numbers of solutions, identify key ideas to develop more, and create a shared understanding around an idea. (UK Design Council 2010: 17; Osborne 1963: 25-38)

Generally in a brainstorming session, a facilitator structures the group session. Participants discuss various alternatives and opportunities and come to final idea which the design team pursues. Some rules should be remembered for successful brainstorming session. Participants should defer judgement. It is built on ideas of others. There should be focus on the topic and one conversion at a time. (UK Design Council 2010: 17; Osborne 1963: 131-152)

The output of this activity is a large number of ideas around a topic. Then this is reduced down to few key ideas to be developed further. (UK Design Council 2010: 17; Osborne 1963: 168-172)

4.3.7 Design Brief

A design brief is complete explanation of fundamental problem being faced by service design team. It is a structured statement that explains goals, barriers, cost and time required for service design. It also provides a reference point for design and a plan for the Develop Phase of service Design. (UK Design Council 2010: 18; Philips 2004: 15 - 25)

It is generally developed by project manager or service design specialist. It extracts current project information from Discover and Define Phase of Service design. It should be clear, understandable, and flexible in specifying detailed design work. It allows for formal sign-off by customers and specifies boundaries for service development phase. (UK Design Council 2010: 18; Philips 2004: 67 - 85)

It is basically a written document which is supplemented with user research data. It forms the core reference point for all participants of service design in Develop and Deliver phases. (UK Design Council 2010: 18; Philips 2004: 115 -122)

4.3.8 Service Blueprint

This tool is a detailed visual representation of overall service for a specific period which shows user's journey through different service touchpoints and channels. This helps all participants in service delivery to understand their roles and ensure user to get coherent service experience. The aim of service blueprinting is to design the problem and solve the complete service experience. It guides in identifying areas of prototyping. It communicates about service to the team involved in delivering and users during development and testing. (Stickdorn and Schneider 2011: 201-203; Kalakota and Robinson, 2004; Safer 2007: 5-7; UK Design Council 2010: 19)

This integrates concepts and touchpoints together into a unified structure and presents a holistic view of all elements of service. It maps the future services and can be com-

pared with user journey map which maps existing services. In this process different touchpoints of service design is identified. Then the journey of user through different touchpoints is mapped. These touchpoints can be segmented into various channels such as web or face-to-face interactions. The customer facing elements of this process is called "the front-office stage". There is need for identifying and mapping touchpoints behind the scene which can help "the front-office stage" to work. This includes back-office staff, IT infrastructure, or logistics. This is called as "the back-office stage". A service blueprint shows a coherent interaction between front and back stage elements. The service blueprint design requires team effort. (Stickdorn and Schneider 2011: 201-203; Kalakota and Robinson, 2004; Safer 2007: 5-7; UK Design Council 2010: 19)

The output of service blueprinting is a visual map showing key stages, touchpoints and other components that is used in service design. This can be presented using text or images or both. The combination of both test and images can make it detailed and comprehensible. (Stickdorn and Schneider 2011: 201-203; Kalakota and Robinson, 2004; Safer 2007: 5-7; UK Design Council 2010: 19)

4.3.9   Experience Prototyping

This tool can be used for testing new ideas or design concepts at specific touchpoints. It aims to find out whether a specific part of service meets user's requirements and how it can be improved. It is about communicating the benefits and experiences of service to stakeholders including decision-makers, team members, partners, and users. It also helps in gathering feedback from users about service. This method does not need to take long time to make, rather it needs to be built and tested quickly. It is also iterative process. (Stickdorn and Schneider 2011: 187-189; Buchenau and Fulton Suri 2000: 2-3; UK Design Council 2010: 20)

There are many methods can be used for Experience prototyping. For example, body storming and role-play gives emphasize acting out service experiences. Some others focus on mocking up products or environment. Mostly Experience prototypes are a combination of physical mock-ups and some elements of role-play that recreates service experience. This recreation might be acted out or documented in image or video format. The style and level of this recreation can vary from raw to realistic. Also, an important of this tool is gathering feedback. The testing with potential users can happen

for a long time. The steps will be followed for much iteration. (Stickdorn and Schneider 2011: 187-189; Buchenau and Fulton Suri 2000: 2-3; UK Design Council 2010: 20)

The output of this process is a number of mock-ups of service touchpoints and interactions recreated in some way. Documentation of this process is helpful in communicating the lessons learned. This allows the feedback about services to be shared within design teams and other stakeholders. (Stickdorn and Schneider 2011: 187-189; Buchenau and Fulton Suri 2000: 2-3; U.K. Design Council, 2010: 20)

4.3.10 Design Scenarios

These are is a set of stories of future situation of service. They help in creating shared understanding and enabling meaningful discussion by creating a story about future of service. It is used as a tool in strategic and management disciplines. It is helpful in communications between people and gives more emphasis on narration and storytelling. It helps in decision-making by creating a vision for future of service based on important drivers. (Stickdorn, M. and Schneider, J. 2011: 178-179; Shostack, L. G., 1984: 2-4; U.K. Design Council, 2010: 22)

This tool can be used in a number of ways and at different times in a service design process. It helps in communicating outcomes with stakeholders, participants and team members in Deliver phase of service design. It helps them to understand service vision. It also helps in testing 'use cases' in a wider context. They are developed by small teams mostly which contains drawing of stories of scenarios. (Stickdorn, M. and Schneider, J. 2011: 178-179; Shostack, L. G., 1984: 2-4; U.K. Design Council, 2010: 22)

The output of this tool is test or images of scenarios. They may look like a comic strip. It creates a compelling story which communicates possible future scenarios in an engaging way. (Stickdorn, M. and Schneider, J. 2011: 178-179; Shostack, L. G., 1984: 2-4; U.K. Design Council, 2010: 22)

4.4 Conceptual Framework of This Thesis

The conceptual framework of this Thesis is a process for service design. The proposed service design process merges the above discussed processes and tools into four step

of a service design process which is based on four-stage Double Diamond Approach, AT-ONE model, Stage-Gate Model and Scrum. The design tools are used to show the activities and personnel at various stages of process.

The conceptual framework of this Thesis is shown in Figure 11 below.

Processes and Tools	Discover (Stage 1)	Define (Stage 2)	Develop (Stage 3)	Deliver (Stage 4) Scrum
Processes and Tools	Tools 1) User Journey Map (Stcikdom and schneider, 2011) 2) User Diary (Stcikdom and schneider, 2011) 3) Service Safari (Stcikdom and schneider, 2011) 4) User Shadowing (Stcikdom and schneider, 2011) Process: 1) Stage-Gate Model (phase 0 - Discover) (Cooper, R. G., 1990)	Tools 1) User Personnas (Stcikdom and schneider, 2011; Cooper, A., 1998) 2) Brainstorming (Stcikdom and schneider, 2011) 3) Design brief (Stcikdom and schneider, 2011; Philips, P. L., 2004) Process: 1) Stage-Gate Model (phase 1 – Scoping and phase 2 – business plan) (Cooper, R. G., 1990) 2) Agile Process (Sprint 0- planning and scoping) (Schwaber, K. and Beedle, M., 2002)	Tools 1) Service Blueprint (Kalakota and Robinson, 2004; Safer, D., 2007) 2) Experience prototype (Stcikdom and schneider, 2011; Buchenau M. and Fulton Suri J., 2000) Process: 1) Stage-Gate Model (phase 3 – development and phase 4 – testing)) (Cooper, R. G., 1990) 2) Agile Process (Sprint 1- sprint planning and scrum) (Schwaber, K. and Beedle, M., 2002)	Tools 1) Design Scenarios (Stcikdom and schneider, 2011) Process: 1) Stage-Gate Model (phase 5 – launch) (Cooper, R. G., 1990) 2) Agile Process (Sprint 1- sprint review and retrospection) (Schwaber, K. and Beedle, M., 2002)
Roles and Responsibilities	1) Project manager 2) Client Manager	1) Project Manager 2) Client Manager 3) Other partners and suppliers 4) Solution Architect	1) Project manager 2) solution architect 3) Development team	1) Project manager 2) Development team 3) Other vendor's development team 4) Client manager
Customer Interaction	1) Requirement Gathering 2) User's Experience 3) Market research	1) Knowledge Sharing 2) User's requirement analysis 3) Solution design		1) Customer presence in review session 2) Customer reviews solution
Managing Subcontractors		1) Co-ordinated Project planning 2) Co-ordinated solution design		1) co-ordinated solution delivery

Figure 11. Conceptual framework of this thesis.

The four stages of this conceptual framework are merged into: *Discover (Stage 1)*, *Define (Stage 2)*, *Develop (Stage 3)*, and *Deliver (Stage 4)*. The objectives, activities and tools used in different stages are described as follows.

At the *Discover (Stage 1),* the objective of this stage is to discover customers and gain an insight into customer's problems. The designer identifies the business problem by

studying user's needs, market researches, and development of initial ideas about solution. The designer looks at the market in a novel way and tries to find new things related with projects. He also uses inspirations and learnings from previous projects. The main activities of this stage are market research, user research, and research teams design. To achieve the objective, the designer defines solution spaces and builds knowledge resources with insights and inspirations. Here, the exploration will include both qualitative and quantitative research methods. The knowledge resource will work as guide and inspiration for the design team. This practice will involve both engaging users and analyzing social and economic trends.

In this stage, the concept of phase 0 (Discovery) of stage-gate model is also incorporated. This concept is related with idea generation about business problem. The multiple ideas can be generated by analyzing market needs and customer's requirements. These various ideas can help the designer to get insights into the business problem. Gate at the end of this stage can help the designer to evaluate the outcome of this stage. The evaluation will help in better understanding of market needs.

The key personnel participating at this stage are customer, project manager and service designer. In case of multi-vendor project also, other vendors do this activity separately. The tools should be used here to design service related activities. The most commonly tools used at this stage can be *User Diaries*, *User Journey Map* and *User Shadowing* can be handy.

User Diaries can be used in gathering qualitative information from users. It maintains the records of user's experiences of usage of previous services and expectations. Since the information is maintained in a diary, hence it can be archived for long period. It can provide guidelines for many projects and can be shared among stakeholders.

User Shadowing is a research method used for gathering user's requirements. It also helps in gathering user's expectations of service. This method also gathers user's previous experience of similar services. Generally, the information is analyzed in real life scenario.

User Journey Map can be used to identify key elements of a project. This is drawn by user's journey through various touchpoints of a service.

These tools can help the designer to do market research, user research, and designing research teams. This helps the designer to identify the customers and their problems. Once these activities are designed with the help of tools, the information can be shared among development team and customers as reference at different stages.

At the *Define (Stage 2),* the objective of this stage is to understand and analyze the findings of the first stage and define business problem to solve. After analysis, the findings are synthesized into opportunities. The design team evaluates various opportunities and alternatives and chooses the best outcome. The outcome is presented as final idea for project sign-off. In this phase, activities related with multiple idea creation, evaluation of alternative, project planning, project management, and project sign-off take place.

The activities related with phase 1 (scoping) and phase 2 (business case plan) of stage-gate model can easily be integrated with this stage. The Scoping will help the research team to evaluate the service concept against the user's requirements. The design team evaluates the strengths, weaknesses, opportunities and threats of designed service. The business plan activity will help the design team to focus on effort estimation, cost analysis, and time estimation. At the end, gate concept of stage-gate model will be used to evaluate the outcome of this stage.

The key actors of this stage are customer, project manager and designers. This stage does not need better design of roles and responsibilities. In case of multi-vendor projects, the other vendors can also participate in this session to come to understanding and plan for complete project. There is a need to design activities of this stage and present in comprehensible format. The tools used for this purpose at this stage are *User Personas*, *Brainstorming* and *Design Brief*.

User personas are useful in formatting user research in a comprehensible and identifiable format. It combines all information of research group in a single entity. It evaluates various concepts and ideas of service design against the user's requirements. It can provide detailed information about user's needs if presented in both text and visual format. It also focuses on user's requirements required in development stage.

Brainstorming helps in creating various alternatives and solutions of a problem. This is a group task. In group, participants discuss various alternatives and opportunities. It

helps to find out best possible solutions and take this solution forward for development. Hence, this tool helps in identifying various alternatives and the best possible solution.

Design Brief provides a complete explanation to the problem faced by design team. This is structured statement which explains the goals, barriers, cost and time used to solve the problem. It helps in time, effort and cost estimation for the project. It can work as a guideline in Development and Delivery phase of service design process.

The above-mentioned tools can help the design team to create and evaluate various alternatives and its solution in discussion. The purpose of discussion will be to come to the final idea. The outcome will explains the goals, barriers, cost and time required to solve the problem. These tools can help in scoping and planning for project.

At the *Develop (Stage-3),* the objective of this stage is to design, develop and test solution. The key activities of this stage are multi-disciplinary working, visual management, development and testing. Scrum is introduced at this stage which makes this process iterative-incremental. Sprint planning and daily scrum is used at this stage to define task and develop it. Scrum helps this stage to develop solution in short sprint cycle where customer also evaluates the outcome continuously. The process of solution development is improved continuously. The process becomes adaptable to changes. Team coordination increase and communication becomes better. The key concepts of phase 3 (Development) and phase 4 (testing) of stage-gate model is also introduced here. The key roles in this stage are project manager, designer and development team.

Several tools are used at this stage to make clear roles and responsibilities of personnel and activities related with design and development of solution. These tools are *Experience Prototyping*, and *Service Blueprinting*. This stage requires many personnel in different activities. Hence there is a need to define rules and responsibilities of personnel clearly for better coordination and communication. Also various activities of this stage should be presented in clear and comprehensible format.

Experience Prototype can help in testing new ideas or design concepts at various touchpoints of service. It helps the development team to find whether the specific part of service meets user's criteria or not and how it can be improved. It also helps in

communicating the benefits of service to stakeholders of the projects. hence it is hughly useful in sprint review session.

Service Blueprint is a detailed visual representation of overall service for a specific period which shows user's journey through different service touchpoints and channels. This helps all participants in service delivery to understand their roles and ensure user to get coherent service experience. It helps in solving complete service experience of customers. It communicates about service to the team involved in delivering and users during development and testing.

Finally, at the *Deliver (Phase 4),* the objective of this stage is the service delivery to the end customer. Key activities of this stage are final testing, approval, target evaluation and feedbacks. The pre-condition for this phase is that service should have passed through all previous gates. The matching with the user's expectations helps in the successful launch of service. Hence, at the end of this stage, the success of service design process is evaluated in the term of customer's feedback. The Sprint review and retrospective session helps the design team in evaluation of service and process. Delivery in short sprint cycle can help in frequent interaction between customer and development team. Any defect found during earlier stage can be quickly fixed.

Several tools can be very useful in delivering service to customers. The most important tool is *Scenarios*. It helps in communicating outcomes with stakeholders, participants and team members. It helps them to understand service vision. It also helps in testing 'use cases' in a wider context. Scenarios are developed by small teams mostly which contains drawing of stories of scenarios.

This conceptual framework is merged to form the foundation for the proposal building in the next section. The building of initial proposal of this Thesis is discussed in next section.

5   Building a proposal for Service Design Process for SMEs

This section focuses on building an initial proposal based on the conceptual framework and CSA findings from the case company. The aim of proposal is to bring further improvement in the service design process of the case company and tackle the shortcomings of the current process. The proposal is built after discussion with key stakeholders of the case company. The section is divided into three subsections describing an overview of proposal building step, initial proposal and a summary.

5.1   Overview of Proposal Building Stage

The building of initial proposal was done in a workshop with various stakeholders from the case company and researcher. This is Data 2 collection activity. In this workshop, senior employees of the case company (Table 3) and researcher participated. The personnel are senior managers of case company and responsible for various activities such as management task, team handling and customer interaction. The workshop was attended by the case company employees only considering the fact that they are accountable for its implementation in case company. The findings of CSA and conceptual framework were presented and discussed in detail. A list of key findings of conceptual framework is summarized in Table 8 below.

Table 8. Key points of the conceptual framework of thesis.

1)	Conceptual framework is a four-stage process model where activities are clearly defined at each stage
2)	The model is based on few stage-based approach (Stage-gate model, Double Diamond approach) and iterative-incremental approach (Scrum) for service design.
3)	First two stages use plan-based process and last two stages follow iterative-incremental process
4)	First two stages are used to identify and define problems and last two stages are used to develop and deliver solutions
5)	Design tools are used appropriately in various stages of the process
6)	Design tools helps in clarifying roles and responsibilities of personnel at appropriate places and developing and sharing activities in comprehensible text or visual format.

7)	Customer feedbacks are addressed properly during defining buisness problems and developing solution
8)	Team coordination and communication hoped to be better.
9)	Continuous interaction with customers and other vendors during service design
10)	Other vendors are managed properly

In the workshop, the researcher presented the conceptual framework to participants. The conceptual framework is based on findings from literature guided by the strengths and weaknesses of CSA. The researcher also briefed the participants on the findings of CSA, the strengths and weaknesses of their current practices. The summary of key findings of CSA is listed in Table 5 in Section 3.5. They were also explained about the rationales behind designing such a framework.

The participants of workshop had mixed feeling about the framework. They felt satisfied with most part of conceptual framework but suggested some improvements in the framework. They found that most of the points of conceptual framework is handling weaknesses of CSA. The key points coming out from workshop is presented in Section 5.2 below. The field notes of this phase of data collection can be found in Appendix 5.

5.2   Initial Proposal for Thesis

The initial proposal of this Thesis has been developed in the workshop attended by employees of the case company and researcher. The participants discussed various parts of conceptual framework and strengths and weaknesses of CSA. The comments and suggestions of stakeholders can be described in Table 9 below.

Table 9. Inputs from the workshop with the stakeholders.

Points	Notes
Comments	1) support hybrid of stage based process (The Double Diamond approach, Stage-Gate model) and iterative incremental process (Scrum, TDD, BDD, XP) 2) support four stage process (Discover, Define, Develop and Deliver) 3) Support first two stage as stage-based process and last two stage as iterative-incremental process

	4) Support first two stage for identifying problem and last two stage as development of solution
	5) support use of design tools appropriately to various stages of model
	6) Support identifying key elements of process (employees, customers, vendors, customer interaction, customer needs) at second stage of process
	7) support actions for improvement areas such as roles and responsibilities of personnel, customer interaction, and managing vendors in multi-vendor projects
	8) The framework is easy to learn and implement as it uses some of current practices of case company. It is an enhanced form of current process.
	9) accept that training and implementation time and cost will be small; good for SMEs
Suggestions	1) Introduce concepts of stages and gates separately to clarify activities and evaluation
	2) Customer feedback mechanism should be addressed properly; it should be handled at second stage of define stage
	3) Introduce Scrum at second stage (Sprint 0 for planning of Sprint cycle) for clarity of solution development plan
	4) Use of Service Blueprint at the end of second stage to define roles and responsibilities of service development because too many personnel are involved at this stage too

The proposed service design process has four key elements: *Stages, Gates*, *Scrum*, *Design tools*, and *People*. The four staged process has been described for following parameters: roles and responsibilities of personnel, customer interaction, managing subcontractors and tools used to design activities.

Based on input from stakeholders mentioned in Table 8, the proposal can be described in the following picture.

	Discover (phase 1)	Gate 1	Define (phase 2)	Gate 2	Develop (phase 3)	Gate 3	Deliver (phase 4)
Roles and Responsibilties	1) Project manager 2) Client Manager	Project manager; Client manager	1) Project Manager 2) Client Manager 3) Other partners and suppliers 4) Solution Architect 5) Project scoping 6) Project planning 7) Project signoff 8) Sprint 0	Project manager; Client manager	1) Project manager 2) solution architect 3) Development team 4) Prototyping, development and testing 5) Sprint planning and scrum	Project manager; Architect	1) Project manager 2) Development team 3) Other vendor's development team 4) Client manager 5) Final testing 6) Delivery 7) Sprint Review and retrospective
Customer Intraction	1) Requirement Gathering 2) User's Experience 3) Market research 4) Develop new ideas		1) Knowledge Sharing 2) requirement analysis and planning 3) Solution design				1) Solution delivery 2) Customer feedback evaluation 3) Directing customer feedback
Managing Sub-contractors			1) Co-ordinated Project planning 2) Co-ordinated solution design				1) Integrated delivery of solution 2) Understanding customer feedback
Designs Tools	1) User Journey 2) User Diary 3) Service Safari 4) User Shadowing		1) User Personnas 2) Brainstorming 3) Design brief 4) Service Blue rint		1) Service Blueprint 2) Experience Prototype		1) Design Scenarios

Customer Evaluation/ Feedback — Yes → End / No

Scrum

Figure 12. Initial proposal of this thesis.

The proposal can be described in two parts. One part describes the process and the other will describe the design tools to be used to accomplish the service design.

The process is a four-stage process which is hybrid of both plan-based approach and iterative-incremental approach. The first two stages follow plan-based approach. In these stages problems are identified and defined. The last two stages are used for solution development and delivery. In these stages Scrum is used to bring concept of iterative-incremental in solution development and delivery. The solution id developed and delivered in short sprint cycle. Other agile processes (TDD, BDD, XP) can be used along with Scrum here. In the first two stages the company works in collaboration with

customer and other vendors and partners. They identify and define business problems and can share information related with project plan and scoping among them. This helps them to become better understanding of project plan and overall design of solution. The second stage is also used to handle customer feedback of service usage. The use of relevant design tools makes the roles and responsibilities clear at all stages. It makes communication and coordination between stakeholders better. This may help in value co-creation for all stakeholders. The stages of this process are separated by gates which ensure better validation of activities performed at stages.

The second part of the proposal is application of service design tools. Design tools help in designing and developing activities at each stage and making roles and responsibilities clear. The format of output of design tools is text or visual which can easily be presented, shared or stored for future references. Design tools can be used to capture customer experiences, customer needs, case company offerings, defining roles and responsibilities. These design tools have been selectively used at different stages.

The proposal is a four-stage process. The purpose, activities, roles and responsibilities of personnel and application of design tools of this process is described further. The proposal can be presented in details as follows.

A. Discover (Stage 1)

The process starts with stage 1, *Discover*. The purpose of this stage is to research user and market requirements, look for new ideas and designs research groups. This is the stage where the design group discovers the problem and gathers insights. The group evaluates many ideas and decides what is new and inspiring. Generally client manager and project manager from case company participate in activities of this stage. In case of multi-vendor projects also, the main participants of this stage are customer and project managers of case company. Participants from other vendors do follow the same step separately. Here activities are more related with getting to know the customer.

Some design tools can be used to develop activities of this stage. The following tools can be very effective at this stage: *User Journey Map*, *User Diaries* and *User Shadowing*. *User Journey Map* can help in discovering various touchpoints of user's journey through service experience. *User Diaries* can help in gathering information from users. It generally maintains the records of user's experiences in the form of diary. *User*

Shadowing helps in gathering user's past experience of similar services. In this case user is motivated to share his experience in real life situation. The user's information is maintained in the form of text or visual form. The information can be archived and used in future projects as reference also.

Gate 1 is the checkpoint of first phase. Here, the client manager and project manager or team lead of case company together evaluates the outcome of the first phase. This step allows the service design process to move to next phase. Here the outcome of first phase is carefully examined. Various documents and visual designs are analyzed against standards. This ensures that the problem has been identified correctly. The project is set to go and customer is willing to work with the vendor.

B. Define (Stage 2)

This second stage of service design process focuses on the requirements that are analyzed and concluded with a clear understanding of problem. To come to clearly defined problem, personnel have to create and evaluate various ideas, alternatives and opportunities. The project scoping and planning is done at this stage. Actually this is the stage where design team gets a better understanding of problem and makes plan for its solution. Once plans are made then project is signed-off. In case on multi-vendor projects, other vendors can also participate in activity with case company and customers. The introduction has been recommended at this stage. Hence Sprint 0 (planning and resourcing) for short sprint cycle can also be done. This helps in getting development team to be ready for multi sprint cycle for development and delivery.

The main participants at this stage are Project manager, solution architect, client manager, and other vendor's managers. The customer is required in project planning, requirements analysis, scoping and technical design. Other vendors can also participate in project planning and solution design. It helps all the stakeholders to get a overall view of problem and its complete solution.

The activities of this stage can easily be accomplished with the use of appropriate design tools. Some design tools can be applicable in this stage are: *User Personas*, *Brainstorming*, *Design Brief and Service Blueprint*. *User personas* are useful in presenting user research in a comprehensible, identifiable and single entity format. It evaluates various concepts and ideas of service design against the user's requirements.

Brainstorming is a group activity which helps in creating various alternatives and solutions of a problem of problem. It helps to find out best possible solutions and take this solution forward for development. *Design Brief* provides a complete explanation to the problem faced by design team in structured format. This states the goals, barriers, cost and time used to solve the problem. It helps in time, effort and cost estimation for the project. *Service Blueprint* at this stage can help in defining roles and responsibilities or personnel. It will help both customer and other partners to know the roles of team members. This can be use in better communication between members in future steps. The design output is presented in both textual and visual format. Several activities like planning, scoping, discussion and sprint planning uses these design tools. The output of design tools in this phase can work as guidance for following phases of service design.

Gate 2 is the checkpoint of second phase. Also, in this step the client manager and project manager or team lead of case company works as evaluator. They altogether evaluate the outcome of the second phase. They evaluate plan, scope, and various solutions of problem. These documents are examined carefully and if passed the process moves to next phase. This checkpoint ensures that problem has been identified and insights of problem have been gathered. For each vendor there should be separate checkpoint.

C. Develop (Stage 3)

This third stage of process starts with creating an idea or plan to develop solution for identified problem. At this stage, solution is designed, developed and initially tested at pilot level. A multidisciplinary team made of architects, developers and testers is working to develop solution. Project manager supervises the progress of project. The key activities are visual management, development and testing. For better service design, Scrum has been proposed for this stage. The tasks are carried out in short sprint cycle. This ensures quick planning, and execution. The frequent interaction with customers during next stage of service delivery can help the team to get frequent feedbacks of solution. This phase follows Sprint planning and daily Scrum. The key participants of this phase are project manager, Scrum master, and development team. Other vendors can work in collaboration with case company or carry out activities separately.

Few design tools can be highly useful at this stage. They can help in design of roles and responsibilities, capturing customer experience and designing solution. Some design tools are *Experience Prototyping*, and *Service Blueprinting*. *Experience Prototype* can help in testing new ideas or design concepts at various touchpoints of service. It helps the development team to find whether the specific part of service meets user's criteria or not and how it can be improved. *Service Blueprint* is a detailed visual representation of overall service for a specific period which shows user's journey through different service touchpoints and channels. This helps all participants in service delivery to understand their roles and ensure user to get coherent service experience.

The key for the success of this phase is communication and coordination. The use of Scrum and proposed design tools can help the team to communicate easily. They also help in defining clear roles and responsibilities which further increases coordination and communication.

Gate 3 is the most important checkpoint the proposed process. This step also follows iterative process due to introduction of Scrum. This step ensures that service is developed and tested properly. They are ready to be delivered. In case of Scrum, this step is also followed in short sprint cycle. Hence, any changes can easily be communicated and addressed. The key players of this step are project manager and solution designer. They ensure that the quality of service meets the criteria.

D. Deliver (Stage 4)

This last stage of process ensures the final testing and delivery of service. Key activities of this stage are final testing, approval, target evaluation and feedbacks. In this stage all stakeholders e.g. development team, project manager, client manager and other vendor's have a presence. This is a phase the team effort is seen. The objective of this activity is complete delivery of solution. This phase also a part of scrum activity. Sprint Review and retrospective session are conducted in this phase where completion of task is decided. The success of this task is dependent on evaluation by customer. If the service is dissatisfied with the quality his concerns are directed to second stage where problems are analysed and evaluated.

The primary design tools is helpful in this phase is *Scenarios*. Scenarios are developed by small teams mostly which contains drawing of stories of scenarios. It tests 'use cas-

es' in a wider context. It helps in communicating outcomes with all stakeholders of the project and helps them to understand service vision.

Finally, *Scrum* has also been used in this process at stage 2, stage 3 and stage 4. In stage 2, sprint 0 is used where future sprint cycle for service development is planned. In stage 3, sprint is planned and daily scrum is used to monitor the progress of development life-cycle. At stage 4, sprint review and retrospective session is conducted where service is delivered. Scrum makes the process iterative and incremental. It is useful in developing and delivering service in short sprint cycle. It is adaptable to changes, helps in team collaboration and communication, provides high level of service quality and helps in quick service delivery. It helps in creating strong network between customer and service provider. Hence, it helps in value co-creation.

In summary, the initial proposal uses the conceptual framework to address the weaknesses of the case company in their current service design practices. It proposes a process for the case company where various processes and design tools are used. It is a four-staged process. In this process, there are four stages followed by gates, at which the output of each stage is reviewed at subsequent gates. First two stages are used to identify and define the problem. The last two stages are used to develop the solution. Scrum is used in the last two stages to make solution development an iterative and incremental process. In this case, the solution is developed and delivered in a short sprint cycle. Scrum is also used to make last two stages adaptable to changes and customer-centric.

The proposed service design process also suggests the tools for addressing the weaknesses of CSA, such as defining roles and responsibilities, communication and collaboration with customers and manage other vendors. Design tools can be used for describing, presenting, storing and sharing activities in text or visual format which can easily be created, stored and shared. The information can also be used for future projects and presented to customers and vendors. Hence, the proposed service design process aims to help along the smooth progress of the service design project. The next step is the validation of proposal.

6 Validation of the Proposal

This section validates the proposal developed in Section 5. Validation refers to e.g. piloting, testing, feedback, key stakeholder evaluation of the proposal using data from key employees of case company and customers. The data collected at this stage is referred to as Data collection 3. First, the section shortly explains how the data 3 has been collected. Then, the final proposal is built based on feedbacks from the participants in data collection 3. Finally, the next practical steps in implementing the proposal are presented.

6.1 Overview of Validation Stage

The validation of the proposal was conducted in two stages. The first stage included a discussion with participants from case company and survey from customers. In this type of validation, an overview of proposal was introduced first and various aspects of proposal were discussed in detail. In the second stage, the proposal was presented to CEO of the case company for final approval.

The rationale behind two stages of validation is the thorough analysis of proposal. In the first stage of validation participants helped to refine the process further. In the second stage, CEO, who is the commanding person of the case company, gave his consent to implement it. Since the validation has been done with a number of participants representing the case company and customers both, the degrees of maturity in validation is quite high.

The list of key points from the initial proposal that were discussed as the first stage of validation is presented in Table 10 below.

Table 10. Key points from the initial proposal discussed at the validation stage.

1)	A hybrid of both stage-based and iterative incremental process (Scrum)
2)	Each Stage is followed by Gate. Stage is used to perform activities, Gate is to verify outcome of Stages
3)	First two stages are used to find the problem and last two stages are used to develop solution
4)	The use of Scrum starts with Stage 2 (Sprint 0) and end s with Stage 4

	(Sprint review and Retrospective)
5)	Service is developed in short sprint cycle to become adaptable to changes and customer-centric. Customer and company interaction is also more in this case
6)	Design tools are helpful in creating, storing and sharing textual or visual format of activities, and personnel information
7)	Design tools are used to define roles and responsibilities, communicate with customers and other vendors by sharing information
8)	Clear Roles and responsibilities of personnel at various stages
9)	Customer feedbacks are addressed and directed at appropriate stage
10)	Improvement in coordination between stakeholders of projects
11)	Continuous interaction with customers during service design, development and delivery
12)	Other vendors are managed properly

Based on comments and suggestions, the proposal was modified first. All stakeholders expressed their views on initial proposal. They made few comments and suggestions for the proposal. Their comments and suggestions are presented in Section 6.2 below. The suggestions were incorporated in the final proposal and presented to CEO.

In the second stage, the modified proposal was introduced to the CEO of the case company. The field notes of the discussion with case company employees and customer survey can be found in Appendix 6 and 7. The feedback of CEO is in Appendix 8.

The validation of initial proposal has been done with the case company employees and customers. They made several comments and suggestions discussed next, in Sections 6.2 and 6.3. A plan with timeframe has also been introduced in subsection 6.4 as part of the proposal.

6.2   Results from Validation of the Initial Proposal

The stakeholders analyzed all aspects of the proposal, the four stage-gate process, Scrum and use of design tools. They discussed how the effective use of tools and vari-

ous concepts of process help in defining roles and responsibilities, communication with customers and management of other vendors.

The participants approved the use of four-stage process. Each stage is verified with subsequent gates. The activities are done in sages and verified at gates. It helps in the progress of project without difficulty. They also approved the first stage to be used for identifying and defining problem and last two stages for development and delivery of solution. The introduction of Scrum in last three stages helps to run the process in iterative and incremental manner. It makes the process customer-centric and adaptable to changes, and also helps in team collaboration, thus making a fit to the need of case company which is an IT SME.

While discussing the proposal, stakeholders also suggested some improvement to the current proposal. They suggested (a) introducing communication channels at every stage. These channels can help in coordination and collaboration. They also suggested (b) a face-to-face meeting in group discussion or people working in proximity and chat, mail, or phone for people working at distance. The group discussion or meeting is always face-to-face and expects presence of all participants. It is given high importance and completed within specified period. Chat, e-mail or phone can help people sitting at distant places and can be used without any specific agenda or timeframe, Finally, they also suggested (c) the use of shared drive for knowledge storing and sharing. All information should be stored in a shared drive for future use.

6.2.1 Implementation of Proposal

Next, the proposal also suggested an outline for the timeframe for implementation of the proposal, as illustrated in Table 11 below.

Table 11. Implementation of the proposal with timeframes and responsibilities.

	Task	Timeframe	Responsible
1	Introducing the process and service design tools to stakeholders responsible for different phases and gates	1 month	Researcher
2	Introducing all key elements e.g. processes and tools to all employees	1 month	Managers/Team Leaders

3	Developing infrastructure for communication and storing of documents	2 months	IT support staff
4	Implementation of Process in one pilot project	2-3 months	Managers/Team Leaders/Customer
5	Evaluation of Implementation in pilot project	End of 2017	CEO/Managers/ Customers
6	Full implementation of process in Company wide	Q1/ 2018	CEO / Managers
7	Complete Evaluation	Q1/ 2018	CEO / Customers

As illustrated in Table 11, the first step is to introduce the process to the stakeholders those are responsible for implementation of process in company. As the stakeholders are managers and team leaders, they should introduce the process to their team members.

The plan is to start implementation this process in case company in Q3/2017. As it has already been discussed with Managers and team leaders, it was agreed that they will take this responsibilities of the implementation. Q3 and Q4 of 2017 will be used to implement the prcess in a case project and then at the end of 2017 it will be evaluated. If all stakeholders – customer, managers, team leaders, development team, and other vendors are satisfied with the outcome, then this will be implemented for all projects of the case company in Q1/2018. Again at the end of Q1/2018, the outcome of process will be evaluated in few selected projects.

6.3   Final Proposal

	Discover (phase 1)	Gate 1	Define (phase 2)	Gate 2	Develop (phase 3)	Gate 3	Deliver (phase 4)
Roles and Responsibilties	1) Project manager 2) Client Manager	Project manager; Client manager	1) Project Manager 2) Client Manager 3) Other partners and suppliers 4) Solution Architect 5) Project scoping 6) Project planning 7) Project signoff 8) Sprint 0	Project manager; Client manager	1) Project manager 2) solution architect 3) Development team 4) Prototyping, development and testing 5) Sprint planning and scrum	Project manager; Architect	1) Project manager 2) Development team 3) Other vendor's development team 4) Client manager 5) Final testing 6) Delivery 7) Sprint Review and retrospective
Customer Intraction	1) Requirement Gathering 2) User's Experience 3) Market research 4) Develop new ideas		1) Knowledge Sharing 2) User's requirement analysis 3) Solution design				1) Solution delivery 2) Customer feedback evaluation 3) Directing customer feedback
Managing Sub-contractors			1) Co-ordinated Project planning 2) Co-ordinated solution design				1) Integrated delivery of solution 2) Understanding customer feedback
Designs Tools	1) User Journey 2) User Diary 3) Service Safari 4) User Shadowing		1) User Personnas 2) Brainstorming 3) Design brief 4) Service Blueprint		1) Service Blueprint 2) Experience Prototype		1) Design Scenarios
Communication Channels	Questionnaire by email, interview (face-to-face)		Workshop, face-to-face, phone		E-mail, chat, face-to-face		E-mail, shared drive, review meeting (face-to-face)

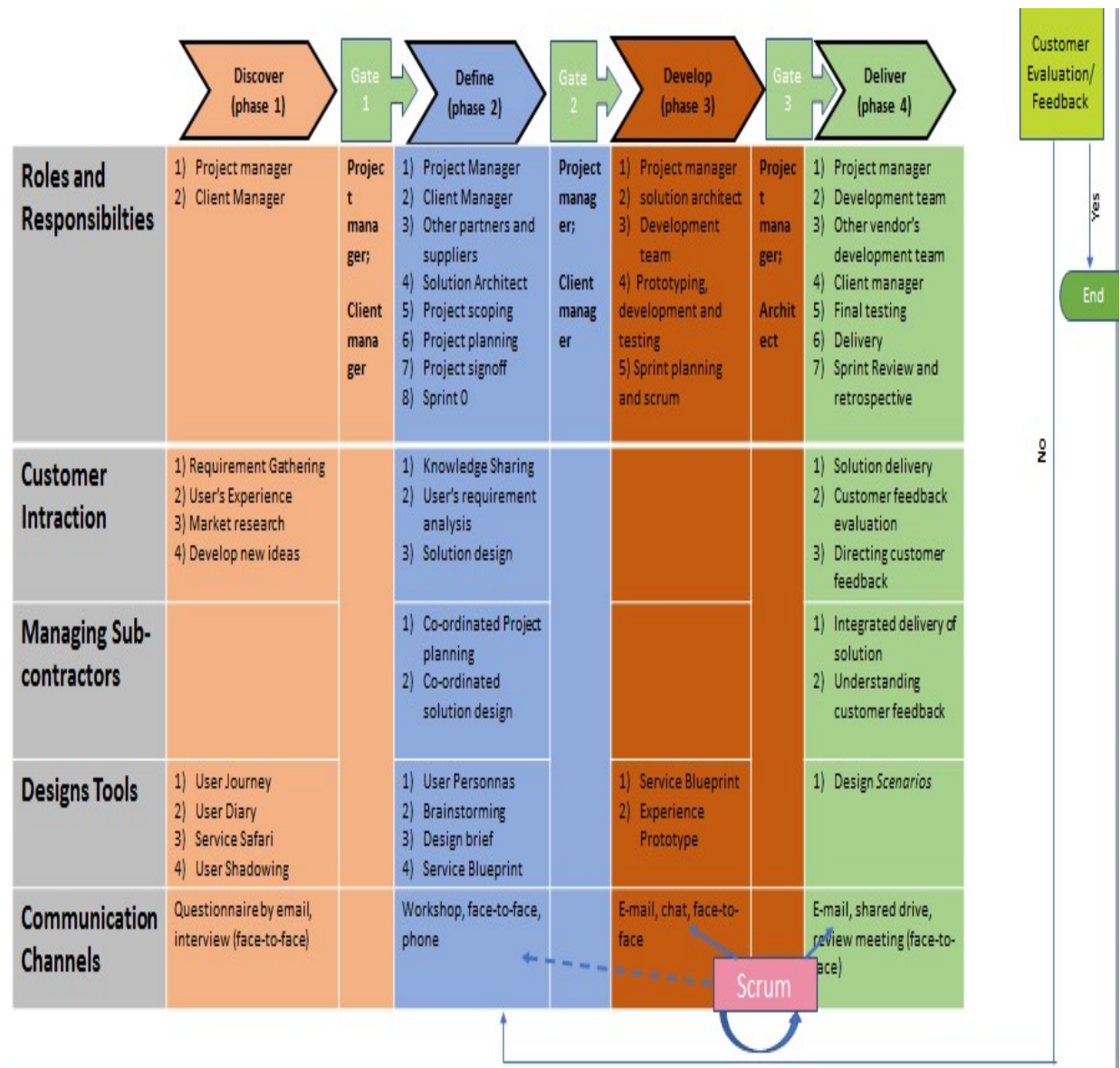Customer Evaluation/ Feedback — Yes → End; No

Scrum

Figure 13. Final proposal for the service design process for the case company.

The structure of final proposal is similar to that if initial proposal with some improve-ments. In final proposal, communication channels have been incorporate to make the process more clear. Also a procedure with timeframe has been proposed as part of recommendations to implement of this process in case company. This final proposal has been approved by CEO of case company. The feedback of this proposal by CEO has been added in Appendix 8. This proves that this proposal is ready to be imple-mented in case company. After successful implementation this proposal can be con-sidered as a generic solution for SMEs. If the size of company grows, then this pro-posal is also adaptable to changes and new processes and tools can be incorporated easily.

In summary, the proposal has been validated first, with senior managers of case company and customers, and second, with CEO of case company. During validations, some points were also suggested by managers and customers. The prominent suggestions were introduction of channels of communication between personnel at various stages and a plan with timeframe for implementation of proposal in case company. The key points of final proposal can be summarized in following Table 12.

Table 12. Key points of Final Proposal.

1)	Proposal has two parts: well-defined process and use of design tools
2)	A hybrid model of stage-based and iterative incremental process (Scrum)
2)	Stages are followed by Gates. Stages are used to perform activities, Gates to verify outcome of Stages
3)	First two stages are used to find the problem and last two stages are used to develop solution
4)	The use of Scrum starts with Stage 2 (Sprint 0) and ends with Stage 4 (Sprint review and Retrospective)
5)	Service is developed in short sprint cycle to become adaptable to changes and customer-centric. Customer and company interaction is also more in this case
6)	Design tools are helpful in creating, storing and sharing textual or visual format of activities, and personnel information
7)	Design tools are used to define roles and responsibilities, communicate with customers and other vendors by sharing information
8)	Clear Roles and responsibilities of personnel at various stages
9)	Customer feedbacks are addressed and directed at appropriate stage
10)	Better team coordination in this model
11)	Continuous interaction with customers and other vendors
12)	Well defined communication channels at every stage
13)	Can be learned easily and implemented quickly and easily
14)	A good fit for SMEs

7 Discussion and Conclusions

This section summarises and finalizes this Thesis. First, an overview of Thesis is given, and practical implications are explained. Then, the Thesis is evaluated by comparing the objective with the final outcome and analysing whether the validity and reliability plans have been carried out as mentioned in Section 2.4.

7.1 Summary

The objective of this Thesis is to provide a practical process which can help TI SMEs to design high quality service. The current state analysis has identified many strengths and weaknesses of the process currently used by the case company. This made the case company to refocus its objective to develop a practical process incorporating strengths and sorting out weaknesses. The aim of this research is to propose a process model for   IT SMEs. The vision of the case company is to deliver customer-oriented solution. The focus of this research is customer and employees. Hence, it is required that the process should be cost-efficient, adaptable to changes and easy to implement.

The outcome of this Thesis is a process model for the case company for service design. The proposal is a four-stage process model which incorporates the concept of stage-gate and iterative-incremental model (Scrum). The concept of Gates helps in evaluating the outcome of each stage. The introduction of Scrum makes the process iterative and adaptable to changes. This model also helps in defining roles and responsibilities of personnel in various phases. This can help in better team coordination and communication between different stakeholders (customer, development team, architects, vendors, managers). The customer feedback is also handled well in this proposal and further improves the quality of service. This process is easy to learn and implement in organization.

The proposal also suggests the use of various design tools at different stages of the process. It helps in addressing weaknesses existing in current practice of the case company. The design tools can be useful in designing tasks, activities and use of personnel and presenting the design in text and visual format. The output can be stored and shared easily. The tools can easily describe roles and responsibilities of personnel

at various stages and task coordination. This helps in better communication between personnel and increases team coordination.

The research approach used in this Thesis is case study approach. The data collection and analysis has been done in three stages in this Thesis. The nature of data collection and analysis is qualitative. The data was collected by semi-structured interview, survey and workshop.

In the First stage, data has been collected and analysed to find out the current state of the service design practices used in the case company. The approach for conducting the current state analysis was chosen based on a customer-centric service design process. The current state analysis interviewed the case company employees and its customers to gain a deeper understanding of the current process and its strengths and weaknesses.

In the Second stage, data collection and analysis has been done to build a proposal for the case company. In this stage a workshop is conducted. The proposal is built on the basis of findings of the current state analysis of case company and relevant information from literatures.

In the Third stage, data collection and analysis is done for validation of proposal. In this stage, first the proposal is validated by employees and customers of related projects and then approved by CEO of the case company. The outcome of this activity is a final proposal which is a recommendation for the case company and similar enterprises. The proposal suggests a plan to implement the proposed service design process within timeframes.

7.2   Practical Implications

The outcome of this Thesis is a process for service design in the case company. The aim of the process is provide a systematic approach to design cost-effective and customer-centric services. Therefore, the implementation of the process should help to enhance the productivity of the company and customer satisfaction which can correlate with the vision of the case company to become leader in high quality CRM consultancy.

The process is easy to learn and easy to implement, so that the case company will not find difficulty in its implementation.

First, the process was introduced to top managers and unit leaders of case company that are responsible for service development and delivery. As it was not possible to give exact timeframe for its implementation in this Thesis, the next step in implementing the process is to test the process in practice. The estimated time for full implementation is end of Q1 in 2018 when the process will be validated and implemented in company for large scale. The implementation of this process has been explained in section 6.1.3 and an overview of implementation can be seen in Table 10 of that section.

In the future, it is important to develop and improve the process continuously. At present the case company is an IT SME, it is easy to get better output with this process. But, if the company grows, it becomes necessary to modify it further to suit the need of company.

7.3   Evaluation of Thesis

This section evaluates the Thesis by comparing the objective to the final outcome and revising the reliability and validity plans made in Section 2.4

7.3.1   Objective vs Outcome

The initial objective of this Thesis was to propose a practical process for service design to case company. Based on the findings of current state analysis, the scope of the study was further narrowed and therefore, the objective was further refined. The current practices were analyzed for improvement by addition other concepts and tools that could be aligned with current process. The outcome of this study is a process for SMEs to help in service design.

The outcome is a four-stage process that is a hybrid model of plan-based and iterative-incremental process. The plan-based process is derived from basic models of Double Diamond approach and Stage-gate model. The iterative-incremental approach is based on Scrum and some other relevant agile processes. These two approaches are used at

respective stages to make the model focus on both defining business problem and solving it. The information of various elements (actors, needs, experiences, offerings, and touchpoints) and tasks of this process are designed and shared using service design tools. The design tools are used for different stages of the process, including the roles and responsibilities of personnel and channels for communication between stakeholders.

The weakness of the study is that the results of this proposed process can be seen only after the implementation of process that can be evaluated after first year. After that, it can be concluded if the process actually helped the case company in service design. If after first year, the customers and employees of the case company feels satisfied with the process, it can be considered successful. However, at this stage the outcome is only at the proposal status.

7.3.2   Validity and Reliability

The plan for validity and reliability of this study was introduced in Section 2.4.

In this study, *validity* was ensured by doing various ways of data collection and analysis. The data was collected by semi-structured interviews, survey and workshops. The data collection was mostly observatory. At first stage of data collection, the current state analysis of the case company was done. In this stage, the data has been collected from various sources such as customers, key employees of case company such as senior managers and team leaders. Although the study has been done as a single case study, the data has been collected for two different projects of case company. Hence the views of respondents were diverse enough to cover all aspects of current state analysis. Second, the relevant information was collected from various literatures. The literature review was diverse in nature and findings were related with various industries. Then the conceptual framework was designed based on findings of current state analysis and literature survey. At third stage, data collection was done in a workshop where key personnel of both projects if case company participated. This step was for building an initial proposal based on current state analysis and conceptual framework. The last stage of data collection was for validity of proposal. In this stage, senior managers, CEO and customers of case company participated. In all stage, the data was collected from various sources such as key personnel and customers of case company and literatures. Hence, this ascertains the veracity and authenticity of data.

In this study, *reliability* was addressed by conducting interviews, workshop and survey, which the researcher documented by audio, field notes and questionnaires template. In all stage of data collection, the information and observation was recorded using audio or text. In the interview and discussion, the conversation was first recorded using audio and then documented in text format. The survey was documented using questionnaires template. These actions reduced the possibility of researcher bias. As the researcher is external consultant to the case company, hence there is little possibility for researcher bias. Also, the data was collected using various techniques, it verifies the veracity of data.

7.4   Closing Words

This Thesis provides a practical process for the case company to design customer-centric services. The objective of company is to deliver services matching expectations of customer. The vision of the company is to become *numero uno* CRM consulting service provider for Finnish companies. In this regard the case company has to differentiate itself from other service provider in terms of offerings and business process. The case company has to become more customer-focused and develop better collaboration with other partners.

The implementation of proposal of Thesis can help the case company to make its operating process better. It should help the company to design service quickly, define roles and responsibilities engaged in the service design process clearly, collaborate with customers and other partners, and communicate with others easier. The proposal also utilizes the tools for presenting the service design activities in a comprehensible format which can make the service design process smoother. The process fits the need of case company, is adaptable to changes and scalable, easy to learn and implement in working environment.

References

Baxter, P. and Jack, S. (2008). *Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers*. The Qualitative Report, 13 (4), 544-559.

Beck, K. (2003). *Test-Driven Development by Example*, Addison Wesley

Beck, K. (1999). *Extreme Programming Explained: Embrace Change*. Addison-Wesley

Böhmann T., Henfridsson, O. and Tunnanen, T., (2016). *Introduction to Digital and ICT enabled services Minitrack*, Proceedings of the 50th Hawaii International Conference on System Sciences, 1236, Open Access at: https://scholarspace.manoa.hawaii.edu/bitstream/10125/41300/1/paper0151.pdf

Brynjolfsson, E. and Kahin, B., (2002). *Understanding The Digital Economy*, MIT Press, Cambridge, UK

Buchenau M. and Fulton Suri J., (2000). *Experience Prototyping*, paper presented at the Symposium on Designing Interactive Systems

Clatworthy, S. (2009). *Bridging the gap between brand strategy and customer experience. The target experience tool*. First Nordic Conference on Service Design and Service Innovation. Oslo, Norway.

Cooper, A., (1998). *The Inmates Are Running the Asylum*, Sams

Cooper, R. G. (1990). *Stage-Gate Systems: A new tool for managing new products*, Business Horizons, 33 (3), 44-54

Cooper, R. G. and Edgett, S. J. (2012). *Best Practices in the Idea-to-Launch Process and Its Governance*. Research-Technology Management. 55 (2), 43–54

Evans, E., (2003). *Domain-Driven Design: Tackling Complexity in the Heart of Software*. Addison-Wesley

Fliess, S. and Kleinaltenkamp, M. (2004). *Blueprinting the Service Company: Managing Service Processes Efficiently*. Journal of Business Research. 57 (4), 392-404

Frontier service design (2010). *Service design*. Retrieved 10 August 2010, from http://www.enginegroup.co.uk/ service_design/frontier service design (2010). About Service Design. Retrieved 10 August 2010, from http://www.frontierservicedesign.com/about-us/about-service-design/

Gantt, H. L. (1974). *Work, Wages and Profit*, Hive Publishing Company, Easton, Pennsylvania

Häikiö, J. and Koivumaki, T. (2016). *Exploring Digital Service Innovation through Value Creation*. Journal of Innovation Management, 4(2), 96-124

Hjørland, B. and Sejer Christensen, F. (2002). *Work tasks and socio-cognitive relevance: a specific example*. Journal of the American Society for Information Science and Technology, 53(11), 960-965

Howcraft, D. and Richardson, H., (2016). *A Gendered Analysis of IT-enabled Service. Work in the Global Economy, Gender in Transactional Knowledge Work*, Springer International Publishing, 9, 11-30

Isaksen, S. G., Dorval, K.B. and Treffinger, D.J. (2000). *Creative approaches to problem solving (2nd ed.)*. Dubuque, IA: Kendall/Hunt.

Kalakota, R. and Robinson, M., (2004). *Services Blueprint: Roadmap for Execution*, Addison-Wesley, Boston

Kent Beck, James Grenning, Robert C. Martin, Mike Beedle, Jim Highsmith, Steve Mellor, Arie van Bennekum, Andrew Hunt, Ken Schwaber, Alistair Cockburn, Ron Jeffries, Jeff Sutherland, Ward Cunningham, Jon Kern, Dave Thomas, Martin Fowler, Brian Marick (2001). *"Manifesto for Agile Software Development"*. Agile Alliance. Retrieved 14 June 2010

Larman, C. (2004). *Agile and Iterative Development: A Manager's Guide*. Addison-Wesley.

Levy, M. and Powell, P. (2004). *Strategies for Growth in SMEs: The Role of Information and Information Systems*, Elsevier Ltd.

live|work (2010). *Service Design*. Retrieved 10 August 2010, from http://www.livework.co.uk/articles/creating-customer-centred-organisations

Mager, B. (2009). *"Service Design as an Emerging Field"*. In: Miettinen & Koivisto (Eds.): Designing Services with Innovative Methods, Helsinki: Taik Publications, p. 28–42.

Maxwell, J. A. (2013). *Qualitative Research Design: An Interactive Approach*. 3rd ed. Thousand Oaks, CA: SAGE Publications.

Mossakowski T., Goguen, J. A., Diaconescu, R. and Tarlecki A. (2007). *"What is a Logic?"*, Logica Universalis, Birkhauser, 113–133

Miroudot, S. and Cadestin, C. (2017). *From Inputs to Value-Creating Activities*, OECD Trade Policy Papers, OECD France, 197, 58-59

Mitchell, I. (2016). *Agile Development in Practice*. Tamare House

Office of Government Commerce. (2007). *Service Design*. London: The Stationery Office.

Osborn, A.F. (1963) *Applied imagination: Principles and procedures of creative problem solving* (3rd Re. Ed.). Charles Scribner's Sons, New York

Philips, P. L. (2004). *Creating The Perfect Design Brief: How to manage design for strategic advantage*. Skyhorse Publishing Inc., New York

Ruutu, S., Casey, T. and Kotovirta, V. (2017). *Development and Competition of digital service platforms: A system dynamics approach*. Technological Forecasting and Social Change, Elsevier, 117 (4), 119-130

Safer, D. (2007). *Designing for Interaction. Creating Smart Applications and Clever Devices*, New Riders Book

Schwaber, K. and Beedle, M. (2002). *Agile software development with Scrum*. Prentice Hall.

Shostack, L. G. (1984). *Designing services that deliver*. Harvard Business Review

Stefan, M. (2005). *Service Design: Practical access to an evolving field* (M.A. Thesis: Köln International School of Design). Retrieved 10 August 2010, from http://stefan-moritz.com/welcome/Service_Design_files/Practical%20Access%20to%20Service%20Design.pdf

Stickdorn, M. and Schneider, J. (2011). *This is Service Design Thinking*. BIS Publishing

The Copenhagen Institute of Interaction Design (2008). *What is Service Design?* Retrieved 10 August, 2010, from http://ciid.dk/symposium/sds/

Turner, D. W. (2010). *Qualitative Interview Design: A Practical Guide for Novice Investigators.* The Qualitative Report. 15(3). 754-760. Open Access at: http://www.nova.edu/ssss/QR/QR15-3/qid.pdf

UK Design Council (2015). *The Design process: What is Double Diamond?* Retrieved 17 March 2015, from http://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond

UK Design Council (2010). *Design Methods for Developing Services* Retrieved 10 August 2010, from https://connect.innovateuk.org/documents/3338201/3753639/Design+methods+for+developing+services.pdf

Yin, R. K. (2009). *Case Study Research: Design and Methods*. 4th ed. Thousand Oaks, CA: SAGE Publications.

Appendix 1. Interview with employees of Case company (Project 1)

Information about the participants

Position of Participants	Team Lead, Client Executive
Date of Interview	22.03.2017
Duration of Interview	1.5 hrs
Document	Audio recording, Field notes

Field Notes

Topics of Interview	Field Notes
How do you describe case company and your unit?	People are very friendly. Technology savvy. Good knowledge of Sieble CRM processes and application.
Describe experiences of current process of service design in case company?	The company uses Scrum as business process. The aim of the company is to deliver software as a service. The current process is iterative and incremental process. It has planning session, daily scrum, review session and retrospective session. Team works as a unit. The project is often multi-vendor projects.
What is rational behind using this process?	The company wants to deliver software-as-a-service. The company is focusing on service development and delivery. The current process is iterative and incremental process. It has many benefits such as adaptable process, easy to implement, working well with small teams, customer is aware of plans and outcomes
What is outcome of this process?	service development and delivery, sprint backlog, product backlog, software codes,
What are artefacts of current process? How much useful they are?	Product backlog, sprint backlog, scrum sheet, software code. These artefacts help to understand progress of project and establish team collaboration. Also adaptable to changes in requirements
How does current process helps in sharing information with customers and other partners? Is any tool used in this regard?	Sharing of information is done by few artefacts sprint backlog, sprint review result, definition-of-done list, software product. Since the process relies heavily on Scrum, it uses Scrum artefacts only. It does not use any tools for defining roles and responsibilities, designing and presenting activities of team
Does current process use any tool for knowledge sharing and archiving so that	No process for design and development of documenting roles and responsibilities of personnel, activities of team members in each stage of sprints. Hence there are no archived files for information of one project that can be used in other projects.

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it can be used in future?	
Is roles and responsibilities are clearly defined in current process? Does it require any tool?	Roles and responsibilities are not specifically defined. Only three roles are mentioned product manager/project manager, Scrum master and development teams. Since the process is iterative-incremental, hence division of responsibilities are limited.
What is Employee Experience in current process?	Software quality is good, but delivery is bad. Difficult to work in multi-vendor projects. Coordination with customers and other vendors need to be improved.
What is Customer Experience?	Customer is happy with service Quality. Perhaps customer wants a better process in practice to bring coordination with him and other business partners. Feedback handling needs to be improved.
What is other Vendors experience?	They expect better knowledge sharing, and task coordination.
Does current process use any tool in service design? Why it is needed?	Scrum is the only process. Useful for small team. Does not need any specific tool for service design. Due to limited coordination and communication between team members, it is required to introduce a better process. Then, design tools are required to conduct various activities.
How Team members communicate with each other?	in Sprint planning, Scrum, Review and Retrospection session. Face-to-face meeting, chat, e-mails etc.
How is team collaboration?	Needs to be developed more.
What are key Strengths?	Big customers, multi-vendor projects, Scrum (iterative-incremental process), expert in technology, customer-friendly
What are key Concerns?	Scrum is useful only for small team, lack of process to work in multi-vendor projects, lacks proper coordination with customer and other vendors, process should be limited to service development and delivery only but also accommodate other steps such as and define the problem. Use of tools or processes to define roles and responsibilities of personnel in big projects to carry out various activities.
What can be further development?	A better process to carry out activities in multi-vendor big projects, Use of tools to specify roles and responsibilities, and knowledge creation and presentation of activities

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Appendix 2. Interview with employees of Case company (Project 2)

Information about the participants

Position of participants	Team lead, project Manager
Date of Interview	24.03.2017
Duration of Interview	1.5 hrs
Document	Audio recording, Field Notes

Field Notes

Topics of Interview	Field Notes
How do you describe case company and your unit?	People are very friendly. Technology savvy. Good knowledge of Salesforce CRM processes and application. Mostly single vendor projects are done in this unit.
Describe experiences of current process of service design in case company	Current process use Scrum. It is good for small teams. It helps in team collaboration and communication. Short sprint cycle for service development and delivery. Quick service delivery.
What is rational behind using this process?	Better service quality and quick service delivery. Good team coordination. Easy to learn and implement.
What is outcome of this process?	Product backlog, sprint backlog, Scrum progress report, Sprint review report, software product
What are artefacts of current process? How much useful they are?	Product backlog, sprint backlog, Scrum progress report, Sprint review report, software product. They help to inform all stakeholders of the project about items to be delivered and progress of project
How does current process helps in sharing information with customers and other partners? Is any tool used in this regard?	Only few artefacts are available. Information about roles and responsibilities of people and various other activities like planning, strategizing, identification problem, defining the problem can be shared because there is no method or tools are used to create and store it.
Does current process use any tool for knowledge sharing and archiving so that it can be used in future?	No, Currently there is no such process in practice where focus is on both defining the problem and developing solution for it. Only focus is on service development.

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Is roles and responsibilities are clearly defined in current process? Does it require any tool?	No, needs to be defined. For better communication it is useful. Especially during customer interaction it is useful.
What is Employee Experience in current process?	Software quality is good, but delivery is bad. Difficult to work in multi-vendor projects. Coordination with customers and other vendors need to be improved.
What is Customer Experience?	Customer is happy with service Quality. Perhaps customer wants a better process in practice to bring coordination with him and other business partners. Feedback handling needs to be improved.
What is other Vendors experience?	Mostly single vender projects are done by this unit
Does current process use any tool in service design? Why it is needed?	Current process is more focused to service development and delivery. If the work load increases there is a need to define roles and responsibilities clear and activities should be better explained. In that condition there is need of proper design tools
How Team members communicate with each other?	face-to-face interaction, chat, e-mails
How is team collaboration?	Within development team, it is good. Butter needs improvement in the area of coordination with customers.
What are key Strengths?	Technical expertise, good use of Scrum, focus on service development and delivery is good.
What are key Concerns?	Needs a better process to focus on both defining the problem and solution development. clear roles and responsibilities, information of activities should be presented and shared easily. Hence the need of design tools in this regard
What is further development needed?	focus on identify and define problems and solution development and delivery, use of design tools to create, present and share information about activities and personnel

Appendix 3. Customer Survey (project 1)

Information about the participants

Position of participants	Program Manager (Customer A), Project manager (Customer B)
Date of Survey	25.03.2017
Document	e-mail, notes

Survey Response

Questionnaires	Notes
What type of project running in your company?	Multi-vendors project mostly
How happy you are with technical capability of case company – xxx oy?	Good in Siebel CRM consultancy.
How do you feel about process used by case company – xxx oy?	Uses Scrum, a good iterative-incremental process. Good for one or two team. But it has limited applicability in service development in big projects.
What is the experience of interaction with vendor xxx oy?	Good in technology. Needs experience to work and coordinate big and multi-vendor projects. Needs better knowledge of an effective process which can help them to coordinate with other vendors and customers
In case of multi-vendor project, how is the coordination? Why	Needs to be improved. The reason can be current process is not helpful much. Focus should be on both defining problem and developing solution. Sort out any problem arising during this condition.
Experience about service quality and delivery?	Service quality is OK on most occasions. Delivery is not well coordinated and sometimes gets delayed.
Do you like to continue with case company	Technical expertise is good. Can Continue. But expects better result from them in coordination with other vendors and customers

What improvement needed?	A better process focusing on coordinated problem identification and solution development, collaboration, feedback handling, information sharing

Appendix 4. Customer Survey (project 2)

Information about the participants

Position of participants	Project manager (Customer C), head, IT department (Customer D)
Date of Survey	29.03.2017
Document	e-mail, notes

Survey Response

Questionnaires	Notes
What type of project running in your company?	Single vendors project mostly
How happy you are with technical capability of case company – xxx oy?	Good in Salesforce CRM consultancy.
How do you feel about process used by case company – xxx oy?	Uses Scrum, a good iterative-incremental process. Good for one or two team. But it has limited applicability in handling big projects.
What is the experience of interaction with vendor xxx oy?	Good in technology. Needs applicability of better process and relevant tools in handling big projects singlehandedly. Needs to improve in the area of problem identification and defining.
Experience about service quality and delivery?	Service quality is OK on most occasions. Delivery is not well coordinated and sometimes gets delayed.
Do you like to continue with case co.	Technical expertise is good. Can Continue. But expects better result from them in coordination customers
What improvement needed?	A better process focusing on coordinated problem identification and solution development, collaboration, feedback handling, information sharing

Appendix 5. Field Notes from Workshop (Building the Proposal)

Information about the participants

Position of Participants	Team Leads, Project Manager, Client Executive (Case Company)
Date of Discussion	04.05.2017
Duration of Discussion	2.5 hrs
Document	Presentation, Audio recordings, Field Notes

Field Notes

Topics of Discussion	Field Notes
Overview of Conceptual Framework	It has incorporated current practices of company and added new concept to make process model more effective for service design. Introduces two parts of model – process and design tools. It is based on Double Diamond approach, stage-gate model, AT-ONE model and Scrum. It is a four-stage process. **Good Feedback**
Overview of Process part of framework	Four-stage process is a hybrid of stage-based (Double Diamond and Stage-gate model) and iterative incremental process (Scrum and other agile processes). AT-ONE is used to focus on elements such as employees, customer, vendors, needs, offering, experiences etc. First two stage focus on identifying and defining problems. The last two stage focus on developing and delivering services in iterative-incremental (Scrum) **Good feedback**
Overview of Design tools	Design tools have been used appropriately in every stage of process. It helps in designing and presenting activities, defining roles and responsibilities of personnel at every stage. It creates several comprehensible documents related with tasks and personnel which is easy to present, share and store in a repository. The documents can be used at another stage of process or in other projects as reference. **Good feedback**

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Roles and responsibilities	Roles and responsibilities of personnel are well-defined at each stage. With the help of design tools it has been designed well. Task co-ordination and communication becomes easy with defined roles and responsibilities. **Good Feedback**
Working with Customers	Customer has become at crucial stages. Customer is a part of sessions of identifying problems, defining problems and service delivery. Hence communication with customers is frequent. **Good Feedback**
Team Activity	Use of design tools at every stage has made tasks and roles of personnel clear. Hence it improves team activity. **Good Feedback**
Working with Vendors	Other vendors are also working with case company in crucial stages. Hence other vendors were having complete information about project. **Good feedback**
Usefulness of Design tools	Design tools have helped in designing activities, and roles and responsibilities of personnel in comprehensible format (text and visual) which can easily be shared and stored for future use. The outcome of design tools help in task coordination and communication. **Good Feedback**
Improvement Areas	Customer feedback should be channelized at second stage where problems are diagnosed and defined. Service Blueprint tool should be used in second stage also, because from second stage onwards activities become complex and many people are getting involved in activities. Hence there is a need to define roles and responsibilities of personnel clearly at that stage too. **Suggestions for improvement**

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Appendix 6. Field notes of Discussion with employees (Validation of Proposal)

Information about the participants

Position of participants	Team leads, Project Manager, Client Executive
Date of Discussion	11.5.2017
Duration of Discussion	1.5 hrs
Document	Audio recording, Field Notes

Field Notes

Topics of Discussion	Field Notes
Feedback about Proposal	The proposal is very efficient and suggests an effective process for service design. The model has two parts - process and design tools. Both parts together provide a generic framework which is highly useful in service design. **Support to proposal**
Feedback about Process part of framework	The process is a combination of stage-based approach and iterative incremental approach. The stage based approach uses four step process with stages followed by gates. Stage is used for activities and gate is used to evaluate outcome of stages. **support to proposal**
Feedback about Design tools	Design tools are very effective in designing roles and responsibilities of personnel at various stages, and presenting and documenting the activities. Often documents activities and responsibilities in text or visual form which is easy to share and archive. **support to proposal**
Feedback about Roles and responsibilities of personnel	Roles and responsibilities are properly defined at each stage of process. Task coordination, people interaction, team collaboration and communication is easy **support to proposal**
Feedback about activities concerning Cus-	Customer is interacted at various stages and their feedback is also addressed at right stage. Customer is aware

tomers	of every part of development activities. hence he is aware of outcome of project. **support to proposal**
Feedback about Team Activity	Activities are easily documented, communicated and shared among stakeholders. It helps in smooth progress of project. **support to proposal**
Feedback about usefulness of process and tools for Vendors	Vendors will benefit from process and use of design tools in service design. Actions, responsibilities, task and roles can easily be communicated to vendors. Vendors also participate in crucial juncture of project with case company and customer. Vendors are aware of progress of project in every stage **support to proposal**
Feedback about Usefulness of Design tools	Design tools help in defining roles and responsibilities. It helps in developing text of visual form of tasks, actions, roles and responsibilities which can easily be communicated and shared. **support to proposal**
Improvement Areas	Mention communication channels. It will help the design tools to communicate information easily and quickly. An idea of implementation with timeframes and responsibilities can help company in adopting proposal in practice as early as possible **Generic suggestions**

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Appendix 7. Customer Survey (Validation of Proposal)

Information about the participants

Position of participants	Program Manager (Customer A), Project manager (Customer B), Project manager (Customer C), head, IT department (Customer D)
Date of Survey	11.05.2017
Document	e-mail, notes

Survey Response

Questionnaires	Notes
Survey on Proposal	The proposal is considered to be good. Discusses both process and tools required for service design. Good to have multi-staged process incorporating both stage-based approach and iterative-incremental approach. Incorporate all stakeholders of a project in service design. Quite flexible in nature and change accommodate changes easily at process level or tools level. **support proposal**
Survey on Process part of framework	Happy with a four-step process with stage and gates concept and Scrum. Activities of stages are verified at gates. The process can be used for both identifying and defining problems, and developing service. Iterative-incremental process helps to accommodate changes in requirements. Services are delivered in short sprint cycle. **support proposal**
Survey on usefulness of Design tools	Design tools help the designer to make roles and responsibilities of personnel visible. Tasks and actions can be designed and documented in text or visual format. easy to share and store documents. **support proposal**
Survey on clarity of Roles and responsibilities of personnel	Roles and responsibilities are clear in the process. Improves communication and team coordination **supports proposal**

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Survey on case company handling customers concern	Customer feedbacks are quickly handled. They are analysed in details. The problem is quickly identified and defined. **support proposal**
survey on collaboration with vendor/ coordination with other partners	Collaboration and coordination with other partners and vendors are better. Decisions, actions and tasks are communicated easily. **support proposal**
Improvement Areas	Things will be better if proposal discuss also channels of communication. Personnel will know how to communicate with other at every stage. This will also show the importance of activities

Appendix 8. Feedback from CEO of Case Company (Validation of Final Proposal)

Date: 16.05.2017

Message from CEO:

The proposal looks interesting and suitable for the need of case company. It is easy to learn and implement quickly. The most important part is that this process is an extension of current practices of company. The use of several new things like design tools, clarity in roles and responsibilities, better customer interaction and effective coordination of subcontractors and partners. The feedback from customers is encouraging. Hence, this proposal will be useful in better service design and allowed to be implemented.