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Guidelines for Service Improvement in an IT Consultancy Firm

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This study was conducted to develop guidelines for service improvement in a small IT consultancy firm that was experiencing drastic decline in level of customer satisfaction with its services. Clear guidelines for service improvement were expected to help the case company in enhancing the quality of services deliver to its clients.

This study was conducted through applied action research which consist of a cycle of planning, acting, observing, and reflecting. The research design adopted in this study began with current state analysis, conceptual framework, proposal building, and ended with the validation of the proposal. During the current state analysis, semi-structured interviews were conducted, with the case company's service employees and clients, to find the root cause of the problem with the services.

The findings revealed inadequate guidelines for services development, lack of clarity in roles and responsibilities, and weak client's engagement in the case company's delivery process. Hence, existing knowledge and best practices on value creation, assigning role and responsibilities, service design, process design, process improvement and formalization were explored from literature in finding suitable tools for improving the service development and delivery process in the case company. Subsequently, workshop was held with the stakeholders in building the initial proposal for the improvement. Finally, the proposal was validated through testing and further improvement made.

This study proposes a four-part improvement guideline which consist of a process map, service design checklists for enhancing clients' participation in the development process, RACI matrix for clarifying service personnel's roles and responsibilities, and process formalization documents. The implementation of the proposed guidelines in the case company is expected to commence in first quarter of 2023.

Keywords	Service delivery process, service development process, Process improvement, Value creation, service design, Process formalization.

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1 Introduction

As the global economic growth increases steadily over the past decade, many economies are in the process of transitioning from developing into mature economies. The World Economic Outlook (WEO) forecast 4.4 percent growth in 2022 (IMF, 2022). While many of the economies are becoming matured in various part of the globe, there is undoubtedly major shift from agriculture and raw materials to manufacturing, and ultimately to services. The confirmation of this changes is shown in the service sector becoming the dominant sector as the modern western economies shift from product-driven markets to information-based, service-driven markets (Fitzsimmons James & Fitzsimmons Mona, 2000). The global service market, which was valued at $1,693,364 in 1976, rose to $10814. 49 billion in 2020 and is expected to reach $15683. 84 billion in 2025 at a CAGR of 7% (Research and Markets, 2021). Service contributed 64.79 percent to the global gross domestic product (GDP) in 2019 (Statista, 2022). According to the report published by the World Bank Group (2022), services now account for more than 65.6 percent of the GDP in EU.

The service industry is a broad industry that consist of various organizations and individuals producing values which are usually intangible in nature, such services include legal services, accounting and consulting, customer services, training and development, staffing and recruiting to mention but a few. The organizations and individuals working in this sector concentrate on utilizing their knowledge, expertise, and information in providing the services as well as transforming products for other businesses, firms, and individuals.

Business practitioners believe that the biggest challenges encounter by organizations operating in the service industry are related to management of customer services and service quality. These problems are mainly due to the nature of service and the different perspectives in quality dimensions of the service (Normann, 2000). Tackling these problems requires service operators to have deep understanding of the differences in service management and product management as the traditional approach to managing services are now inadequate when it comes to production and delivering of quality services especially in the consulting businesses.

This thesis discusses the services process and proposes guidelines on how the case company can improve the quality of its service development and delivery process.

1.1 Business Context

The case company of this thesis is a consultancy company established in 2018 and operates in the Finnish Information Technology (IT) sector. The company's head office is located in Helsinki, Finland. The company concentrates on providing IT and other business solutions to other organizations and companies operating in various sectors of the economy. The company's main business areas are in consultancy services, mobile app development, web designing, software design, and digital marketing. The case company's clients include both private and public sector organizations as well as smaller entrepreneurial businesses.

1.2 Business Challenge, Objective, and Outcome

Since its establishment in 2018, the case company has managed to operate successfully within the Finnish Information Technology sector by providing IT services and business solutions to businesses and organizations in various industries. However, in the recent months, the level of customer satisfaction with the case company's services has declined drastically. This decrease in customer satisfaction points to a problem in the case company's operations and has caused the company to lose many of its clients as well as revenue. Failure to address this problem may eventually lead to the collapse of the firm as a business enterprise.

The objective of this thesis is *to develop the guidelines for service improvement in the case company.* An improved service should not only help the case company in achieving its strategic goals but also give the case company competitive edge at the marketplace. The outcome of this thesis is the guidelines for service improvement in the case company.

1.3 Outline of the Thesis

The thesis is divided into seven sections. In Section 1, the context of this thesis is introduced. This is followed by the business challenge, objective, and intended outcome of this study. In Section 2, the research approach adopted for this study is discussed and the research design is highlighted. At the end of the section, the data plan is drawn. In Section 3, the current state analysis of the case company is conducted. It reveals the strengths and weaknesses in the current procedure for delivering services in the case company. In Section 4, the existing knowledge on service process, service design, value

creation, process formalization and improvement are discussed. In addition, special attention is given to the overview of IT consultancy services, as well as the concept of IT services and consulting, ideals on assigning roles and responsibilities, and the concept of continual service improvement. In Section 5, an initial proposal for project development process in the case company is built, based on the findings of the CSA and the conceptual framework. In Section 6, the initial proposal is validated. Additionally, improvement feedbacks from the participants are incorporated into the initial proposal and the final proposal is submitted. In Section 7, discussion on the findings is made and conclusions are drawn.

2 Method and Material

This section of the thesis describes the research approach as well as the research design used for this study. It also describes the research techniques for data collection and analysis used in this study. The section ends with the validity and reliability plan for the thesis.

2.1 Research Approach

Since the quality of research depends, to a large extent, on the suitability of the research method used, choosing the most appropriate research method becomes indispensable (Krishnaswami & Satyaprasad, 2010). Thus, having a deep understanding of various research methodologies, strategies and approaches is a prerequisite for conducting any research project successfully.

Two broad classifications of research can be found, namely, basic research on the one hand, and applied research on the other. Each of these research types has own process in gathering, recording and analysis of data for generating knowledge. Sreejesh et al. (2013) describe basic research as “a focused, systematic study or investigation undertaken to discover new knowledge or interpretations and establish fact or principles in a particular field”. The primary goal for embarking on basic research is to gain and enhance knowledge of specific phenomena by using different methods in assessing, examining, refining, and explaining theory without interest in its practical application. On the other hand, applied research is depicted as a dedicated investigation which is usually undertaken to discover the applications and uses of theories, knowledge, and principles in actual work or in solving problems. The aim of applied research is solving pragmatic problems as well as gaining better understanding of a particular situation (Saunders et al., 2009.) According to Saunders et al. (2009), both forms of research use systematic analysis throughout the research process and follow logical interpretation of evidence in establishing facts as well as proving a theory.

Regarding the research strategy, Action research is a philosophy and strategy of research popular in the field of business and social sciences which combines the idea of conducting research with action and active participation. According to Kemmis and McTaggart (1988, 5) action research is a form of collective, self-reflective inquiry that participants in social situations undertake to improve not only the rationality and justice

of their own social or educational practice, but also the participants' understanding of these practices and the situations in which they carry out these practices. Action research goes beyond taking a mere action in research, it also involves the thinking and how a certain form of thinking informs a particular form of action (McNiff, 2013). Kuula (1999) points out the three characteristics that separates action research is that it is a based-on practices, aim at change through intervention, and the research objects participates actively in the research. Action research does not have its own methodologies, the methods to be used come from the traditional research which consist of qualitative research, quantitative research, or mixed-research approach (Kananen, 2013).

More specifically, this thesis can be categorized as closest to Applied action research since it has a shorter cycle of typically only one cycle, aims at improvement, development or design or a product or services, and strives to archive a change or improvement to the better state of the issue/process at hand (Kananen 2013). There are two main reasons for choosing this approach for this study. First, it provides the most efficient and effective strategies for achieving the purpose of this study. In other words, there is a strong alignment of purpose between this study and Applied action research in terms of change and improvement. Furthermore, the problem introduced in Section 1.2 above is a real-life problem that occurs in a business environment. As such, solving this problem requires not only active participation from the researcher but also collective collaboration from various stakeholders of the case company. The second reason for selecting the Applied action research is because the thesis researcher is an external researcher to the case company. Thus, the Applied action research provides the best means for working alongside and collaborating with stakeholders over a short period of time, for a specific goal. The outcome of the thesis is a working solution aimed at achieving better results than previously. All these features point out the choice of the Applied actions research as the approach for this study.

2.2 Research Design

Figure 1 below shows the research design for this study. It describes the path which the thesis researcher adopted in carrying out the study and provided explanation on the data collection, intermediate outcomes, and stages in the study.

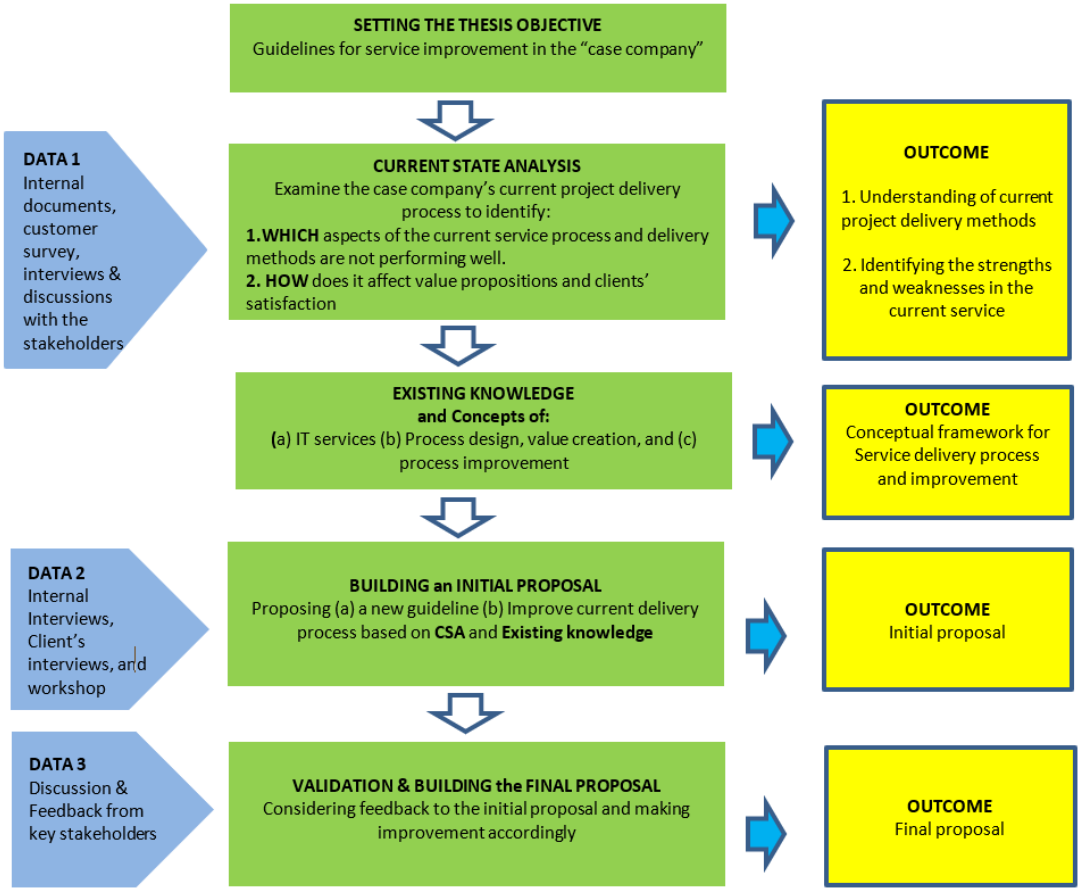


Figure 1. Research design for this thesis.

As shown in Figure 1 above, this study starts with identification of the business problem and setting the objective for this study.

The second step is the current state analysis of the development and delivery process in the case company. The objective is to learn about the current procedures and processes used for developing and delivering services in the case company; this will reveal the strengths and weaknesses in the company's service practices and identify the aspects of the company's service delivery process that needs improvement. The data needed for this analysis are gathered from internal documents, employee interviews, as well as client interviews.

The third step is the conceptual framework where the relevant data are gathered regarding service design, service process, value creation, ideas on role and responsibilities sharing, process improvement and process formalization in the service industry. The

objective is to explore the available knowledge and best practice in the IT service industry.

The fourth step of the thesis is to build the guidelines for improving the service. The initial proposal is drafted based on the outcomes of the CSA and the literature suggestions.

The final part of this thesis is the validation and building of the final proposal. This is accomplished by conducting a test of the initial proposal, incorporating the feedback and recommendations to the initial proposal, and making improvement thereafter.

2.3 Data collection plan

The data for this study was collected in three phases. Table 1 below shows the summary of the data collection rounds.

Table 1. Summary of three rounds of data collection.

	Content	Source	Outcome
Data1 Current state Analysis	• Interviews • Internal documents • surveys	• Management interviews • Customer's interview	Summary of the strengths, weaknesses and areas needing improvement in the current project delivery process
Data 2 Initial proposal	Process formalization and improvement, service design, sharing roles and responsibilities	• Stakeholder meetings • workshop	Initial proposal for developing and improving project delivery process
Data 3 Validation	Improve proposal based on the test results and feedbacks	Stakeholder meetings	Final proposal

As shown in Table 1, data for this study were gathered in three data collections rounds. Data 1 was collected during the current state analysis. This included examination of the case company's internal documents and processes, interviews with the case company's personnel and clients. Data 2 was gathered during the building of the initial proposal. Data 3 was collected during the validation and building of the final proposal. Table 2 below give details of Data collection 1.

Table 2. Details of Data collection 1

	Participant	Data collection type	Content	Outcome	Date and duration	Documentation
1	CEO / Lead Consultant (Case Company)	Interview	Discussion on the current processes followed when services are delivered by the case company	Strength & weaknesses in the service process	06.07.2022: 1 hour 10 minutes	Field notes and audio recording (appendix)
2	Lead developer (Case Company)	Interview	Discussion on current service procedures, processes	Strength & weaknesses in the service process	11.07.2022: 45 minutes	Field notes, audio
3	Project team head (Case Company)	Interview	Discussion on current service process and procedures	Strength & weaknesses in the service process	22.07.2022 1.3 hr	Field notes, audio
4	Partner / External developer	Interview	Discussion on working atmosphere, work coordination and team cooperation	Strength & weaknesses in the service process	12.08.2022 30 minutes	Field notes, audio
5	Project manager (case company)	Interview	Discussion on current processes	Strengths & weaknesses in the service delivered	11.08.2022 75 min	Audio, field notes (appendix)
6	Project Manager (Client 1)	Interview	Discussion on service quality, processes	Strengths & weaknesses in the service delivered	11.08.2022: 1 hour	Survey, phone recording (appendix)
7	Service team Lead (Client 2)	Interview	Discussion on service quality, processes	Strengths & weaknesses in the overall service delivered	18.08.2022: 1.2 hr	Survey, field notes, audio (Appendix)
8	Project manager (Client 3)	Interview	Discussion on service quality, processes	Strengths & weaknesses in the overall service delivered	12.08.2022 40 min	Survey, Audio recording (Appendix)

As shown in Table 2 above, Data 1 included semi-structured interviews with the key stakeholders who are responsible for creating, managing, and delivering services in the case company. Additionally, questionnaires were sent to key individuals from the clients' organization prior to the scheduled date of the interview with the clients. Furthermore, the thesis researcher analyzed the internal documents related to the service processes used in the case company. The collected data was analyzed to reflect the strengths and weaknesses in the case company's services offerings as well as in the service delivery processes.

Thus, interviews made the primary method of data collection. The interviews were semi-structured, held one-on-one with the key participants who are directly involved with the services in the case company and the ones from the client's organization. During the interviews with the case company's staff, necessary adjustments were made to the interview questions as the need to get a broader view on the problem became obvious. Consequently, the interview content expanded from questions only concentrating on how services were carried out in the case company to a broader context about the whole operations of the company. The same interview procedures were followed during the customer interviews. The interview recordings were transcribed into readable format. The interviews were held by the thesis researcher who is primarily an external participant to the case company but aided in managing some of the projects in the case company.

During Data 1 collection, the focus of the interviews emerged to concentrate on three key themes: service design, team communication and service coordination. Based on the research, these three areas were the key areas that came up when investigating service failure. However, as mentioned previously, during the actual interview the discussion also shifted outside of those themes. This was necessary for unveiling more details into the actual root causes of problem. In addition to the staff interviews, customer interviews were also conducted, and the focus was primarily on service quality.

Thus, qualitative techniques were used throughout Data collection 1, except for the customer survey that was sent to the customers prior to the customers' interview. A SERVQUAL survey was conducted to get an idea about the customer satisfaction levels with the case company's services. In addition, documents relating to existing service processes in the case company were examined. The insights from these data were used for formulating the results from the current state analysis.

The Data 2 included a workshop organized for building the initial proposal for this research. Table 3 below shows the details of the second round of Data collection.

Table 3. Details of Data collection 2 (Initial Proposal)

	Participant	Content	Data collection methods	Outcome	Documentation	Date
1	Team Lead	Process formalization and improvement, service design, sharing roles and responsibilities	workshop	Initial proposal for developing and improving project SW delivery process	Audio recording/ field notes	01.11.2022
2	External Developer					
3	Project manager					
4	Analyst					

As shown in the Table 3 above, the Data 2 collection for this thesis was aimed at building the initial proposal for this study. Thus, key stakeholders in the case company participated in the workshop. The goal was to address the key problems identified during the CSA. Various ideas on service design, value creation, process improvement and formalization were explored in building the initial proposal.

The third Data collection round was for validating the initial proposal. The Table 4 below shows more details of the Data 3.

Table 4. Details of Data collection 3 (the final proposal)

	Participant	Content	Data collection methods	Outcome	documentation	Date
1	Team Lead	Validating delivery process in the case company	Testing, Meeting, feedback	Final proposal for improving SW development process in the case company	Audio recording/ field notes	18.11.2022
2	CEO/Lead dev					
3	Project manager					
4	Analyst					

As shown in the Table 4 above, the purpose of the third round of data collection was to validate the initial proposal for this thesis. The CEO and other three key member of the case company participated in this round of data collection. The meeting for this validation round took place after the testing of the initial proposal was conducted. The participants

made suggestions for improvements on the initial proposal having considered the test results.

2.4 Thesis validity and reliability plan

No reliable and valid research can be completed without having any form of criteria to judge its quality (Seale et al., 2004). In this regard, Denzin & Lincoln (2017) propose credibility, transferability, and dependability, and authenticity as the main competency criteria for evaluating the quality of research work.

With *credibility,* the goal is to make sure that the researcher carefully considers and ensures that the way the research is constructed and represented really match the initial intent (Sunders et al., 2016). This is addressed by the researcher getting deeply involved with the research topic, selecting the relevant research methods and tools, and collecting sufficient data. In this study, the research approach adopted was action research which improves credibility by involving others in the analysis and co-creating solutions, as well as involving relevant existing knowledge into the development, so that the research and solutions have solid ground both in the real situation and in the existing knowledge base. Additionally, triangulation was applied in data collection, as well as in research methods used in this study.

As for *dependability,* it is often used in describing the consistency of the research result that has been obtained (Kananen 2013). Usually, when conducting research there is a tendency to focus on the research changes as the research process proceed. Under such circumstance, the concept of dependability emphasizes the importance of documenting each of the changes so that a reliable and dependable account of the emerging research focus is produced in such a manner that may be understood and evaluated by others (Sunders et al., 2016). Dependability of this study was ensured by taking the following steps: clarity in explanation when setting the objectives, procedures, and findings of this study. Additionally, the text in this study has been explained in a straightforward manner using simple terms that is easy for the audience to understand and the use of complicated, ambiguous terms, and unnecessary technical jargons is avoided.

Transferability means that the study and its results can be replicated by others, and they would bring approximately the same results if carried out in a described manner and under similar circumstances. To address this, the researcher needs to elucidate and document the research questions, research design, the processes and tools used in the

study, its context, findings, and interpretations so that the reader and other researchers can have the opportunity to judge the transferability of the study to another setting and replicate it (Sunders et al., 2016). In this study, the researcher addressed transferability by ensuring detailed reporting of the research procedures and findings as well as the interpretations of results. Additionally, each of the methods adopted in this study were documented so that they can be used for gaining similar results in similar settings.

Authenticity is often discussed in relation to fairness in representing all views and concerns pertaining to the research. Despite its importance, it remains one of the quality criteria that is mostly overlooked. In this study, the issue of authenticity was addressed by employing multiple data sources and gathering data at several points in time. Lastly, the raw data in the form of filed notes were made available for review by the participants for gaining their approval after the data collection, and thus increasing the authenticity of the developments and conclusions.

3 Current State Analysis of the Case Company's Core Process

This section discusses the current state of the project delivery process for various SW services projects in the case company. The purpose is to identify the root cause of problems in the current project delivery process. The section is divided into three parts. The first part describes the current state analysis procedure. The second part describes the services frameworks, procedures, processes, and sub-processes currently followed in the case company. The third part discusses the strengths and weaknesses found in the current project delivery process in the case company.

3.1 Overview of the CSA Stage

The data for the current state analysis (referred to as Data 1 in Section 2.3) was collected through discussions and meetings with four staff members of the case company, one of the case company's partners (freelance developer), three clients of the case company, and analysis of the internal documents related to the procedure used in delivering services by the case company. The current state analysis was conducted in the following steps.

First, prior to the stakeholder interviews, the internal documents, guidelines, and processes of the case company were examined so that the thesis researcher have a better understanding of the case company's business operations and formulate the right questions for the interviews. Specifically, this scrutiny included the SLAs process, service portfolio, service level templates, archived scope of work documents, service evaluation reports, service level reports (SLRs), supplier service level reports, archived on customer complaints, and operational systems.

Second, the interviews with the company's stakeholders were held. The goal was to find out how the company operates as well as the processes the staff members follow in carrying out their work. During the staff interviews, three main themes emerged which pointed out to the root cause of current problems: service development, communication, and service coordination. Other topics related to how the case company' staff create and co-create value with the clients, handle feedbacks from the clients especially during the development process, collaborating and working with other team members, following the company's work policies as well as understanding their individual role and responsibilities within the work environment. These discussions revealed the weaknesses and

strengths in the current practices of service creation and delivery in the case company's operation.

Third, 15 service-quality (SERVQUAL) surveys were sent to the case company' clients before the client interviews were conducted. Only 12 responses were returned out of the 15 sent out to the clients. The response rate constitutes 83.33% of the total population. The purpose of the survey was to find out the level of the clients' satisfaction with the case company's services. The results provided insights on what the customers think about the case company's service prior to the customer interview and to dig deeper during the interview. The survey covered the important service attributes such as responsiveness and quality assurance, reliability, empathy, resources, and company image. The survey was followed by three client interviews to obtain an accurate picture of the case company's business practice regarding their services offering as well as the delivery process. The clients' interview mainly focused on the quality of case company's service offering from the customer point of view, and whether it met the customers' needs and expectations.

Fourth, the key findings were identified into the strengths and weaknesses in the current development process. This provided a view into the challenges the case company is facing.

3.2 Overview of the Case Company

The case company is a small consultancy firm operating in the IT sector. The company was established in 2018 and is located in Helsinki, Finland. The company offer IT and other business solutions to small and medium scale companies as well as private clients.

The company offers IT related and advisory consulting services in the area of web design and development, mobile app development, custom software design, web hosting, and digital marketing. The company has approximately seven regular employees as well as part-time workers who work on project basis. The company's partner are contractors who are mainly freelancers working alongside the case company's staffs in developing and creating IT solutions for the clients. The inputs provided by the partners varies from one project to another. For instance, in software development projects, the partners provide support to the development team regarding software coding and shift-left testing. In mobile app developments, they may provide support in developing UI, backend, API etc.

The case company's main customers are small and medium size enterprises (SMEs) operating in various sectors in the Finnish economy. They consist of startups, facility maintenance firms, travel agencies, event management firms, retail outlets, transportation companies among others. These customers are in need of expert advice and solutions for avoiding business hassles and reduce costs by implementing IT solutions in their business operations. The case company fulfills those needs by leveraging its IT expertise in providing solutions to help the customers in achieving not only their long-term goal but also providing assistance on the right technology the client needs to acquire in achieving those goals. The clients find the case company by going to its website or visiting their office in Helsinki.

3.3 Description of the Current Project Delivery Process in the Case Company

The case company adopts a projectized organization structures. As such the company develop and delivers various Software projects (including webpages with web services) to their clients on a project basis. The company have both single vendor as well as multi-vendor IT projects running concomitantly.

As shown in Figure 2 below, there are three main actors recognized in the company's project delivery process. These actors, to a large extent, influence service process which the case company follows in solving business problems and creating solutions for its clients. These actors consist of the clients, the case company, and its partner. Each one of these key actors performs importance task in every phase of the project delivery process in the company. Figure 2 below illustrates a typical procedure currently follow in delivering IT service with a single vendor project in the case company.

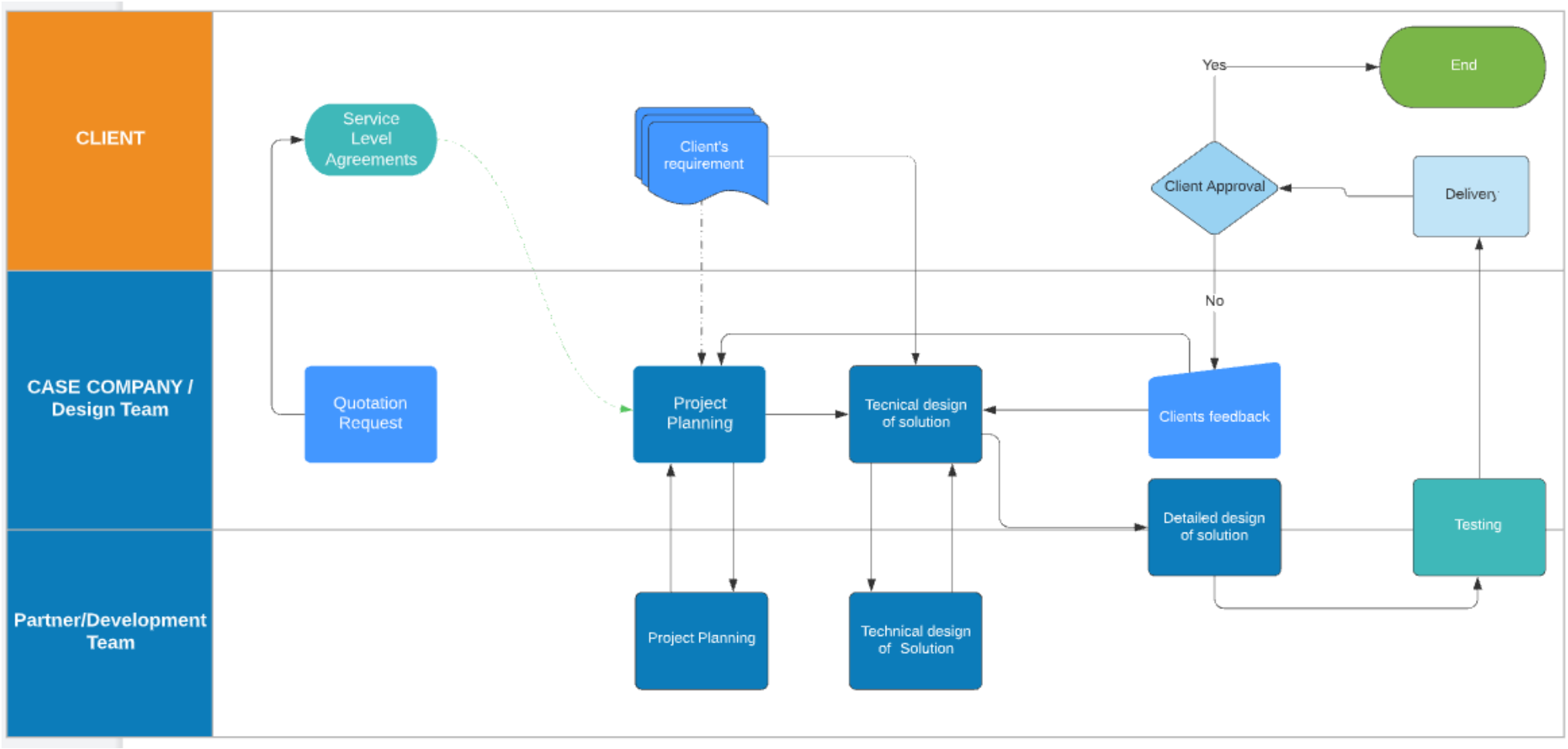


Figure 2. Case company's current project delivery process.

As shown in Figure 2 above, the request for quotation from the client is the event that triggered the project delivery process in the case company. Afterward, the client and the case company both sign the service level agreements which stipulates the terms and condition of the service contract. This phase is where the scope of work to be performed is agreed on. At this point, the case company's responsibilities, client responsibilities, and the performance metrics for the services are clearly defined among many other things.

Subsequently, the case company proceeds to the project planning phase in which consideration is giving to the client requirements and the SLAs throughout the planning activities. The company basically uses Gantt chart for the project planning. The project planning in the company is usually done by the design team in conjunction with the development team that contributes expertise on technical development of the solutions. The case company has the in-house development team as well as the design team. However, depending on the type of problem that needs to be solved, the company also works with external partners, freelance developers, and other IT specialists.

The process continues to the Technical Design of the solution. This is the stage where the Technical Design Document (TDD) is created by the development team, usually with the support from the design team. Depending on the project, for instance in a software development project, the development team focuses on how the functionality of the program will be applied in code.

The next stage in the project delivery process is the Detailed design of the solution. This is where solutions are further developed and improved by the company´s development team with the assist from the design team. The case company follows iterative approach in this phase. The goal here is to complete the specification for the solutions as well as the sub-element of the services. To improve productivity at this phase of the project delivery process, the company incorporate Kanban method in monitoring the progress of the project and simultaneously measures the cycle and lead time of the projects. Additionally, the system uses the control charts, throughput as key metrics in supporting the development team. The goal is to gather as much as possible information. Thus, the more the information that is available at this stage, the better the decisions the team makes regarding the performance and reliability of the solution being made.

The next phase is the Testing of the solution. The case company's partner and the development team are the main participants in this stage. The team evaluates and verifies the solution to see if it really works the way it supposed to work. The team carries out different types of testing at this stage. In custom software development, the team does the acceptance testing, reliability testing, usability testing, and stress testing to mention but a few.

The final phase of the case company´s project delivery process is the Delivery of the solution. This is where the solution is delivered to the client in accordance with the Service Level Agreements.

Having described the current project delivery process (as it is) in the case company, the next sub-section focusses on examining the processes in order to uncover the root causes of the problem in the delivery process.

3.4 Analysis of the Current Project Delivery Process

The current project delivery process is analyzed by going through the step-by-step process of the example of recent consulting and web development project (SW services project) undertaken by the case company. This project was to provide advisory service as well as develop a reliable and user-friendly website for a start-up technology company that specialize in refurbishment and sales of phones. The paragraphs below highlight the key phases in the case company's IT project delivery process on this specific business case.

The **"Request for Quotation"** was the first steps that triggers the project delivery process for this case**.** As the client company's CTO make a quotation request to the case company for their services. The client knew about the case company through a referral. The case company's CEO compiles the quotation stating the cost of the services, the scope of services, as well as the estimated time for the delivery of the services and sent it to the client organization. As pointed out by one of the interviewees [Data 1, Interview 6]:

> *"When we are contemplating on which direction to take for implementing IT in scaling our business, we requested for their (referring to the case organization) expertise in developing and lunching our website".*

When asked a question about how they got to know the case company, the same interviewee replied: "*We heard about them (case company) through one of our suppliers".*

This CSA revealed the mixture of different roles and responsibilities in the case company. The role of the CEO is combined with Lead Consultant since the case company is a small company and overlapping tasks existed between both. Thus, response to **RFQ** and pricing go through the case company's CEO who is also responsible for negotiating fees and rates in line with the company's policy. So far, the response time to RFQs and pricing enquiries has been fast, despite the company not having uniformed pricing for its services which is understandable because of the customization of its services offerings. This phase of the project delivery process has gone smoothly and there has not been complaint on incomplete RFQ (at least from the customers side) [Data 1, Interview 1].

> *"We have our own pricing policy which we follow for client proposals. We try to respond to every request for quotation within three business working days"* (Data 1, interview 1).

The next step was **"Service Level Agreements".** The case organization compiled the agreement ensuring that all necessary terms and clauses regarding the service offerings are included. The SLA set the terms and conditions under which the case company provided the advisory and development service to this client. The key points discussed in the agreement were the services description, services level goals as well as the role and responsibilities of the contractual parties (in this case, only the client and the case company). More specifically, the case company's responsibility as the service provider, the clients' responsibilities, the scope of the services, the quality standard, the performance metrics (response time, resolution time), and how disagreements with the contract were to be resolved (penalties and exclusions). The CEO of the case company was the one who had meetings to negotiate on these terms with the client. The agreement was signed by both companies [Data 1, Interview 1]. The CEO signed on behalf of the case company therefore is responsible for any gap in the SLA. In this regard, the customer agreement portfolio in the case company were inspected and it reveals that SLAs in the case company are different from one project to another. This is because most of the company's projects are custom projects and the clients' requirements varies. In addition, during the staff interview, the question concerning whether the case company have a unified SLAs with every single client came up. The interviewee responded:

> *"No, we don't have a unified SLAs with all our clients. Our clients' needs and requirement determines the type of service we offer as well as our agreement with them (referring to the client) I take care of the contracts and agreements with the clients, there are many things I consider before signing these agreements. In this field, every detail matters in ensuring that we are on the same page with the client. I read though our agreement rigorously and I recommend our clients to do the same, so that we can both eliminate the possibilities of disagreement in the future" [Data 1, interview 1].*

So far, there were no problems in this part of the case company's project delivery process which can be directly or indirectly attributed to wrong clauses or any other inconsistency in the contracts. Therefore, it is safe to conclude that the structuring of this aspect of the project delivery process works as it should.

The next step was "**Planning phase".** This planning phase came as a follow up to series of meetings held by the case company's project manager with the client which were dedicated for identifying the problem areas in the client's organization and ascertaining the client's business requirements. As stated by the interviewee [Data 1, interview 2]:

> *"We had a couple of meetings with them (referring to the client). The goal of those meetings was to understand their business operations, identify their business challenges and see how we can deliver values to them in solving those challenges".*

The planning was overseen by the project manager with the support of the team lead. This phase was planned based on the outcome of the results in the discovery phase of the project. It is also worth mentioning here that the client for this specific project already had a business need and the request was for web development and IT advisory only. So, this planning mainly focused on delivering web development project as agreed in the SLA. Therefore, the scope of the SW project was confined to web designing, developing, testing and delivery.

The project was scheduled to be completed in six weeks, which was also in line with the client's need and the terms of reference (TOR). The human and material resources for the project were estimated, milestones were established, and deliverables were defined.

During one of the interviews, the questions on planning of the project came up, and the interviewee responded:

> *"We use different tools in breaking down projects into different executable stages. Right now, we are using Accelo in managing service operation and keeping the project scope under control" [Data 1, Interview 3].*

The project manager monitored the progress of the project, gathered information, and coordination with the client organization. The project manager also oversaw the assigning of roles and responsibilities for the team [Data 1, Interview 2]. While the project main activities were broken down in the WBS, roles were not strictly assigned to individual team members.

> *"We didn't assign roles for our team because we are running several projects at the same time, and it is difficult to know who will be available when planning the project. We rely on Kanban methods in developing most of our projects: it is efficient way because each member of the team can see the status of the project's activities in real time and the whole team knows which aspect of the project has been completed so far. So, the next person to continue with the rest knows exactly what the previous person has done and where to continue" [Data 1, Interview 5].*

There were two main shortcomings with the structuring of this phase of the project. First is the issue of unclear roles and responsibilities within the teams. This same issue was noted in some of the other projects embarked by the case organization whereby tasks were not properly assigned to individual personnel from the beginning; however, at that time, questions regarding who is to do what were but vaguely addressed.

In this specific project, there was also a challenge with the choice of agile methodology. While the choice of Kanban web development technology was efficient in workflow visualization [Data1, Interview 3], however, this methodology was insufficient for the implementation of the plans regarding details of the task to be done and the personnel responsible for doing it. As the project went on, the need to combine this methodology with other web development methodologies that focuses more on incorporating customer recommendations and users' feedback became more obvious [Data1, Interview 2]. These

inefficiencies limited the amount of input, especially from the development team, which resulted in the teams working almost in silos.

Secondly, the structuring of this phase of the project delivery process limited the information sharing and cooperation from different teams. Specifically, access to vital information was withheld from certain participants in the project which is not supposed to be if more people are involved in the planning. While the planning teams have access to the service level targets and other vital documents, the same thing cannot be said by the testing teams. According to one of the interviewees (Data 1, Interview 4):

> *"The thing here is that I was not involve in the planning phase of the project from the beginning. I was only contacted for the backend development and testing, the frontend design has been done already by the other team, so I wasn't aware of the other phases. Moreover, documents on SLAs are not shared with us (referring to the external developers)".*

These findings also coincided with the other staff interviews whereby the respondents agreed that information sharing could have been better in the case company [Data 1, Interview 1, 2, 3]. The structure of this planning phase also undermines the larger part of the problem discovery of the projects where the case company as the service provider co-operate with the client in investigating the source of the client's business problem. This set-up has resulted in lack of deep analysis in finding critical business problems and needs of the client organization. While the project manager was the main communication link between the case company and the client's organization, many of the team members working on the solutions have limited access to the client's organizations as well as their staffs. This has serious implications on "the problem diagnosing/finding" which is one of the most important activities in any solution development, and it was reflected by the ratings of the client survey regarding reliability of the case company in solving client's problem which score an "average of 2" (Appendix 1).

The next step was "**The Technical design**". The technical design and content creation for this project was overseen by the case company's design team lead. The team also participated in creating the sketching of the sitemap, the wireframe as well as selecting the framework, methodology and the programing language to use for the project.

The design team also collaborated in carrying out the initial web structuring and decided on the direction to follow for the visual layout of the project. The lead developer was responsible for arranging meetings and cooperating with the client in deciding which visual language to adopt for the web as well as addressing the wide range of questions concerning the end-users [Data 1, Interview 3].

The findings showed that there were no formalized project delivery procedures in the case company. Guidelines on steps and actions the personnel, responsible for designing the services, need to follow during SW services project delivery are not explicitly and clearly stated. Therefore, this stage became confusing to implement, especially to new staffs that are not yet conversant with the way the case company operates. Notwithstanding, this phase of the project was handled with utmost professionalism since the company´s design team and the partner's development team have technical and technological experience in the IT sector. However, the shortcoming with the way this stage was set up resulted in the minimal participation from the clients. Meaning that, it did not give room for a good level of cooperation with the client despite the case company's service culture claimed to be customer oriented. Although it can be argued that the client in this case project had little to no experiences on IT and web development, it is obvious that the client was not well carried along with the progress of the project and the client's views and feedback were not properly considered in the solution. In particular, the interactive prototypes for this web project were built during the Design phase. However, the design specification was not shared with the client before the case company proceeded with the detailed design [Data 1, Interview 7]. This point is also buttressed by the result of the client surveys regarding the "*Provision of exact service*" which scored an average of two, despite the same survey being rated a high score of four in terms of *"Sufficient resources regarding employee's service knowledge"* (Appendix 1). This gap in the ratings also proved the discrepancy between the "problem discovery" of the solution design which is solely dedicated to finding the source of problem or client's business needs and the actual development of the solution in solving those needs. This fact is proven by client complaint log on for this project:

> *"There were reported lapses in the visual consistency of the design, although the UI meet the interface required by the client, however the visual design is inconsistence with the information architecture used. In addition, from the incident report, there were also records of slow responsiveness of the web after it was lunched."*

The next step was **"Detailed design phase".** The development team handled this phase of the project. Both frontend and backend developers worked in refining the design specification of the project. The work was carried out according to the design made in the technical phase as well as in the planning phase of the project. The structural elements including the articles, menu items, summary and main sections were developed. In addition, key elements relating with the forms including data lists, keygen, and outputs were also checked. The development team also decided the input types relating with the colour, date, and list before adding the graphic elements consisting mainly of the canvas and svg. To further improve the appeal of the web to the ended user, the team added media elements consisting of audio, embed, source track and video. At the end, the syntaxes were checked, and semantics corrections were made to the errors and bugs. The codes were finally validated by the team.

Despite the level of professionalism and thoughtfulness shown by the team in finalizing this phase of the project delivery process, there were still some concerns. Among the point made by the customer was that the web navigation disappeared once the user scrolled down from the landing page. But the customer preferred it to stay all the time. Secondly, the client pointed out the need for removal of text in some of the motion graphics of the web. Lastly, the client complained that the customer stories were too long on the sites. However, the feedbacks from the client have not been properly implemented in the final solution [Data1, Interview 7].

Thus, there were some noticeable drawbacks to the structuring of this phase of the project delivery process. As noted in the technical design phase, this phase is also affected by the lack of formalized guidelines for service design and project development. Important instructions relating to the service design to adopt, the methods and procedure to use in delivering projects are not formalized. In addition, there were no concrete policies in the company that is dedicated to formalization of the project delivery processes. Another major problem at this phase was the low level of co-ordination within the teams, specifically between the design teams and the development team. The developers needed to take more active role in the project planning phase, specifically at the problem discovery and defining phase where the business needs of the clients were analysed, and solution was designed. This problem could also be attributed to inadequate of human resources in the case company. Since many of the company's personnel are overwhelmed with tasks on several projects running concurrently in the case company thereby making it impossible to devote necessary attention on a single project.

The next step was **"Testing phase".** Both manual as well as automated testing of the website was carried out by external UI specialists. This partner was selected the base on expertise in web testing and coding. The primary focus of the test was on the functionality of all elements of the web as well as its compatibility with mobile. Feedbacks from conducting the testing were delivered to the project manager and necessary corrections were made to fix errors and bugs found.

The CSA reveals that the reason for delegating the testing to external partner was that the internal developers were preoccupied with other projects and this project was almost overdue for delivery.

> *"At that point, we were running out of time on the project schedule, so the only alternative we had was to give the testing to our partner…...that was not the only reason for selecting this partner, we have been doing business together for a while now and we are satisfied with their work" [Data1, Interview 5].*

As far as this phase of the project delivery process is concerned, the actual problem was not in the structuring. Having external partner to carry out some of the required activities in this phase did not have negative effect on the project delivery process. The problem arises only when the external partners were not properly informed or giving access to vital information in relation to the whole project [Data 1, Interview 4].

"**Delivery phase"** was the last phase of the project delivery process regarding this project. The business solution was delivered as agreed in the SLA (although it took a week longer than the initial plan). A quick online session was held by the teams for reviewing the completed work before the project was lunched. The project manager also had meeting with the client in reviewing the website, while the client gave feedbacks on the entire projects (including their views on the advisory services). It is important to note here that the client's complaint in the complaint log concerning the slow responsiveness of the website came after this review, so it was not included in the feedbacks at this point. The feedback was shared with the teams on this project. As the interviewee responded on questions regarding the current service process in the case company:

> *"That (referring to the delivery phase) is the last but not the least in our current process. I said this because, it is the point where we sign off the project.*

> *I personally think it is one of the most important phases in any services delivery. In many of the projects that we do, we usually meet with our clients in delivering the projects. This meeting is not just for us to hand over the solution to them but also for us to get feedbacks from them (the customers). Sometimes, this is when the customers decide if they want additional service from us" [Data 1, Interview 1].*

When the question came up whether the case company have a standardized delivery method for all its projects services. The interviewee replied:

> *"No, we don't have a standard delivery method. The delivery takes different forms, for example, when we have multivendor projects, we have to co-ordinate with other vendors in the final delivery. But that is not something we do all the time"* [Data 1, Interview 5].

The delivery phase of the project delivery process did have some noticeable flaws. Even though the case company collets client feedbacks on the projects at this phase, no provisions were in place for analysing those feedbacks and utilizing the experiences gathered in similar future projects. This issue could be attributed to failure in assigning the roles and responsibilities regarding the work to be done or having a person in the case company who is responsible for this task. In addition, the client survey rated an average of two regarding "adequate capacity" also reaffirms this problem.

3.5 Key Findings of CSA: Strengths and Weaknesses

The output of the analysis revealed some of the strengths and weaknesses in the current project delivery process in the case company.

First, the main noticeable strength in the delivery process currently follow in the case company, is the knowledge and expertise of the personnel who are responsible for creating, developing, and delivering solutions to the clients. The CSA findings shows that the personnel working in the case company have vast amount of knowledge regarding the latest developments in the IT field and deals professionally with the clients. This has been demonstrated in the technical design of the projects as well as the entire services offerings of the case company. The way the company handles the technicality of the solutions offered to clients is commendable. Furthermore, the case company's personnel

show professionalism regarding friendliness in dealing with the clients. As one of the interviewees said.

> *"They (referring to the case company) are professionals, I rate their technical knowledge and expertise high. Couple of months ago, we are having challenges in building the right IT infrastructure to complement our company's strategy. As start-up, you know…… it was one of our biggest challenges, so we requested for their service, and their services team guided us through the process of developing the roadmap and implementing IT technology in our operations" (Data 1, interview 6).*

Second, another strength in the current procedure in the case company is that the company incorporates Kanban system in the project delivery process. The utilization of this agile system (Kanban) has brought some form of improvement to the management of workflow within their team. The CSA revelations confirms that there have been several distinct business projects running simultaneously by the case company which consequently added a little bit of strain on the company's structure/systems (with consideration to the limited human and material resources available at the disposal of the company). In specific, this impact is noticeable in organization of workflow in the company, as the priorities changes quickly from one project to another. However, incorporating the Kanban into the project delivery process has provided flexibility and helped the company in managing the teamwork, at least to some extent. Although the CSA results also shows that there is still need for improvement in the adoption of the system as well as incorporating it with other agile methods that support better cooperation with the clients'

> *"Yes, we are using different tools in managing the workflows of our projects. Kanban is one of them. As you must have noticed, we are small team, keeping up with many of these projects will be impossible without having tools like Kanban to monitor their progress" (Data1, Interview 3).*

Third, another strength is the use of Accelo for managing customer communication. The case company uses Accelo in combining and integrating all the client's data with the work to be done and the team responsible for doing it in a single platform which is easily accessible in real-time. This enables streamline of operations (including finance and administrative processes) and focuses on maintaining high relationship with the clients.

Although there is there is need to encourage more use of this in the company. [Data 1, interview1]:

> *"It is something that we introduce recently in our operations. We have been using numerous programs here and there in managing our operations. Now, bringing everything under the same umbrella will not only make our processes faster but also saves us time and cost in the long run. Accello is one of the best CRM tools, we now use it for almost anything…. We use it for automatic tracking of time on meetings with the clients…. with it we are able to keep insight on overall time we spent on every project. The automatic sync function on the software also enables us to keep track of email communication with our clients".*

Having highlighted the strengths found in the case company project delivery process for various SW projects. The following paragraphs highlights the main weaknesses found.

First, one of the weaknesses with the current project delivery process in the case company is that there are no formalized guidelines which is specifically assigned to the Service designing and project development process. The instructions on how the services are to be created, developed, and delivered to the customers are not clear in the case organization: specifically, when it comes to the Technical Design and Detailed Design phase of the delivery process, the design guidelines and instructions are not available to the service personnel in the case company: consequently, there were no clear directions either on the service design methods to adopt, design processes to follow, or the design tools to use in service development process. Although, the case company claims to have structure in place for designing SW services, the reality is that (1) its project delivery process (shown in Figure 2) currently used in the company is generally broad and depicts the starting and the end of the process but failed to clearly detail how, when and by whom each step of activities needed to be done in order to achieve the desired outcome. The challenges relate especially to (2) SW services projects and to (3) the Service design stage of such SW services projects.

Additionally, the company´s project delivery process is loosely documented. This poses problem in accurately measuring the SW development progress as well as using the previous project and service knowledge for future developments and improvements. As a result of this, there are no systems in place for the case company to use in continually

improving neither its SW service design stage nor its SW services development process. This has negatively impacted the company's ability in effectively and efficiently adapting to the changes in market demand.

Second, there is weak connection between the company´s design team and the partner´s development team, or a third-party partner. Currently, the case company collaborate with partners such as freelance developers in providing solution to some of its projects. However, in many cases, the partners are not fully integrated into the whole SW project delivery processes. Particularly in the early phase of designing solutions where clients' businesses are analyzed, and problems are identified. Thus, this has resulted in slight disconnection between the actual problem identified from the onset and the solution developed by the case company. Based on the analysis results, co-operation between the case company´s personnel and the clients are weak in the current delivery process, and it is right to conclude that this lapse is one of the main causes of low service quality.

Third, the information/documentation flow and roles & responsibility sharing are not clear to all stakeholders involved in the project delivery process. For instance, during the CSA, the findings shows that the SLAs are not made available to every personnel involved in the project development process. Consequently, not all stakeholders involved in the project development and delivery process have common understanding of the service requirements. This often happen to the external partners of the case company. The CSA findings also shows that there is unclear roles and responsibilities sharing for some of the important tasks which has made it difficult to properly implemented customers feedbacks.

Furthermore, there is minimum involvement of the customer in the development of the solution, even though the company provides custom solutions for the client. On paper, the project delivery process clearly depicts the clients input in the solution process. However, there have been many cases where the customers have not been fully informed and giving the opportunity to participate in the project development process as it should be. This issue has undermined the "problem identification" which is crucial for developing quality solution and meeting the client's real business needs. In addition, the overall delivery experience has not been managed well even though the company use Accelo in keeping track of the customers feedback, the implementation of those feedbacks into the design solutions has been poorly handled.

Fifth, the case company's personnel focus more on the technical aspects of developing solutions while paying less attention to the other important elements of the services which includes the needs and expectations of the end-users. The CSA shows that the user-centric aspect of the SW services delivery process is very low at the moment and needs urgent improvement. Services/solutions should be made with the clients and not just for the clients. The response from one of the company's clients buttress this point.

> *"The website they (the case company) built for us was okay in terms reliability but many of our customers have a hard time navigating through it, because it was too complicated to use. Don't forget that we are facility maintenance company, and many of our customers are not tech savvy…….they have less experience in using the internet and developing a website with such a complicated UI didn't work" (data 1, interview 7).*

In conclusion, these weaknesses highlighted above have led to poor quality of services and decline in customers satisfaction with the company's service offerings. While the case company claimed to have a clear service delivery process on paper, the fact is that the delivery process is too broad to be used in efficiently and effectively developing quality SW development projects. Furthermore, the processes have not been properly documented for each project, this in turn has made it difficult for the company in reflecting on the projects and using the knowledge and experience gathered from the previous project as learning for similar projects in the future. Furthermore, this poor implementation of the project delivery process has resulted in not keeping track of every step followed in the project delivery process and has undermined effective collaboration with the clients as well as blocked any future improvement to the process. Table 5 below shows the summary of the CSA findings.

Table 5. Summary of the key findings in the case company current project delivery process

Strengths	Weaknesses
1. Personnel with high technical and technological expertise. 2. Incorporating Kanban in the IT services delivery process. 3. Managing customer communication with Accelo	1. Lack of adequate guidelines/formalized Project Delivery Process 2. Disconnection between the teams 3. No clarity in roles and responsibilities among the personnel 4. Weak client's involvement and engagement in the project delivery Process 5. Lack of customer focus; too much focus on technical implementation

As shown in Table 5 above, the case company has a significant number of weaknesses in its project delivery process. To address these problems, best practices and existing knowledge in value co-creation and service process improvements were explored in this study. The following focus areas were selected for improvement:

1. Developing, improving, and formalizing the Project Delivery Process

2. Enhancing client's involvement and engagement in the Project Delivery Process

3. Clarifying the roles and responsibilities in the Project Delivery Process.

The focus areas above were selected for improvement because of their importance to the core process of the case company as well as the smooth operation of the company. Thus, this selection is based on result of the findings of the CSA. In addition, this selection enables diving deep into existing knowledge and practices on process improvement and value co-creation process in service organizations which in turns provide a trickle-down effect that address most of the other problem found in the case company's processes. Finally, the primary aim is to formulate strong conceptual foundation that could help to addresses the core weaknesses found in the case company's services.

Having clarified the rationale behind these choices, the next section focuses on best practices and existing knowledge on process improvement and value creation.

4 Existing Knowledge and Best Practice on Process Improvement in IT Consultancy

This section discusses the available knowledge on IT services, value creation, service process, process formalization and improvement within the context of Information Technology. At the end of the section, a conceptual framework for improvement is drawn based on best practices.

4.1 Overview IT Consultancy Services

As the service sector becomes dominant in various economies of the world, examining the composition of this sector becomes crucial in understanding the innovative processes involve in designing, improving, and redesigning how organizations and businesses meet their service demand (Gloppen, 2009). This leads to the question of what exactly an IT service is. According to Grönroos (2000), “A service is a process consisting of a series of more or less intangible activities that normally, but not necessarily always, takes place in interactions between the customer and service employee and/ or physical resources or goods and /or systems of the service provider, which are provide as solutions to customer problems”. Holmlid (2010) gives a different dimension to the meaning of services by describing it as a sequence of meaningful actions which contain both tangible and intangible part. In IT business context, these tangible aspects may consist of IT systems, inventories, and artifacts produced. A closer look into these two definitions reflects a common economic view of services and the presence of value in the exchanges in which the service provider performs certain activities that end up giving some form of experiences or other output to the customer. In this respect, the customer sees value in those experiences and is ready to pay for it (Panin, 2019).

The Information and Technology (often called IT) landscape is a very fast-moving landscape which many businesses find difficult to keep up with. With a global spending of $4.5 trillion US dollar on IT in 2021, the industry is transforming business landscape at an unprecedented rate (Statista, 2022). As a result, a lot of companies invest in technology not only to improve their business operations but also to enhance their performances and gain competitive edge over rivals.

IT services is a term that is often use in describing the application of business and technical expertise which allows organizations to create, manage, optimize, or access

information and business processes (Gartner, 2015). The IT service as an industry is a broad industry with two sub-industry which includes (a) data processing and outsourced services on one hand, and (b) IT consulting and other services on the other hand. It is also worth mentioning that market for IT services is often categorized based on the skills that is needed in delivering the services (Sudan et al., 2010).

IT consultancies focuses on helping other organizations by utilizing their own expertise as well as experience, on how best the client can use information technology in achieving its business objectives (Parikh, 2015). A large number of IT consultants provide services which includes IT services, systems integration services, advisory services, and information management (Sudan et al., 2010). There is no doubt that the consultancy is a fast-paced sector. However, despite all these investments in human and material resources, IT consultancies still faces major challenges in satisfying their clients' ever-changing business needs. As a result, there are reported high rate of customer dissatisfaction with the level of services received from the IT consultancy firms which requires serious attention. That is one of the reasons why IT consulting companies usually invest in employee training. Improving the quality of IT services offered to the clients requires the understanding of the processes through which the services is developed in the first place.

4.2 Concept of a Process in IT

While the knowledge of the environment and industry in which services are developed is vital in creating quality IT services for the customers, the actual improvement of services requires deep understanding of the processes, also on the business level, in which the services are developed and delivered to the customers.

4.2.1 Processes in business

All operations carried out in an organization typically involve one or more processes to some extent. Praful (2022) defines a process as "series of actions or tasks which connect each of the intermediary decisions during the development of services or products". As Grover et al., (2008) simply put it "processes are ways of organizing works". Alshathry (2016) defines it as "a set of independent activities that are purposefully structured to deliver a specific output" (Alshathry, 2016).

Since a process has a broad usage in different fields, understanding its composition is crucial in managing the operation of any service business organization (such as an IT consultancy). This composition may vary at different levels even within a single organization. Many literatures on processes generally identified operational, supporting, and management processes as the three main types of business process. Based on operation management, two important views are identified. These consist of the strategic and the operational perspective on processes (Slack et al., 2013). Breaking down of processes in this category enables organization to differentiate and focus on activities at various level in the organization. At the operational level, many literatures highlighted the composition of processes in a service-oriented organization with a simple input-transformation-output model (Ma et al., 2002; Slack et al., 2013).

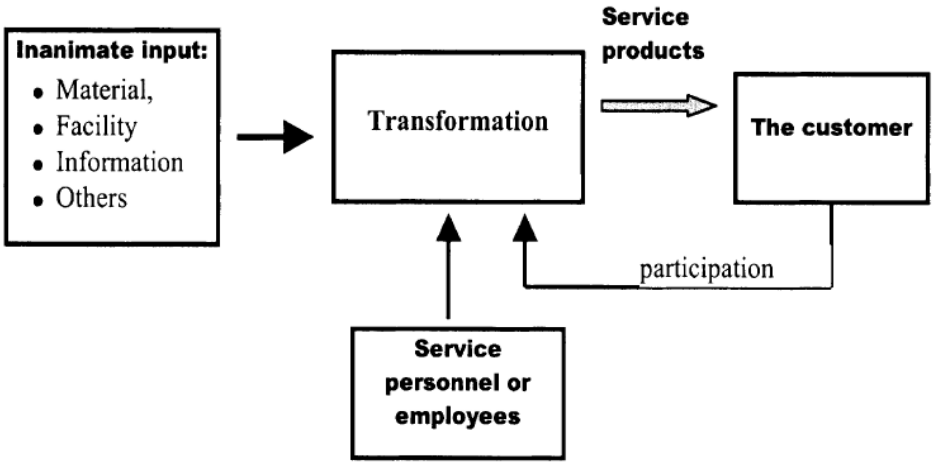


Figure 3. The input-transformation-output model for service organizations (Adapted from Ma et al., 2002, 16).

As shown in Figure 3 above, the transformation begins with a form of input which could be material, information as well as other resources. The nature of the input, to a large extent depends on the field or sector in which the firm operates in. These inputs later go through the transformation phases in order to produce an output which can be finished or semi-finished product or services or mixture of both. Then comes the transforming resources which are used in the actual conversion phase. These transformative resources are the ones that changes the raw material or input resources into finish products or semi-finish product. These transformative resources consist of the buildings and machineries used in the operation. In a typical manufacturing operation, it is easier to distinguish these transforming resources because they are quite visible during the operation. However, in services operations, this might not be the case because of the intangibility nature of services. Nevertheless, the company´s competences and staff has been

categories as transformative resources in many books (Slack et al., 2013). Finally, the output which can either be a finished product, service, or a combination of both. It is important to note here that the output of one process may also serve as an input to another process.

4.2.2 Processes in IT Project management

IT Projects just like any other projects are temporary endeavor undertaken to create unique product or services for the clients (PMBOK, 2013). Managing this type of process presents a different form of challenges due to a lot of uncertainties surrounding IT projects. The fact that project environment is very different from the daily operational environment presents additional challenges to the IT service organizations operating on project basis. Therefore, understanding the composition of processes within project environment is critical in providing quality IT services to the clients.

A lot of literature on project management have identified several phases in project processes. In this regards, Smyrk & Zwikeal (2019) break down the life of the project into four sequential blocks to provide deep insight into processes in Project Management. This includes the initiation, planning, execution, and outcome realization phase. From this breakdown, one can easily see that this type of process is more suitable managing processes in broad sectors. However, managing IT project present another form of challenges which require different consideration when choosing PM for IT projects, this is because IT projects are developmental projects in nature. That's why Kerzner (2013) suggested managing IT projects through system life-cycle approach which includes distinct phases such as conceptual, planning, testing, implementation, and closure phase. Based on this notion, Verzuh (2008) proposes using four phases for product development in managing IT development project.

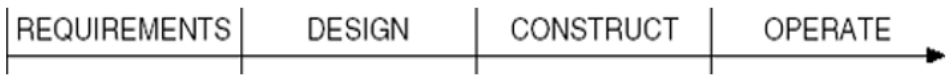


Figure 4 Product development life cycle (Adapted from Verzuh, 2008: 23)

As shown on the figure 4 above, four phases can be identified in a product development project such as IT project management. The name of this phases may change depending on the project being carried out. However, the idea behind the phases remains the same.

The Requirement phase: This phase is concern with how the product will work. This includes important process in defining the functionality of the product as well as its performance requirements (Verzuh, 2008). In IT consultancy field, this phase might include gathering of requirement and specification with the clients.

The Design phase: this is where the idea of the product is brought to life and details of its description is written. In SW services and development projects, this is the phase where solutions are designed.

The Construct phase: this is where the product is built and details regarding how it works is written down. These stages include the technical design of solutions. In web designing for example, this is where the website is built, and testing are done.

The Operate phase: This is the final phase in the development process where the product is used. It includes lunching of the product as well as further support and maintenance.

Having discusses the phases in Project Management. It imperative to explore the nature of processes as it relates with IT services.

4.2.3 Processes in IT Services

Laamanen & Tinnilä (2009) view a service process as all internal processes that are used in delivering services to the customers. Clark & Johnson (2008) define a service process as “a set of interrelated tasks or activities that together, in an appropriate sequence, create the services”. Bitner et al. (2007) view a service process as a chain or constellation of activities that allow the service to function effectively. The ITIL describes service process simply as how services are created or deliver to the customers. These may include roles and responsibilities, tools, as well as management control that is required to deliver services to the user (ITIL, 2011).

Designing an efficient service usually takes place in a complex and holistic environment because the overall customer experience is affected and impacted by every little detail

that influence the customer experience (Gloppen, 2009). Conceptualizing the service process as a series of activities enables the service provider to breakdown its composition as well as developing a better understanding of how those activities can be combined. This is usually done with consideration to the kind of process being managed as different processes requires different approach in management. The dynamic and complex nature of services provides ground for viewing service as a series of processes. Since the nature of processes largely vary from one to another, service providers usually adopt different approaches in designing and managing various task concerning the processes. This requires deep knowledge of various elements in a process.

To overcome the difficulties encountered in dealing with processes, numerous approaches can be found in literature were the “4Vs of processes” are used which are based on characteristics such as the *visibility, volume, variety,* and *variation* of the process output (Slack et al., 2013). To this end, Slack et al. (2013) identifies three types of service processes based on the volume-variety continuum.

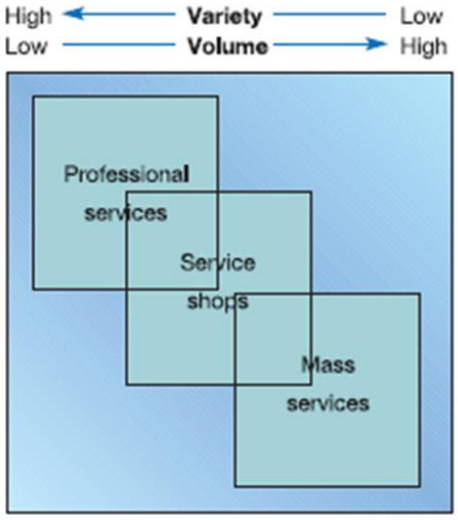


Figure 5. Service process types (Adapted from Slack et al., 2013, 102).

As seen from Figure 5, the first type of process in the service process matrix is what Slack et al, (2013) refers to as *the professional services* which is also known as the capability process (Clark & Johnson 2008). These consist of high variety and low volume process typical of highly professional services which require a considerably high amount of participation by the customer in the process. The aim of the service operator offering

this type of services is to provide capability to the clients. That is why it is usually characterized by flexibility of services outcome and service delivery process which in turns results in varying customers experience (Clark & Johnson 2008). The services rendered in this type of processes are usually based on the people (client) which is quite opposite to services based on equipment. Additionally, this type of process is most suitable for highly customizable services.

The second type of process is *the "service shops".* It is the one in-between the high variety and low volume to the low variety and high-volume processes. This type of process represents a balance between the other two extreme opposite continuum in the service process types. One of the distinct characteristics of this type of services is the present of both front and back-office tasks (Slack et al., 2013).

The third type of service process is *the "mass services"* which Clark & Johnson (2008) refers to as "commodity process". According to Slack, these are processes for low variety and high-volume services. This type of services does not require customization. Therefore, they can be standardized to some extent for mass delivery (Slack et al., 2013).

The type of service process, to a large extent, influences the process implementation and consequently how the process can be improved. Thus, IT consulting services falls within the category of high professional services with decreasing volumes and increasing customization as its main characteristics. Managing and improving operational capability efficiently in such a service is crucial even though it can be difficult to accurately access, from the onset, the level of impact a tailored service requirement, from the customer, might have on the current process when contracts are being signed. Therefore, understanding of the type of process will enables the firm to recognize the key characteristics of a process and the effect any addition or rearrangement of tasks will have on the process as well as process output. Process improvement in the IT field will be incomplete without paying attention to *the contents* of the service and its process.

4.3 Service Design as part of the main process

While a process on its own can be view as a structured set of activities to accomplish a specific objective, there are several service design processes used nowadays in the IT sector. The following subsection discusses some of the prominent ones found in literatures.

4.3.1 The double diamond

The double diamond is one of the design approaches used in the services and IT industry. This design approach provides a clear, complete, and visual description of the design process and enable organizations transform the way they develop services. It was first formalized by the British design council (UK design council, 2019), as shown in Figure 6 below.

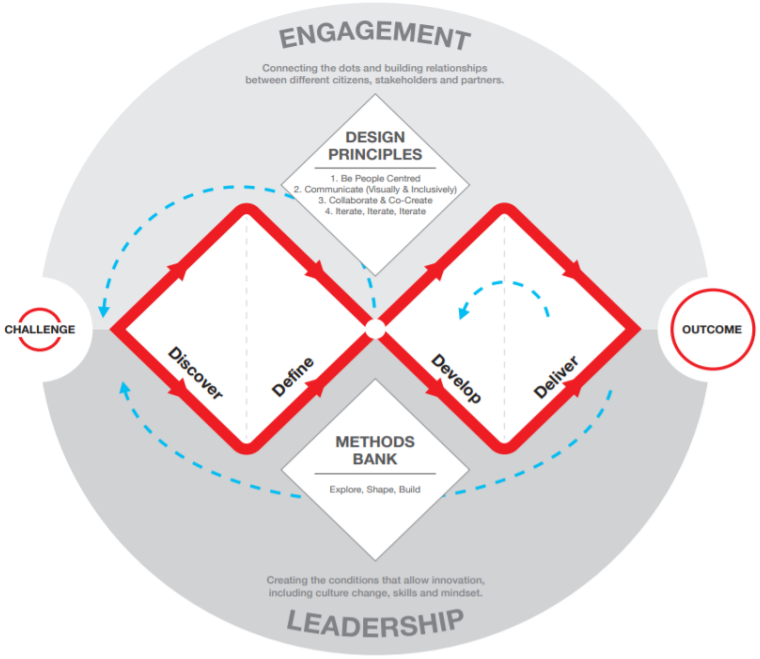


Figure 6. Double diamond model (adapted from UK Design Council 2019)

As seen from Figure 6 above, there are four main steps when using the double approach for designing services. The first step is “Discover”. This is needed at the beginning of the project. In this stage, the designer tries to speak to and spend time with the people who are affect by the issue. The goal is to understand the problem to be solve rather than making assumption of what the problem might be. There are numerous techniques which designers use in broadening their view and understanding at the discovery stage. This includes observation, creating and using user diaries, designers being in the users’ position, brainstorming, sampling, quantitative survey (omnibus, ad hoc survey), fast visualization, and secondary research (UK design council, 2019).

The second step is “Define”. Here the designer defines the challenges in various way based on the insight gathered from the discovery stage. The focus is to evaluate, narrow

down insights and decides what the main project challenge is. Several tools are used in facilitating this stage such as customer journey mapping, drivers and hurdles, comparing notes, working in focus groups, and utilizing assessment criteria in choosing and developing the most promising ideas.

The third step is “Develop”. The focus at this stage is on creating solutions to the project challenges, test out what works and leave out what does not work, done in cooperation with the other stakeholders involved or affected by the problem. The idea behind this approach is to get different views on the solution and co-designing with stakeholders give inspiration to the designer. Various tools are used to facilitate this step such as creating character profiles, building scenarios, role-playing, services blueprints, and prototyping.

The last stage in the double diamond approach is the “Delivery” of the solution. The focus at this stage is to finalize, produce and lunch the service. There are several activities that can be use during the delivery of the service, for example, testing the service in a small group before delivering it on the large scale. This enable the service designer to manage the risk associated with the service before it is lunched. Another important activity is the service evaluation which involve reporting back on the performance of the service after it is lunched. This can be done through a survey that tracks the customer satisfaction, or by comparing the ongoing customers satisfaction with a rival service using a third-party bench marking data (UK design council, 2019).

Even though the double diamond was originally developed for designing services, the use of this methodology has extended beyond the initial purpose, and it is used. For example, in the IT industry and SW development, where the intangibility of the service present huge challenges to the service provider. Going through the four steps process involved in designing the services will help the service provider to identify which area of the service design process is underperforming and subsequently make improvement to the quality of services offer to the customers. While the double diamond method has proving to be valuable in the service industry, there are other methodologies that are also frequently used in this industry. The stage gate model is one of the most popular ones for designing services.

4.3.2 The Stage-Gate model

The Stage-Gate model, which is also known as the phase-gate process, is a methodology grounded on a fundamental principle that service or product innovation is a process which create value starting with idea generation and ends as soon as the service or product is launched successfully (stage-gate international, 2000). This model is reported to be developed by Robert Cooper in 1988 with the goal of managing and improving product development process. However, the use of the model has been extended to managing other projects relating to service development, process improvements, as well as process changes. Although there are variations to the model nowadays, most of the models consists of five major phases or stages which is led by four to five gates (Cooper, 1990). Figure 7 below depicts an example of the stage-gate model.

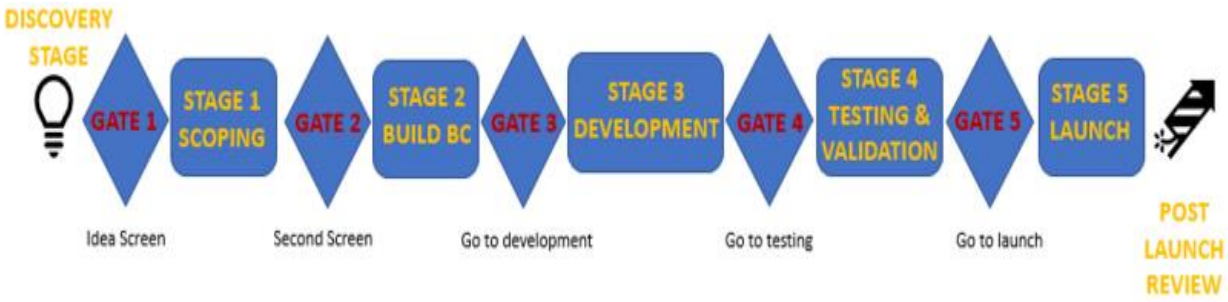


Figure 7. The Stage-Gate model (Stevens and Dimitriadis 2005, 177).

As seen from Figure 7 above, each of the gates in the model represent a point for business evaluations where decisions are made either to continue or stop the project. Each of the five stages consist of different activities such as data collection, service design and service development to be perform. Each of the stages is preceded by a gate where a go or kill decision regarding the continuity of the project is made. In addition, each of the stages is design to gather data concerning the uncertainty and risk factor associated with the project. As the process goes further through the gates, the cost associated with each of the gates increases while the information gathered from the gates becomes more accurate thereby reducing the risk associated with the project (Cooper, 2006).

First, the process starts with *the Discovery stage* where the development idea is initiated and go through screenings. If an idea is selected, it is transfer to the scoping phase where assessment is made on how relevant the idea is. Additionally, the scope is

clarified, and the competitiveness of the project is evaluated in this stage (Cooper & Edgett, 2012.)

The second gate is a deeper screening is done based on the insights gathered from the scoping stage. Gate 2 is for building the business case for the service or product. Here, different analysis such as the technical analysis, financial analysis as well as market analysis regarding the new service or product are conducted. These various analysis helps the provider, among many other things, in identifying the customers and end-user's requirements, estimating the investment needed, and coming up with preliminary plan for designing the product or service (Cooper et al., 2003).

Gate 3 is where the project gets a positive decision, the process proceed to the development stage where the actual development of the service or product takes place. At the end of this gate, testing plans are drawn for the final output which is usually in form of a prototype (Cooper, 2002).

Gate 4 is for deciding if the development should continue to the testing phase. If changes need to be made, this is where the decision is made. Afterwards the project moves to the stage 4 which is for the testing and validation. The goal here is to validate the development process and ensure that the project meet an acceptable standard as planned in the previous stages. There are several ways for carrying out the testing. This includes carrying out field trial with the end-users of the product or service, as well as in-house testing (Cooper et al, 2005).

Gate 5 is the revision of the testing and validation results as well as approving the lunching of the project. The actual lunching is done in Gate 5. At this point, the product or service is put into operation. This is followed immediately by the post review of the project where feedbacks are taking into consideration and improvements are made to the project where necessary (Cooper & Edgett, 2012).

In order to create the high-quality products or services that meet the customer's needs, IT consultants using the stage-gate method needs to carefully observe and analyze each phase of the model. In the case of existing services, the model is particularly useful in improving the quality of the services. Analysis of each stage of the process is carried out to identify the underperforming elements of the process and improvement made thereafter. In practice, IT consultancy firms usually support the stage-gate methods with other

approaches that adapt quickly to increasingly change in market demands. This is where the agile methodology for service design and development comes into play.

4.3.3 Agile service development

The agile service development delivers values to businesses, clients, and users through a rapid, dependable, and repeatable process. Agile methods focus on flexible and quick response to changes. The agile team organizes themselves in such a way that promotes adaptive planning and development so that early service delivery can be achieved. Agile approach has several phases. These phases include requirement gathering, designing, development, testing, deployment, and feedback.

There are several agile development methods that can be used when designing e.g. SW services. The method to be adopted depends, to a large extent, on the circumstances as well as the purpose of usage. In terms of the coverage, some agile methods are better use in covering the entire development cycle, while others are good in merely covering the requirement specification and development aspect of the project (Ahmed, 2020). Irrespective of the circumstances, agile service development follows the agile principles which emphasis the importance of the people involved in the design over any rigid procedures and tools, collaborating with the users over any official arrangement, flexibility and quick response to changes instead of following plans (Rola et al.,2016).

Scrum and *Kaban* are two of the most popular models which are based on the agile principles and frequently used in the IT field. *The Scrum model* is a methodology that is often used in managing Agile IT projects such as SW development (Lei et al. 2017). 53% of IT practitioners who adopts the agile approach use Scrum model (Rola et al. 2016). Scrum is more of a general procedure that accommodates different types of sub-processes and techniques. Using Scrum in an organization requires making changes to the way the work is organized, the team member thinks, the management style, how the staffs relate with the customers, as well as in the layout of the office (Schwaber and Sutherland, 1991–2013).

Kanban methodology is used for managing project tasks through visualization and transparency. Although Kanban is mostly known in project management, the use of this methodology has been extended to other areas, e.g., SW development. One of the main reasons for adopting this approach is that it enables visualization of the tasks which are worked on thereby making it easier to spot bottlenecks caused by overloads and

disruption in the workflow commonly encounter during the service design process (Lei et al., 2017). Figure 8 below is a graphical depiction of the Kanban.

Figure 8. The six Kanban practices (adapted from staragile, 2021).

As shown in Figure 8 above, Kanban has six practices that is applied in a typical project. This practice includes *visualization, managing flows, limiting work in process, improving, and evolving, implementing feedback, making policies explicit*. The combination of these elements of the Kanban forms the Kanban system. Applying Kanban methods in SW service development helps in managing and organizing the design activities relating to workflow on a board so that each task, process, and sub-processes are display in a transparent manner and handle efficiently. Using the Kanban approach requires following its core principles which includes regular enhancement and monitoring of workload and processes, prioritization of incremental and evolutional changes, as well as focusing on reducing work in progress, visualization, and transparency (StarAgile, 2021).

Summing up, the adoption of agile methods in the IT consultancy services is increasing due to the flexibility of the methodology, there are many areas in which the agile methods have been implemented, especially in managing the SW development projects. The goal is to achieve higher customer satisfaction through the positioning and repositioning of the customer's need at the center of development. Irrespective of the specific process adopted, most of the design processes usually begins with activities that are dedicated to knowing more about the customer, identifying the customers problem, developing

solutions to the problem in form of prototype or any other form, then finally testing out the solution in real time. In the event of service improvement, the service provider will have to go step by step through the process in finding which area in the design process is underperforming. Dealing with these complex service design challenges will be impossible without a proper mapping of this stage of the process.

4.3.4 Designing a Service Design stage of the process

Proper design of the service, whether is done through process engineering or rearrangement of the current process workflow is necessary for producing a quality output. Incorporating a design stage for developing a service or reforming a service has been identified as a crucial step to delivering quality services and improving organization's chances of retaining the customer (Desai, 2010).

Mapping out the design stage can be compared to a roadmap for service development. It basically displays the procedures which the service personnel need to follow in developing the service as well as how the service personnel supposed to utilize and interact with other resources during the process of service creation. In a real world, these other resources could include materials and equipment (Clark & Johnson 2008). It is a complex task to accomplish because processes differ from one another and there is no single universally accepted way to achieve this. When making this critical improvement, experts suggested to pay attention to the dynamic and complexity of the processes involved. While some design processes are flexible in nature, other design processes are closely defined so that they can produce consistent output (Clark & Johnson, 2008).

Slack et al. (2013) highlighted the interrelations between the design of services and the design of the process used for creating those services. According to him, both are highly related. The slightly different between the two is that during service design, the designer mainly focus on designing the service in a way that it can be effectively created. While in process design, the focus is on designing the process in a way that it supports the creation of service which the operation may introduce afterwards. In any case, both depends on one another (Slack et al., 2013). Notwithstanding, as Desai (2010) pointed out that process design could also be a risky tool to use in such situation compared to the process improvement, because of unknown elements that can result into failure.

In the IT consultancy field, the constant change in client requirements, and the need for customized services requires different approach to process design. As a result, many

experts in the consultancy sector suggested that a project manager and designer should focus on the flexibility of the whole process when engineering or re-engineering their process so that it is adaptable enough in delivering highly tailored outcomes (i.e., product or services) that should meet the clients' dynamic needs. Thus, exploring formalization of any involved processes becomes a key area of interest in process improvement.

4.4 Formalization of a process

Formalization of a process is simply a means through which the steps in the process and role and responsibilities of the personnel involved (the teams, group, and organization units) are laid out and standardized, usually in a written form, through various means such as procedures, job descriptions, policies etc.

Martinsuo & Tuominen (2019) defines formalisation as "intentional efforts to make process more uniform and replicable by limiting variation and generalisation of knowledge". Sandholtz (2012) make the comparison of process formalization to standardization of process template while Brivot (2011) added the codification of knowledge to the meaning with emphasis on embedding written rules, service models process blueprints and other tools to represent the formalization.

In SW service development, for example, the need for formalisation emerges because many of the processes are informal and as such, they are highly subjected to ambiguities and inefficiencies (Robertson and Swan, 2003). These inefficiencies can have serious impact not only on the customer experience but also on the overall quality of delivery to the customer. To combat these challenges, organizations are switching towards adoption of process standardization, as well as modularisation, productization, and formalisation of service processes in order to increase customer value, scalability and profitability (Martelo-Landroguez and Martin-Ruiz, 2016). Wright et al. (2012) and Kärreman et al. (2002) concluded in their reports that efficient formalization helps employees in dealing with ambiguity in work related tasks thereby enabling them in making the right judgement which in turn has positive implication on customer satisfaction rate.

In IT consultancy services, formalization can have different effects on employees, and the entire value creation process. Several reports carried out in this area has shown how on one hand, formalization supports the knowledge sharing, enables the creation of

share meaning and trust when it is implemented correctly in organization (Kärreman et al., 2002; Brivot, 2011; Rahikka et al., 2011). On the other hand, formalization can also be a cause of constraint and curtail the personnel´s ability to provide the necessary assistance to the customer in the value creation process if it is excessively applied (Morris, 2001; Sandholtz, 2012). The key is to find the right balance and choose the most appropriate formalisation approach that benefits the customer and the organization without hindering flexibility of the process while giving enough room for the employee to improvise whenever it is deem necessary.

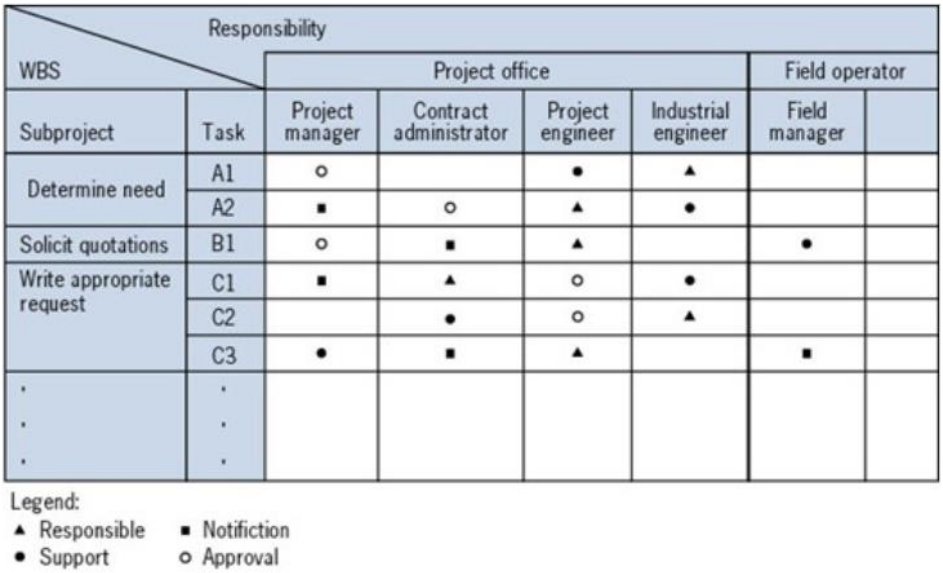
Process formalization involves taking a number of steps which requires making key decisions on the framework through which the process can be implemented (Reijers & Liman, 2005). In this regards, Davenport (2005) and Johnson (2020) suggest, to start by creating *a map* of the process to aid in visualizing and understanding of the key steps involve in the process. Then proceed by creating written guidelines explaining the flow of the key activities in the process. This should be followed immediately by identifying the type of resources required for each of the key activities as well as identifying the key responsibilities needed. The final step is the creation of written work instructions for the personnel.

Several tools for implementing process formalization, within the organization, have been suggested. These tools include standardizing processes, writing job descriptions, articulating roles and responsibilities, enacting work policies, creating official communication systems, and setting-up operational and strategic plan (Baum and Wally, 2003; Genchev et al., 2011). While process formalization is critical to enhancing the interaction and collaborations among the development teams as well as the customers, setting up a clear role and responsibilities for them remains the corner stones for delivering high quality services and products to the clients.

4.4.1 Role and responsibilities in processes

Establishment of role and responsibilities in projects and processes is important for process formalization. This is because all actors involve need to have common understanding of their duties and tasks in order for the whole project or process to work efficiently. Moreover, a clear role and responsibilities enhances good coordination and interaction among various actors who are involved in the process.

There are numerous tools that can be used in planning roles and responsibilities. One of such tools is the linear responsibility chart which is also known as *responsibility grid* (Clayton, 2017). The Linear responsibility chart is a tool that is used in assigning activities and responsibilities for each member of a team working on a project. The chart shows the authority and relationship between the people working on a project which in turns helps in mitigating confusion and conflicts relating with works (Clark, 2008).



WBS \ Responsibility		Project office				Field operator	
Subproject	Task	Project manager	Contract administrator	Project engineer	Industrial engineer	Field manager	
Determine need	A1	○		●	▲		
	A2	■	○	▲	●		
Solicit quotations	B1	○	■	▲		●	
Write appropriate request	C1	■	▲	○	●		
	C2		●	○	▲		
	C3	●	■	▲		■	
.	.						
.	.						
.	.						

Legend:
▲ Responsible ■ Notifiction
● Support ○ Approval

Figure 9. Example of a simple Linear Responsibility Chart (Adapted from MEM 612 Project Management, 2015).

As seen from Figure 9 above, the LRC is divided into rows and columns. The row represents the responsibility, activities, and authority for approval regarding a project. While the column depicts the position of the personnel. The LRC is complemented with special symbols to denote the responsibility, supports, approval and notification existing between the rows and columns.

The second common method used for assigning roles and responsibility is the Responsibility, Authority/ Accountable, Consulted, and Informed *(RACI) Chart, or RACI Model*. The model is a simple chart which shows a visual summary and clarify the roles and responsibilities of personnel involves in a service process (Gallacher & Morris, 2012). The variables in the RACI model are applicable to every personnel who are involve in the service development in order to have a common understanding of the roles and

responsibilities of each member of the team (Cordell & Thompson, 2018). The Figure 10 below shows an example of a RACI matrix for change management in an organization.

Activity	Director of service management	Service level manager	Problem manager	Security manager	Procurement manager
Activity 1	AR	C	I	I	C
Activity 2	A	R	C	C	C
Activity 3	I	A	R	I	C
Activity 4	I	A	R	I	
Activity 5	I	A	R	C	I

Figure 10. Example of a simple RACI matrix on change management (Adapted from Gallacher & Morris 2012).

As seen from Figure 10 above, the RACI matrix has both column and rows for assigning roles and responsibilities. While the R stands for the responsibility to denote who is responsible for carrying out a task, the A stands for accountability to show who is in charge of approving the task as well as having the authority to make the decision. The C stands for consult, to show whom to ask for more details regarding the task. While the "I" stand for informed to show who is to be updated regarding the progress of the task as well as the person whose work relies on the task (Maioli, 2018).

Defining the roles and responsibilities with the RACI matrix is vital in any product, project or service delivery process and it involves a number of steps. Gallacher & Morris (2012) propose the service provider begins with the identification of the processes, activities and roles involves in creation and delivery of the services to the customers. Then, continue by mapping the tasks to be done with the roles. This should be followed up immediately by defining the level of involvement each participant in the role will have on the task (Gallacher & Morris 2012).

While the LRC and RACI matrix have presented many advantages in clarifying roles and responsibilities in project, or product or service development environment, it is important to note that they both have shortcomings for not being able to define the relationships between the employees in the process. Moreover, the fact that firms operating in IT consultancy sector usually have customized projects also present additional challenges for

using this tool in assigning roles and responsibilities because frequent changes to customer requirement may limit establishing permanent roles and responsibilities for all projects. Therefore, it is more appropriate to use this tool on a project basis (Clayton, 2017; Cordell & Thompson, 2018).

However, irrespective of the method being used in assigning roles and responsibilities, the main ideal is to clarify who is responsible for what and ensure accountability. It is also possible that one person is assigned with more than one role and responsibility in the process. Next, process improvement will be examined via looking into the customer´s role in the process as well as enhancing the customer´s participation in e.g., SW service design and delivery. Thus, the next sub-chapter discuss key ideas in value creation within the context of Knowledge-based-intensive-services (KBIS).

4.4.2 Customer participation in processes

Many of the causes of poor quality of services in the KBIS can be directly or indirectly link to low level of customer engagement in the services design or delivery process. In many cases, this problem has resulted in the service provider imposing solutions on the customers which does not necessary solve the actual needs of the customers since the customers have not been fully involve in the problem-solving process. To tackle this lapse, Sjödin et al. (2016) adopted the role play theory in explaining common challenges in three key area of the co-creation process and the solution for solving them. These phases consist of *requirement definition, customization/integration,* and finally, *implementation and operation.* Grönroos (2008) suggested the service producer to find a means to improve dialogue and engage with the customer thereby increasing customers participation in the co-creation process. Ballantyne & Varey (2006) argues that joint sharing of vital information and effective communication is a prerequisite for increase and sustainable value co-creation between the service producer and the customer. Aarikka-Stenroos & Jaakkola (2012) presented this framework for value co-creation in KBIS environment.

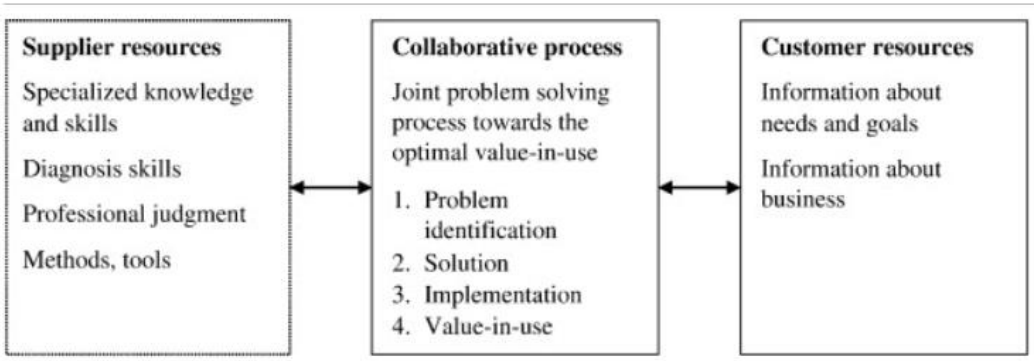


Figure 11. Framework for customer involvement in value creation (Adapted from Aarikka-Stenroos & Jaakkola, 2012).

As shown in Figure 11 above, the collaborative process in a joint problem solving has three important elements which consists of the suppliers' resources, the customer resources, and the collaborative resources. While the supplier resources are the main input in which the supplier contribute for solving the customers business problem, the customer resources consist of knowledge of the customer regarding the problem, business need and goals. The collaborative process is the main element in the problem-solving process, and it is pivotal in creating value for both actors in the process (Aarikka-Stenroos & Jaakkola, 2012).

Various steps in solving the customer problem and most importantly supporting meaningful collaborative interaction were outlined in literature (Aarikka-Stenroos & Jaakkola, 2012; Tuuli et al. 2007). The first step is *the problem identification* phase which requires the participation of both actors in identifying the business needs of the customer and the objective of the interaction. Here the customer provides essential information about the business needs. It is important to note that there is a possibility of scenario whereby the customer does not know their business need at this stage, this is where the provider needs to take the responsibility, uses their experience and knowhow in finding what the customer needs. The key to success at this phase is for both parties to have discussion and establishing common understanding of the objective of the interaction as well as deciding on the best possible solution that optimize the value-in use for the customer.

The second phase is for *designing the solution*. In IT consultancy business, this is where the solutions are developed in which the outcome could be in different form such as blueprints, reports, and plans. At this phase, the supplier negotiates with the customer in finding and presenting various possible solutions in solving the customer´s business

problem. The customer in this phase plays the primary role of co-producer and co-designer by articulating the right knowledge and information not only about their business but also regarding their industry. This could also present challenges as the risk of neglecting customers input could increase. The key to the success at this phase lies in communication and effective collaboration which can helps both parties in forming a common understanding of expectation regarding the value-in-use as well what the possible solution could be.

The next phase is *implementing the solution*. The supplier plays the key role helping the customer in the implementation process in a manner that the customer can realize the optimal value-in-use from the solution. While the customer may play the role of co-implementor.

The final phase relates with looking into the benefit accrued by both parties in retrospect. Although one may argue that this step is not necessarily part of the co-creation process, it is vital that benefits and sacrifices encounter during the co-creation interactive process are examined in order to gather important knowledge and make improvement for future development. The knowledge gathered in this phase becomes a testament for the provider in understanding that value received by the customer of the physical product or service offered to them (Aarikka-Stenroos & Jaakkola, 2012; Tuuli et al. 2007)

These steps described above are best used in enhancing customer participation only when they are properly incorporated into the core product or service delivery process. In addition, sustainable improvements are usually implemented via process improvement. The next subchapter focuses on some of the well-known process improvement methodologies.

4.5 Process Improvement Methodologies

There are several approaches available today for improving processes. Many of these process improvement methodologies have something in common in the sense that they usually start with the identification of the process, then follow by the analyzing the process to examine how it works and eventually end in refining the process. The following subchapters discusses some of the well-known process improvement methodologies that can be suitable for IT and SW development sectors.

4.5.1 Business Process Management (Re-engineering)

A classic approach to improving processes is through Business Process Management (BPM). The term Business Process Management originated from the Business Process Reengineering (BPR) which was first explained by Davenport and Short in the early 90s (Davenport & Short,1990). Although, process reengineering as a practice derives much of its principles from scientific management which has been in existence since the early 19th centuries. As the use of the word “business process reengineering” was deemed to have a negative connotation that is related to layoffs and unsuccessful change programs in organizations (Davenport, 1996), most especially in the USA, many authors, industrial and business leaders now prefer to replace the reengineering word with other terms such as business process management, business process innovation, business process transformation etcetera (Grover & Markus, 2015; Hammer, 2002). Despite all these variations in name, the focus of this methodology remains on the actual processes whether it is aimed at improvement, designing or re-designing.

According to Weske (2012) “A business process consists of a set of activities that are performed in an organizational and technical environment”. The idea of improving processes through BPM stems from the fact that any product or services which an organization offers to the market comes as a result of combination of different activities. Therefore, Grover and Markus (2015) suggested that managing those activities efficiently can improve the quality of products and services offer to the customers.

Although BPM originated from a mechanistic approach to managing processes. This was evidence in the earlier literatures on the topic which were saturated by hard system approach to process and organizational management. The contemporary industrial practitioners and writers have called for and incorporate holistic approach in managing business processes with consideration to the role play by the people as well as the organizations’ strategy in business development (Baker & Galliers, 1995; Earl et al.,1995; Silver, 2004). In recent times, BPM now adopts a procedure which is characterized by systematic identification, measurement, evaluation, and improvement process in managing business operations. This new process is referred to in many literatures as the process approach (Kowalik and Klimecka-Tatar, 2018).

When applying BPM in the services organization there are fundamental principles that must be adhere to. First, is the orientation. BPM applies process orientation in each of the activities regarding the designing, redesigning, and improvement of services

processes. This means that the focus is not just on the output of the process but also on the input and transformative resources used in the process. Thus, when improvements are made, it is made on the entire processes. Secondly, the focus of the BPM is on the customer. In other words, it adopts a customer-centric view in managing the processes. Therefore, all improvement activities are made with the aim of providing values to the customers. Third, BPM seeks to measure results of the outcome. This measurement can be in form of gauging the quality of the output, the cost, or the cycle time of the process. As Grover and Markus (2015) argues that not every outcome of the processes can easily be measured. The fact that BPM programs also incorporates some aspects of knowledge management (KM) such as managing information flow in processes makes it difficult to measure the outcome. In this regard, the application of BPM has been extended to business activities where processes are not easily defined and thus outcome cannot be easily measure. This aspect includes the utilizing BPM in the services process. Therefore, Grover and Markus (2015) suggested that a different sophisticated measuring methods should be use in such case.

Like many of the other improvement methodologies, BPM does not have specific tool of its own, it incorporates different methodologies, techniques, and tools for analyzing and improving business processes. Notwithstanding, Grover and Markus (2015) reiterates the importance of having deep understanding of the nature of the processes when implementing BPM for process improvement. He also suggested viewing process from several angles to achieve efficient improvement result. Implementing BPM requires following the five steps in of process redesign.

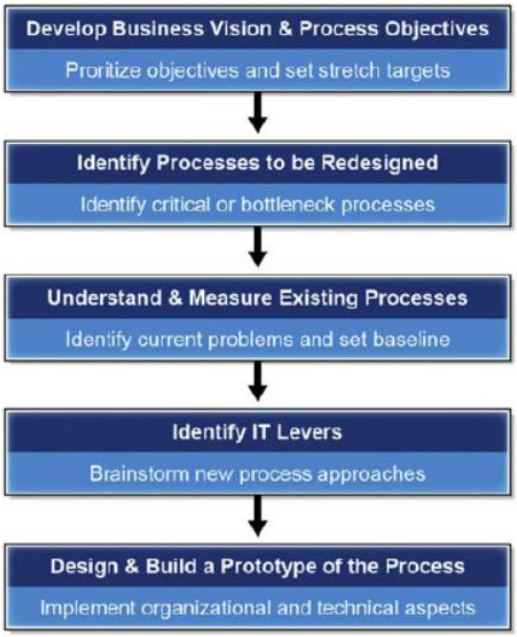


Figure 12. The five steps of process redesign (Adapted from Rosing et al. 2014, 55)

As shown in Figure 12 above, redesigning a process through BPM requires following the steps in this methodology. The first step requires developing the process objectives (Rosing et al., 2014).

4.5.2 Six Sigma methodology

The Six Sigma is an improvement methodology that was introduced by Bill Smith in 1980s. Its foundation can be traced back to Shewhart's quality management philosophy which was in circulation in the 1920s (Adams et al., 2011). The methodology was initially developed and used in improving process capability in manufacturing operations. Six Sigma methodology combines the best practices in statistical approach to quality management with concepts from organizational behaviorist. Thus, it provides a holistic approach to analyzing problems and managing quality in an organization (Adams et al., 2011).

Although Six Sigma is often portrayed as a mere tool for managing quality in an organization, its usage has evolved overtime. A closer look into the methodology reveals that

Six Sigma is a methodology that is dedicated to improving organizations profitability and realizing the organizations' strategic objectives in a sustainable manner (Arnheiter and Maleyeff, 2005). The methodology can be adopted for designing, improving, and monitoring business processes that deliver both products and services (Adams et al, 2011; Revere et al. 2004). It is applicable to any business process irrespective of the type of process or whether the process is in sales, marketing, R&D, or administration (Desai, 2010).

A successful application of Six Sigma requires following a well-defined strategy. Desai (2010) identified DMAIC and DMADV as the two Six Sigma sub-strategies for product, process, and service improvement. The DMAIC is the classic problem-solving steps representing Define, Measure, Analyze, Improve and Control (DMAIC) which is applicable in solving problem with existing process (Hambleton, 2007). While DMADV represents Define, Measure, Analyze, Design and Verify (DMADV) which is mostly applied in creating new processes [Desai, 2010;]. Although the DMADV is more suitable for new processes, Desai (2010) argues that the methodology can also be adopted if a current process requires more than an incremental improvement. The graph below shows the improvement process in a typical DMAIC.

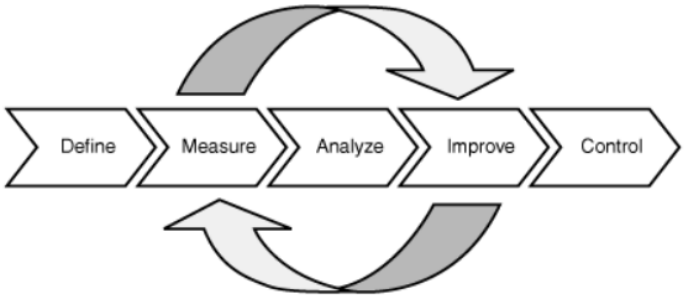


Figure 13. Six Sigma improvement process step (Adapted from Hambleton Lynne, 2007)

As shown in Figure 13 above, the DMAIC follows five important sequential steps in reducing process variations, ensuring that the process is under control and process targets are achieve. The steps are briefly explained in the paragraphs below.

Step 1. "Define": the process improvement starts with defining what the improvement is all about. In most cases, this is where the problem and the scope of the improvement are specified. This is usually done in line with consideration to the organization's goal

and the need of the customers. A simple tactic that is commonly used is to think of it as what does the customer want. As pointed out by Hambleton (2007) DMAIC is mostly suitable in solving problem that occurs repeatedly and not just a one-time event.

Step 2 “Measure”: The measuring phase involves looking closely into how the current process operates or performs. This requires developing plans for collecting data regarding the process and showing a graphical presentation of the problem. At this point, process mapping tools are used to gathered information regarding the process (Adams et a., 2011).

Step 3 “Analyze”: the analysis phase involves carrying out series of test to determine the root cause of the problem in the process. This analysis could either be in statistical or qualitative form. The aim is to develop an idea or theory about the root cause of the problem. Therefore, activities that do not add value to the process as a whole are identified. The Ishikawa diagram is one of the tools used at this stage to display the cause of the problem and its level of effect. Another option is to use tree diagram to display this information, in case the information is huge and difficult to display on the fishbone or Ishikawa diagram.

Step 4 “Improve”: the improve phase focus on eliminating the root cause of the problems identified in the previous stage. This phase includes brainstorming session in which potential solutions to be problem are examined and ranked. The decisions on selecting the best possible solutions are made based on the impact the solutions will have on the performance of the process, the customer, and the company. The solutions are also tested if possible.

Step 5 “Control”: since the root cause or bottle necks in the process has been identified and resolved in the previous stages, the control phase focus on standardizing the improvement. In addition, this phase also includes handling over the process operations to the management. In other words, the process operation is passed on to the personnel in charge of daily usage of the process and the improvement process is closed. The goal in this phase is to ensure that the improvement is sustainable (Keller & Thomas 2014).

Having gone through the steps in the DMAIC, it is important to note that there have been some variations in its applications. Many literatures on this topic cited the addition of innovation as well as the inclusion of lean methodology as example of such variations.

While the lean methodology introduces the element of value-added, flow and velocity into the existing core fundamental of the Six Sigma. The innovation elements enable the DMAIC to be use in creating novel processes (Hambleton 2007). Despite these variations, the steps in the application remain the same while its implementation is targeted towards the alignment of the company's visions, values, and systems.

4.5.3 Total Quality management (TQM)

The Total Quality Management (TQM) is another methodology for improving quality of products and services. TQM concepts revolves around quality management philosophy which were proposed and shaped by quality experts such as Edwards Deming, Joseph Duran, and Crosby (Rosning et al. 2014). The International Standard Organization (ISO) refers to TQM as "a management model for an organization, centred on quality, based on the participation of all its members, and achieves long-term success through client satisfaction, and creates advantages for all of the organization, and the society as a whole" (ISO 8402: 1994).

TQM is an organization wide initiative for managing quality and is applicable to improving processes in both product and service organization regardless of the size of the organization. The initiatives rely on key elements which includes ethics, integrity, trust, leadership, communication, training, cooperation, and recognition. Although the adoption of TQM as an improvement initiative is more popular in the manufacturing sector. Nevertheless, its concept is applicable in the service environment.

The concept of TQM as a quality initiative comprises some key fundamental principles which practitioners adopting this methodology needs to adhere to. First is the ideal of continuous improvement of services and products. To achieve this goal, TQM requires processes, whether is services or manufacturing processes, to be designed and arranged in such a way that is not only visible and measurable but can also be replicated over a period. Second, using TQM in improving services requires studying and analysing the way the customer uses a service so that the service organization can have a better understanding of the customers' need which in turn can culminate in providing better service and value to the customer (Rosning et al., 2014). Third, is the principle of employee empowerment in which TQM requires the employees, working in creating the services or developing the product, to be encourage in improving such services and product since they are in a good position to understand the problem with the service or manufacturing process. The last principle is the knowledge of TQM tools which requires

the employees to be trained on the use of TQM tools so that everyone involves in the production or service process have adequate knowledge of the tools required for implementing TQM since the improvement task is not assigned to only one individual (Rosning et al., 2014).

Having discussed this, TQM has been criticized as an improvement methodology. Much of the criticisms come because of TQM not having a concrete implementation roadmap or model. Because of this reason, experts have proposes supplementing the TQM with other process improvement methods in order to achieve the optimum results. It is important to note that the benefits of combining more than one process improvement methods outweigh the deficiencies that could be found in simply using one. TQM relies heavily on other tools for its implementation, one of the most frequently used tools for TQM is the Deming PDCA Cycle shown in Figure 14 below.

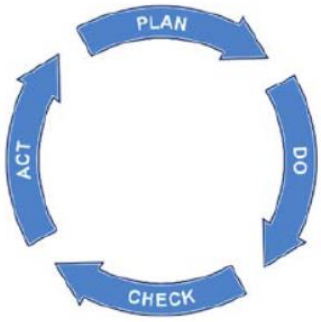


Figure 14. The Plan-Do-Check-Act Cycle (Adapted from Rosing et al. 2014, 68)

The Plan-Do-Check-Act (PDCA cycle). The PDCA cycle is a process improvement tools which is based on constant improvement of processes for product and services. It follows the concrete cycle of planning. The *planning* phase is all about establishing specific goals for the continuous improvement in the organization. Afterwards, detailed actions and steps required to meet the identified goals are created at this phase. The next phase is *the "Do":* this phase focus on doing or implementing the actions and processes which were laid out in the previous planning phase. It basically involves defining all activities needed for creating and implementing solutions to the identified problems in the earlier phase (Sorli &Stokic, 2009). *The Check* phase is concern with monitoring and evaluating series of actions and processes from the previous phase as well as examining the outcome and comparing it with the initial goals of the improvement plans which were set at the beginning. According to Deming, urgent response should be giving to the reports on

the outcome of this phase and improvement on quality should not be postpone until the quality inspections are carried out on the final product or services. *The Act* is the final phase in the cycle, this is where actions and decisions are made regarding what is to be improved. At this point, it is important to assess the whole PDCA process and make adjustment if needed prior to the implementation of the process improvement.

4.5.4 CSI process, methods, and techniques

There are numerous tools and processes that can be used in achieving continuous improvement in IT service-oriented organizations. Among the widely known model is the seven-step improvement process proposed by the ITIL. This model also incorporates the Plan-Do-Check-Act (PDCA) cycle into the core process. Figure 15 below gives a visual of the activities involved in the process.

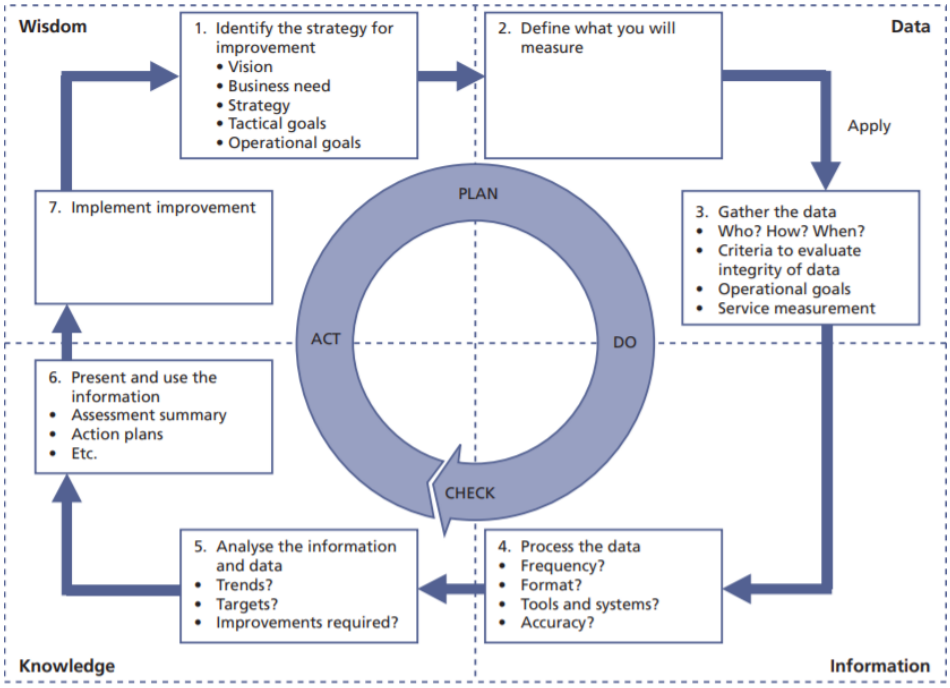


Figure 15. ITIL seven-step improvement process (ITIL 2011, 40).

As shown in Figure 15 above, the ITIL seven-step improvement process combines the Edwards Deming cycle quality assurance method (PDCA), with the other seven steps.

The Deming PDCA is particularly useful when it comes to the application and implementation of the CSI to services as well as for managing service processes.

1. Identifying the strategy for improvement. This requires the service provider answering crucial question concerning the goal of the improvement in relation to the organization.

2. Defining what to measure. This is one of the most important activities in the entire improvement process. ITIL suggests the measurement to be directed towards the strategic, tactical, and operational goals which are used in measuring services, processes as well as facilitating CSI. The frequent measurement areas include the customer satisfaction, market performance of the services, service levels, business impact, and supplier performance.

3. Gathering the data. The idea of step 3 is to collect data from the monitoring tools in place. To this effect the ITIL recommend organizations to set rules for monitoring and data collection procedures. Data relating to services are usually gathered through the examination of end-to-end service result, while the ones relating to processes are gathered though KPIs, CSFs as well as other activities that support service management processes.

4. Processing the data. Here, the data gathered in previous step is transform into the format comprehensible to the required users. ITIL recommends updating of logs and records in conjunction with proper documentation of compliance activities by organization staffs to solve these problems, and reporting techniques that can compress large data into information in such a way that facilitate easy analysis in the next phase.

5. Analyzing the information. Here, the processed data is treated as information. Making decisions on what to analyze is paramount as merely converting data into information without applying knowledge to the information or comparing the information with predefined objectives with a measurable target is insufficient.

6. Presenting and using the information. Here, the analyzed information is presented in form of a report or in any other formats that is comprehensible to the targeted audience and in a way that provide the utmost value. While the interest of various audiences might differ, keeping the report simple is the key.

7. Implementing improvement. The goal of this last step is to enhance, improve and make corrections to the services by utilizing the knowledge gathered throughout the previous steps. While it is possible to detect more than one issue and several improvement activities being presented, the organization will need to make decision on which of the solutions to implement. This decision is influenced by the goal, objectives, as well as ROI the solution present to the organization. (ITIL, 2011.)

Implementing continues improvement in IT consultancy services requires analyzing the whole service process and identifying areas that are underperforming on a regular basis. As envisage previously, improvement does not have to be massive, the consistency of the improvement process is what matter. In addition, the extent of the implementation also depends on the size of the organization. In a SMEs, the focus area can be limited within the key components of ITSM which includes reviewing the services, evaluating the process defining the CSI initiatives and finally monitoring the CSI initiatives. In large organizations, in addition to the ITSM, the CSI improvement activities are embedded in the whole the entire service lifecycle which includes the service strategy, service design, service transition and the service operation.

No successful process improvement can take place without the right tools. Therefore, it is necessary to explore some of the well-known process improvement tools used in services sector.

4.5.5 Process Improvement Tools

Successful process improvement requires the use of appropriate tools. Each of the tools deployed during the improvement process must fit the needs of each of the improvement phases so that desire outcome can be achieved. These tools can help process owners, developers, and designers in evaluating, analysing, measuring their processes.

Blueprinting

According to Fliess & Michael (2004), “Service blueprint is a picture or map that accurately portrays the service system so that the different people involved in providing it can understand and deal with it objectively regardless of their role or their individual point of view”. In other words, Service blueprint provides a way of documenting and codifying

the design process as well as mapping the sequence of events in a service in an objective and explicit manner (Shostack, 1982). This tool is use for operation analysis by outlining the services processes.

These design tools are used in achieving the targets set in each stage of the design processes. The nature of the services provided by IT consultancy firms, is such that requires constant improvement from time to time. This is because the IT industry is a very fast-paced and competitive sector. Keeping up with this new development requires improving the service process and service design on a continual basis.

Process Mapping

Process map is a structural diagram which shows a set of interrelated activities used in converting an input into output. It is primarily an analytical tool used in identifying components of a process in order to discover where improvement opportunities are.

There are many variations of process maps. This ranges from high-level process map, which is used in displaying wide range of classifications of activities or milestones, all the way to detailed process map which is contain more information and is used in identifying improvement opportunities by showing comprehensive and detailed pictures of the activities, tasks, and players in the process.

Process mapping in service environment provides a clear visual display of the entire process involves in the service creation.

The Fishbone diagram (Ishikawa)

The fishbone diagram which is also known as the Ishikawa diagram is one of the seven basic tools for quality improvement. The tool was initially developed to display the variables causing poor quality as well as their effects. This tool helps process manager and developer in arranging and analysing the potential causes of problem.

Using this the fishbone in process improvement requires brainstorming and finding all the potential causes of problem in the process and putting them in different groups. The causes of the problem are display in the diagram as bone of the fish that comes from faulty outcome which is represented by the head of the fish. Additional details concerning the problems are display separately on the branches of the bone, usually away from the

central bone. Finding the cause and effect using this tool follows two main formats which on one hand is the process format and on the other hand is the dispersion formats. The process format can be use in service while the dispersion format is mostly used in the manufacturing sector. Although there have been different perspectives to use of this tool as process improvement tools. Some of this involves starting by focusing on the problem, while others include working backward by focusing on ideal outcome.

4.6 Conceptual Framework of This Thesis

This section pulls together the conceptual framework for the next steps in this thesis. This framework is compiled based on selected elements of best practices and available knowledge related to process formalization, value creation, process design and improvement. The framework combines key elements such as the PDAC model with the DMAIC process improvement techniques. In addition, some of the process improvement tools used for defining roles and activities area as well as steps in enhancing value-co creation are included in this framework.

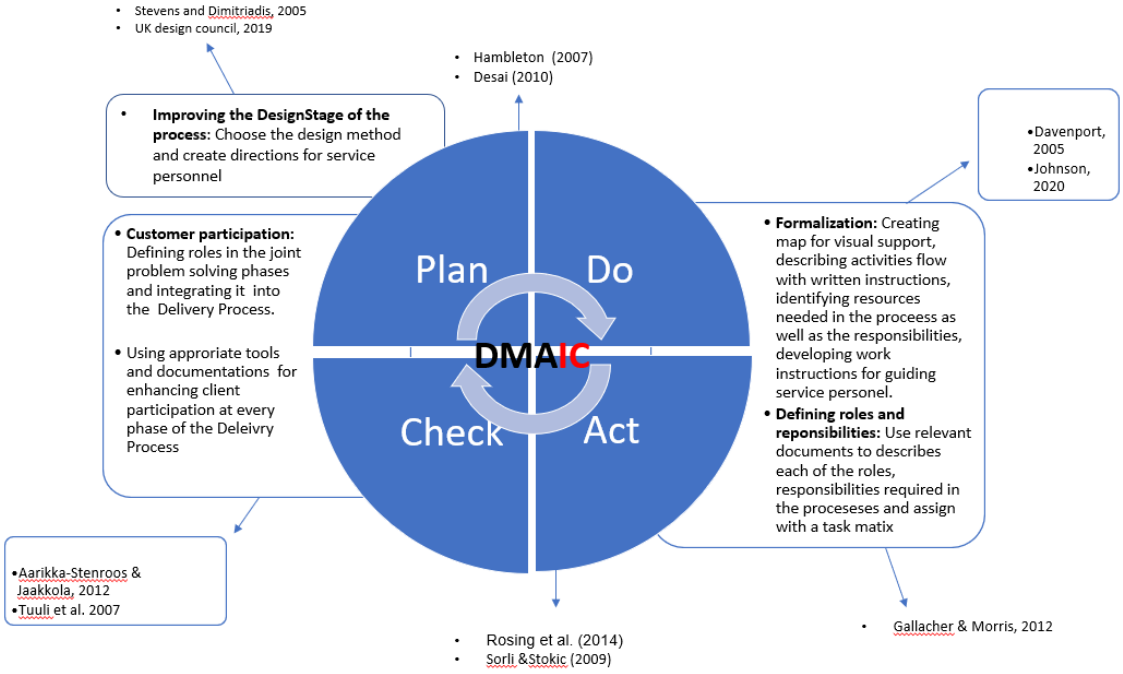


Figure 16. Conceptual framework for this study for process improvement.

As illustrated in Figure 16, the topic selection from literatures and existing knowledge mirrored the focus problem area from the CSA result. This conceptual framework has one central part and two subordinates. The center part is the improvement approach for this study. This follows the service process improvement steps which consist of the Defining, Measuring, Analyzing, Improving, and finally Controlling phase. The subordinate part of this framework concentrates on the problems identified within service delivery process. This model simplifies and focuses on the crucial areas in the service process improvement.

As stated above, the first area in this conceptual framework describes *the adopted approach* for improving the current service delivery process. This combines the DMAIC improvement approach with PDCA. Furthermore, since the Define, Measure, and Analyze phase of the Six sigma have been carried out during the CSA, the focus of this conceptual framework is now on process **Improvement and Controlling**; this is the rationale behind highlighting of the "Improve and control" with red in Figure 16 above. In addition, incorporating the PDCA model with the DMAIC is deemed necessary for supplementing the improvement process and involving the case' company management in the process. Moreover, this decision is also made to mitigate any shortcomings that may arises in using only Six sigma initiatives in service environment thereby boosting the improvement initiatives.

The first subordinate part of this conceptual framework focuses on *process formalization*. This includes various steps for enhancing the service delivery process and activities in work environment; this includes adopting the process formalization techniques used in clarifying roles and responsibilities for the service personnel. Such tools include RACI chart.

The second subordinate focus area is on *customer participation*. This consist of steps in aligning value co-creation techniques with the service delivery process and integrating communication tools to support the customer participation in the service process.

This conceptual framework provides the basis for relevant concepts and tools in developing the proposal for service process improvement in the next section.

5 Building Guidelines for Improving the Service Process in the Case Company

This section focuses on developing the improvement proposal for the case company based on the CSA results, the framework pulled together in Section 4, and the workshop (Data 2) where the improvement proposals were co-developed with the key stakeholders.

5.1 Overview of the Proposal Building Stage

This section presents the steps taken in building the proposal. This proposal was developed with the primary goal of resolving the key weaknesses found in the CSA. During the CSA, key issues came up regarding lack of adequate guidelines for service development, disconnection between the teams, unclear roles and responsibilities during service development, and little to no involvement of customers in the project delivery process. Consequently, a review of the existing knowledge and best practices on how to improve processes, formalize process and enhance customer participation in delivery process was conducted. Particularly, concept of service process, service design, process formalization, ideas on value co-creation and process improvement methodologies in knowledge based intensive services (KBIS) were explored. Among these concepts and improvement tools reviewed, the framework for value co-creation proposed by Aarikka-Stenroos & Jaakkola (2012), process formalization steps proposed by Davenport (2005), double diamond model, stage gate model, and the RACI matrix used in assigning roles and responsibilities, were found to be appropriate in solving the case company's problem. In addition, the Deming cycle (PDCA) and the classic DMAIC were also found to be the most suitable improvement approach for implementing the solution to the problem. Therefore, these process formalization concepts, process improvement methods, service design methods, framework for value creation and roles and responsibilities matrix were used for the proposal building. These following steps were taking in putting everything together.

First, a workshop was organized in building this proposal. The goal was to revise the key findings of the CSA, get acquainted with the existing knowledge and best practices in process improvement, service design, process formalization, assigning roles and responsibilities, value co-creation, hold discussions on improving the service process in the case company and bring together suggestions from the stakeholders. The focus of the development efforts in this step was directed towards formalizing the service process,

clarifying and assigning roles and responsibilities for the service personnel, and enhancing customers participation in the case company's project development process.

The workshop was attended by four participants who are responsible for service creation, development, and delivery in the case company. The reason for choosing this form of data collection method is because the workshop provides the best setting for gathering quality inputs from the stakeholders, as they were in the forefront in encountering the problems. Moreover, this approach also ensures that the solution reach in the proposal address the key issues found in the CSA.

Second, after the workshop, a brainstorming session was held, suggestions from the participants were gathered, and consensus was reached on what to include in the proposal as well as the direction to take in improving the project delivery process. This consensus approach to the solution development ensure that all the participants had a chance to contribute, and the proposal does not only solve the problem on the paper but can also work in real life. The next sub-section reports the key findings from the co-creation session.

5.2 Proposal Development (based on CSA, CF and Data 2)

The current state analysis (Data 1), conceptual framework as well as this co-creation round (Data 2) formed the basis for building the proposal for improving the project delivery process in the case company. The focus area for this improvement are as follows:

1. Developing and formalizing the project delivery process

2. Enhancing client's involvement and engagement in the Delivery Process through value co-creation.

3. Clarifying the roles and responsibilities of service personnel during project development and delivery.

5.2.1 Summary of the co-creation process

The Table 6 below is the summary of the improvement reached during the co-creation session dedicated to solving the case company's problem.

Table 6. Summary of the co-creation process

	Key focus area from CSA	Input from literature (CF)	Suggestions from stakeholders for the Proposal, Summary (from Data 2)	Description of suggestion
1	Developing and formalizing the Project Delivery Process	Adopt map for visual support, describing activities flow with written instructions, identifying both material and human resources needed in the process as well as the responsibilities. Developing work instructions for guiding service personnel.	Identify the set of documents required for formalizing the process, also identify the people who are involve in the process, develop and select the right documents in managing the process.	Define the steps involve in the process and rearrange the activities to improve the delivery process. Make the process visible (visualize), then tailored the process activities into SW development process to address the real issue found in the CSA. Create Standard Operating Procedures (SOPs) to solidify the improvement and inform the necessary participants in the delivery process.
2	Enhancing client's participation in the project development and delivery Process through value co-creation.	Defining roles in the joint problem-solving phases and integrating it into the Project Delivery Process.	Use Service design methods in identifying and engaging the clients into the development process.	Delineate the Design phase of the delivery process. Write a list of checklists in which the employee needs to observe in involving the clients at each stage of the Service design. In addition, include client review and approval on the SW development process map.
3	Clarifying the roles and responsibilities of service personnel during project development process	Identify each role needed in the SW development process and use LCR or RACI matrix to allocate role of the service personnel	Define the process steps involved and link it with roles and responsibilities matrix associated with each task in each of the steps.	Comprehensive description of the roles in the project delivery process should be made available: not only including who is going to do what but also how it should be done. There should be a clear responsibilities matrix for the roles.

5.3 Findings of Data collection 2

At the beginning of the workshop session consensus were reached to solve the problem by methodologically listing the overall steps to follow in solving the problem at hand (improving the SW project development process in the case company). The following paragraphs highlights the steps agreed on.

First, it was agreed to address the problem by reviewing the current process, redefine the process activities if necessary and clearly state the main steps to follow in the SW development and delivery process in the case company.

Second, it was agreed to map the process's main activities in phases to enable clear understanding of the process flow. The idea behind this decision was to integrate client into each phase of the overall project development process and ensure that the process is comprehensible, concise, and easy for the service personnel to understand and monitor. To this end, the SW development process for web development was adopted.

Third, consensus was reached to delineate service design from the overall delivery process. The rationale behind this decision is to enhance client participation in the delivery process by incorporating hybrid methods (double diamond and stage gate) within the development process. The expectation is that it will help the service personnel not only to understand the process better but also give more details on how they should coordinate and co-operate with the clients.

Fourth, it was agreed to identify the necessary documents requires for the formalizing the process.

Fifth, decision was reached to identify role for the people involved in the delivery process and assign responsibilities to them accordingly.

Fifth, agreement was reached to develop the document needed for the process.

Finally, it was agreed to make decisions on how to control the process and ensure that the employees are aware of the new development and changes.

5.3.1 Current process

Steps 1

This phase is the first steps in the process improvement as agreed during the co-creation process. The goal here was directed at reviewing the activities in the current delivery process in the case company. The Figure 18 below shows the activities in the current delivery process.

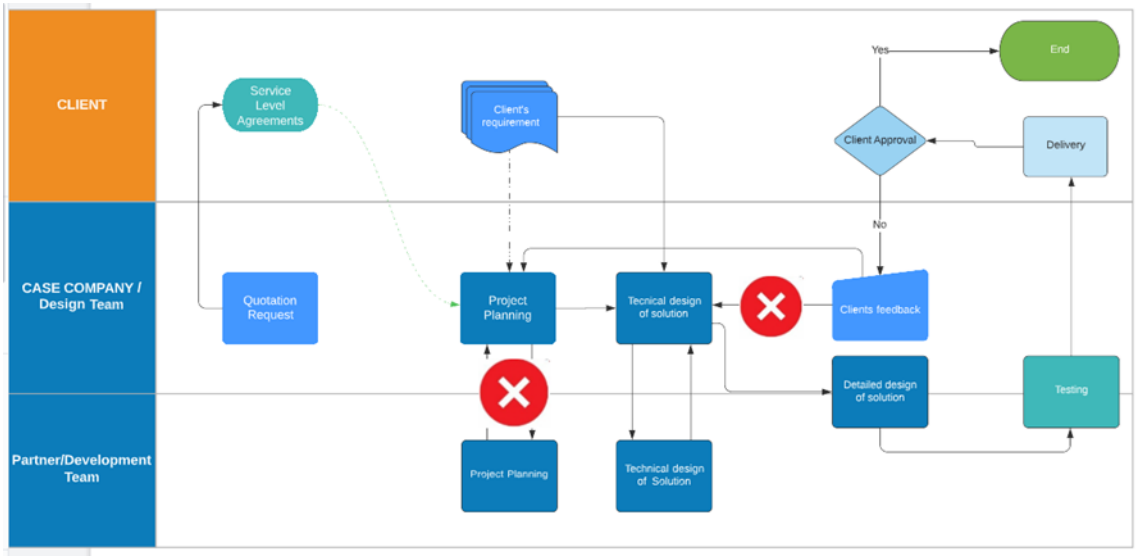


Figure 17. Description of the current project delivery process in the case company

The figure 18 above is the description of the current process for delivering IT services in the case company. The red mark in the graph shows the area of concerns in the process which prompt the whole process activities to be review during this co-creation process (Data 2). The result of this redefined steps was used in constructing the process map in the next session.

5.3.2 Process Mapping:

Step 2:

This session shows the process mapping as agreed on during the co-creation sessions. All the participants in the co-creation session agreed that the process activities need to be redefine/rearrange and carefully tailored specifically for SW development process for

web app. In addition, consensus was reached on retaining the starting point from the current process. Thus, the point where the request for quotation is made remain the event that triggers the new process while the ending point was redefined to be the point where the client makes decisions whether to continue with the services after project is delivered, launched and additional support is giving to address any problem that might occur post implementation. The reason behind this decision was that it allows the case company to reflect on the whole process after the delivery of the solution to the client which is something lacking in the current delivery process.

Other notable changes to the existing process activities are the addition and highlighting of sprint planning meeting, clients' reviews, feedback, and approval at various phases of the development process. The figure 19 below shows the process flow for the case company's SW development and delivery process.

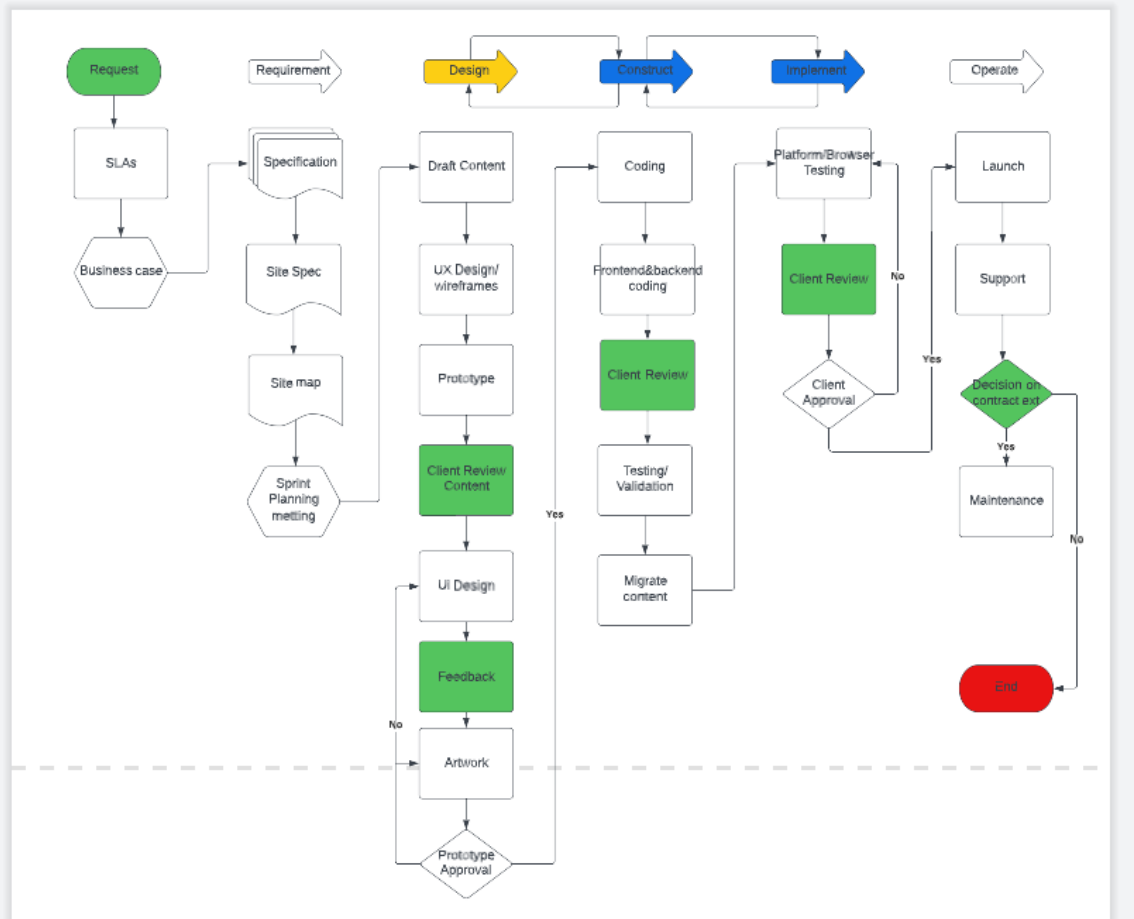


Figure 18. Improved Flowchart for the SW development process for web services.

The figure 19 above is the improved process map showing workflow of activities for the case company's SW development process for web app. As explained early in the previous section, the main activities in the process were listed and suggestions were made on rearranging the activities as well as deciding on what to include in the improved process flowchart. These suggestions were made primarily to address the bottleneck currently experienced in the delivery process during the CSA.

The improved SW development process begins with request for quotation, which is followed immediately by signing of agreement on the service levels (SLAs) with the clients. Then continues with establishing business case for the web delivery project by performing a joint problem diagnosis of client's business problem as part of value co-creation.

Afterwards, the SW development process proceeds to the requirement phase where specifications, site specs and site map for the project are defined in detail. Sprint backlog is created for logging this information and used in planning meetings for the web development.

The process later goes to the Design phase where draft of the content is created. This is followed immediately by designing of the UX as well as the wireframes. Prototype of the wireframes are created and followed by client review of it. The feedbacks should be addressed immediately before proceeding with the creation of the UI. The next activity is to get feedback on the UI and go ahead to develop artwork for the site. As agreed by the participants, client approval is required at the end of this phase before going on to construction phase.

The construct phase begins with the actual coding. This goes on to the front-end and the back-end codding. The workflow continues with the client's review before the testing and validation are carried out. Afterwards, the content is migrated before the platform and browser testing is done. Then the flow of activities continues with the final review by the client and approval is required before launching of the web.

The last phase in the refined web development process is the operate phase. Where the new solution is lunch. This should be followed by support for minor fix and bugs that may occur after the launching. Then it continues, to the point whereby the client is required to make decisions on whether to continue with the maintenance services or end the contract.

Below is the summary of the action taken for the improvement of the SW development process.

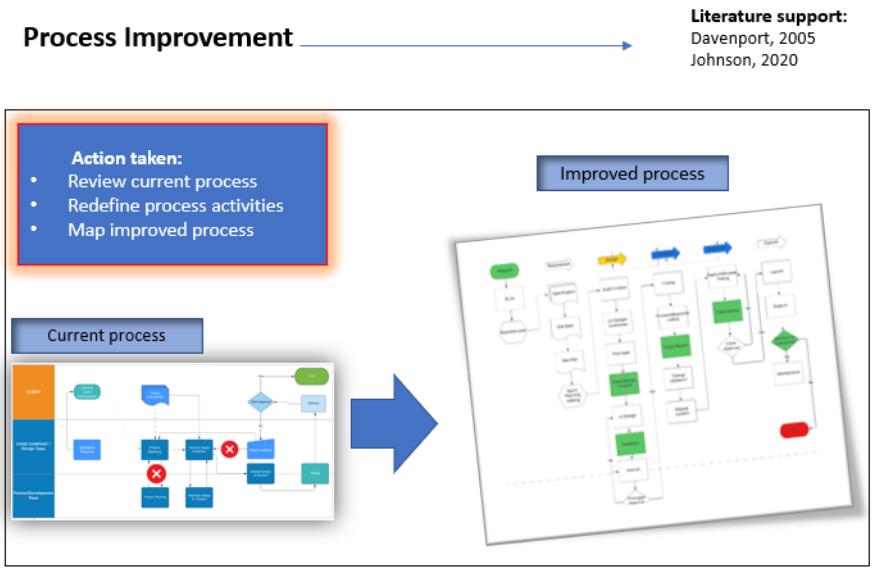


Figure 19. Outcome summary of Step 1&2:

Process mapping and improvement

5.3.3 Service Design and enhancing customer participation in the development process.

Step 3:

This section is the follow up to the previous session. This represents the steps 3 based on the agreement reached earlier. The aim is to delineate the service design from the overall project delivery process. As agreed by the participants during this workshop session, this helps to give more clarity to the design phase of the project development process and enhance customer participants in the SW development process. The Table 7 below shows the consensus reached regarding the service design phase of the process.

Table 7 The Service Design phase of the delivery process

	DESIGN STAGES	External Partner Engagement	Roles and Responsibilities	Communication Interface Management	Customer Engagement
Service Design	Discovery		Case company's Project coordinator / manager, Client manager, case company's business analyst/ developer as well as other personnel in the client firm.	Regular briefs, contact meetings, information sharing via files	conduct design workshop with client and provide conducive environment for them to take active participation. Workout research questions
	Define	Full participation in Project development plan, full involvement in solution design	Project manager, relevant external partners/vendors, planning team, client manager, solution designers need to be involved in this phase	Face to face, telephone calls	Knowledge sharing with client, examining & interpreting user's requirement, designing solutions together with clients on
	Development	Full access to joint development of solution (files, documents, agreements etc)	Project manager, development team. Other relevant solution designers	Meetings, phone calls, face 2 face	Updated on key development progress as well as delivering POC to the client. Implement feedback on key issues
	Delivery	Coordinating and participating in the solution delivery, access to customer feedbacks	Project manager, design team, external partners/vendors, client manager,	Meetings, phone calls, face 2 face	Meetings with client for delivering the final solutions. Gather client's reviews/Feedback regarding the solution

As shown in Table 7 above, each stage of the service design phase in the delivery process has been separated based on the suggestions from literature and the workshop session. The double diamond design method was suggested for adopted. The aim is to highlight different participants in the delivery process and enhance their participation. Thus, enhancing client participation in the development process remains the primary

focus here. Although, external partner as well as tools are listed also because of the problem identified during the CSA. Notwithstanding, the majority of the focus here is dedicated to enhancing client's involvement in the process.

At the discovery stage of the design, suggestion was made to include conducting of research workshop with the client as mandatory. The rationale behind this recommendation is that the regular briefings and meetings has not been enough in fully engaging the client, as a co-creator, in the delivery process. Based on the result of the CSA, which revealed that many of the meetings held with clients were only with single contact from the client's company, and the views were somehow limited. Therefore, suggestion is made to include diverse people in the workshop (project discovery workshop) in getting broader perspectives.

At the define stage of the design, recommendation to enhance the customer participation includes knowledge sharing during the analysis of problems or business needs which has been identified. In addition, solution designing should be made along with clients. In this regard, the consensus is that regular update on the status of the project should be made available to the client and the client approval needs to be obtained before this phase is complete.

At the develop stage, suggestion to improve customers participation includes the introduction of prove of concept (PoC) and prove of value (PoV) as vital deliverable to the customer in this proposal. This does not only ensure that the customer is carried along in the development process but also ensure that the solution designed matches the client requirement. Other mediums for promoting client's participation, including regular project updates and meetings are also embedded in this proposal to increase customer involvement in the service process.

At the delivery stage, the addition of customer review in the process is recommended. This ensures that the customer takes more active role in the whole co-creation process and the customer approval is required before the project can be delivered. This step deemed necessary as a precaution to the problem currently encountered in the current service design.

5.3.4 Documenting the Process

This session focus on the required documents for this process improvement and formalization. Recommendations were made during the cocreation session with the stakeholders based on suggestions from the literatures and consideration to the problems currently encountered during the SW development process. In addition, attention was giving to the flexibility of the process in addressing dynamics customers' needs as well as its implementations.

The Table 8 below shows the required documents for this process formalization as well as its implementation. The identified documents were based on the concerns raised by the service employees during the CSA. During the workshop (Data 2) suggestions were made on creating SOPs for the web development process. Additionally, recommendation was made concerning updating the work instructions to reflect the changes in work practices. Finally, it was recommended that procedure guidelines for service design as well as other work-related rules should be explicitly articulated in the work manual. The Table 8 below shows the required document documents and comments.

Table 8. Document required for process formalization in the case company.

Name of document	Additional information
Work instructions	Description of the activities within the formalized project delivery process should be provided as well as the way these activities are to be carried out and documented
SOP for SW development process for web services	To be drafted by the team and assigned to process owner.
Instruction for addressing customer complaint/feedback.	There should guidelines in place for handling customer complaint or feedback and integrating customer into the delivery process.
Checklists for service design	A checklist for designing services as well as the communication tools for service development should be made available to service employees

As shown in the Table 8 above, comprehensive instructions on how to execute the task regarding web development projects in the case company, requires creating and updating the content in the four documents mentioned above. While the standard operating procedures (SOPs) addresses procedures which the service personnel in the case company need to following creating and delivering web projects for the clients, updating the work instructions is needed for sustaining and supporting the development processes as well as ensuring that service personnel are well informed and have common understanding when carrying out their activities and tasks concerning the development and delivery quality of the web services. In addition, guidelines on enhancing client's participation in the SW development processes were also developed.

Below is the summary of the decision taken during the cocreation session regarding enhancing customer participation in the development process and the document needed for the process formalization.

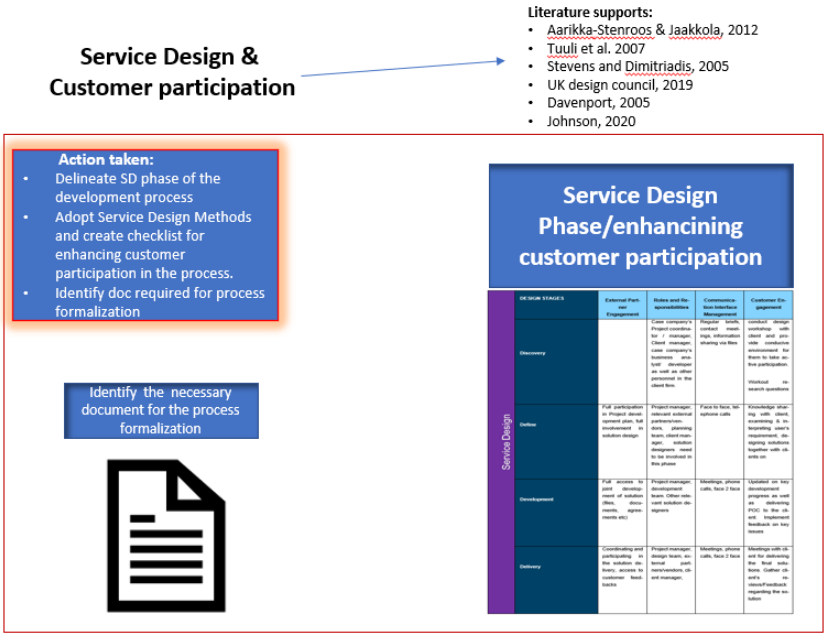


Figure 20. Outcome summary of step 3&4:

Service Design/enhancing client's participation and identifying documents required.

Having gone through the steps required in identification of documents needed for the process formalization. The next section is for identification of role and responsibilities in the web development process.

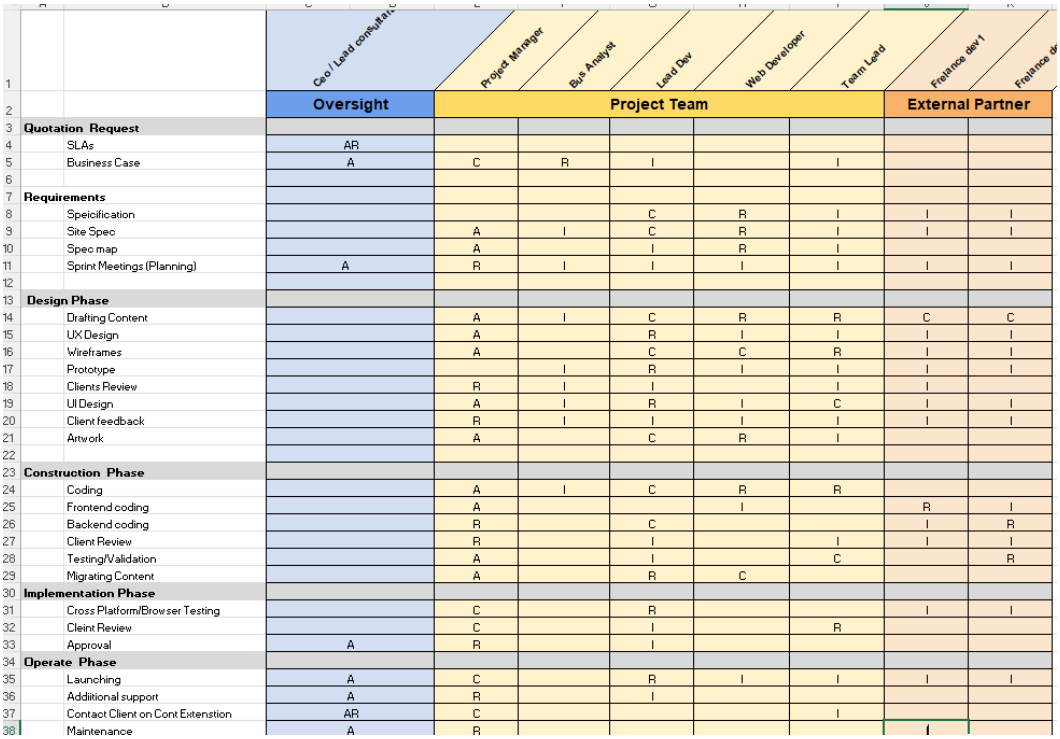
5.3.5 Clarifying and assigning roles and responsibilities

This section of the co-creation workshop focusses on clarifying and assigning roles and responsibilities for the service personnel during the product development process. The recommendation from best practices and literature review on assigning roles and responsibilities in chapter 4 provided the basis for the steps taken in this co-creation session. The following paragraph highlights the suggestions from experts on the action to take in putting this section together.

The required step begins with identifying the process involves in the SW development process (which has been done in section 5.3.1 above), then construct a list of the activities involve in the project development. The list of the roles should be compiled based on the resources available at the disposal of the case company. Afterwards, the activities should be matched with the roles and assigned to the participants in the web development process based on the anticipated level of involvement with each role. Finally, the decisions should be convened to the process participants.

During the workshop, several process activities were identified as soon as the process was mapped (in section 5.3.2 above). Concessus were reached after consideration were giving to the roles in the newly improved project development process. Additionally, all the participants agreed to use RACI matrix for the task due to the simplicity of using the tool as a role and responsibility assignment tool. The column in the table was used for listing the tasks while the list of participants in the process was placed on the row. The Table 9 below shows the consensus reached.

Table 9. RACI Chart for the web project development process.



	Ceo / Lead consultant	Project Manager	Bus Analyst	Lead Dev	Web Developer	Team Lead	Freelance dev1	Freelance dev2
	Oversight	Project Team					External Partner	
Quotation Request								
SLAs	AR							
Business Case	A	C	R	I		I		
Requirements								
Speicification				C	R	I	I	I
Site Spec		A	I	C	R	I	I	I
Spec map		A		I	R	I		
Sprint Meetings (Planning)	A	R	I	I	I	I	I	I
Design Phase								
Drafting Content		A	I	C	R	R	C	C
UX Design		A		R	I	I	I	I
Wireframes		A		C	C	R	I	I
Prototype			I	R	I	I	I	I
Clients Review		R	I	I		I	I	
UI Design		A	I	R	I	C	I	I
Client feedback		R	I	I	I	I	I	I
Artwork		A		C	R	I		
Construction Phase								
Coding		A	I	C	R	R		
Frontend coding		A			I		R	I
Backend coding		R		C			I	R
Client Review		R		I		I	I	I
Testing/Validation		A		I		C		R
Migrating Content		A		R	C			
Implementation Phase								
Cross Platform/Browser Testing		C		R			I	I
Cleint Review		C		I		R		
Approval	A	R		I				
Operate Phase								
Launching	A	C		R	I	I	I	I
Additional support	A	R		I				
Contact Client on Cont Extenstion	AR	C				I		
Maintenance	A	R					I	

The Table 9 above shows the consensus reached, during this workshop, on the RACI matrix role and responsibilities for the web project development process in the case company. The letter “R” represents responsible which denotes the person who is supposed to carry out a task, the letter “A” represents Authority showing the person who is accountable for the task. The letter “C” represents consult showing the person who need to be consulted about the task. While the letter “I” represent inform which represent the person that needs to be updated as the development project progress.

In addition, the tasks were display according to the development phases of the project. It was agreed that in each of the phases a role should be dedicated to a team member in ensuring that the customer is fully updated on the progress of each phase of the project and the customer approves the phase before proceeding to next phase. This decision was taken to address the cause of the problem which marred the current delivery process in the case company.

It should be noted (as agreed in the workshop) that this RACI matrix for the project development process may be adjusted based on the project embarked by the case company. This is deemed necessary in order to adapt the process to changes in client requirements as well as availability of human and material resources in the case company.

Finally, a copy of the RACI matrix was sent to each of the participant for perusal and improvement suggestions were expected.

5.3.6 The Standard Operating procedures (SOPs)

This section focuses on documenting the web development process. This represents the Step 5 Highlighted in the section 5.3. This is a continuation to section 5.3.4 above where the required document for the process formalization is listed.

Standard operating procedures are work instructions aimed at ensuring consistency and quality in services. Some of the literature's idea discussed in chapter 4 provides the basis used in formulating this section. There are number of questions that needed to be answer when developing SOPs in consultancy firms. This includes: how to manage the document? what is the structure and content to include in the document? How to check the accuracy of the content of the document? And how to inform the people in the process about the SOP.

Regarding the management of the document, it was agreed that the document should be updated from time to time. The rationale behind this is because IT consultancy as well as the whole IT industry is a face-paced industry. Therefore, it makes sense to review and update the SOP periodically in order to ensure that the process can adapt to new development and changes in market environment. To this end, there should be a section of the document containing the date and the name of the people responsible for reviewing the document as well as those responsible for its approval.

Regarding the structure of the document, the consensus reached coincided with suggestions from literature. Therefore, the name of the process the SOP covers, the scope of the process, the purpose of the document, responsibilities, the definitions as well as the procedure are included in the document structure and content.

Regarding the verification of the document's contents, it was agreed that the draft of the SOP should be forwarded to the team members for perusal and give feedback on it. Before the final deployment, test will be conducted to see if the instruction works as intended and further recommendations are welcome.

Finally, the finalized version is retained. The Figure 25 below shows the summary of the decisions reached in this phase

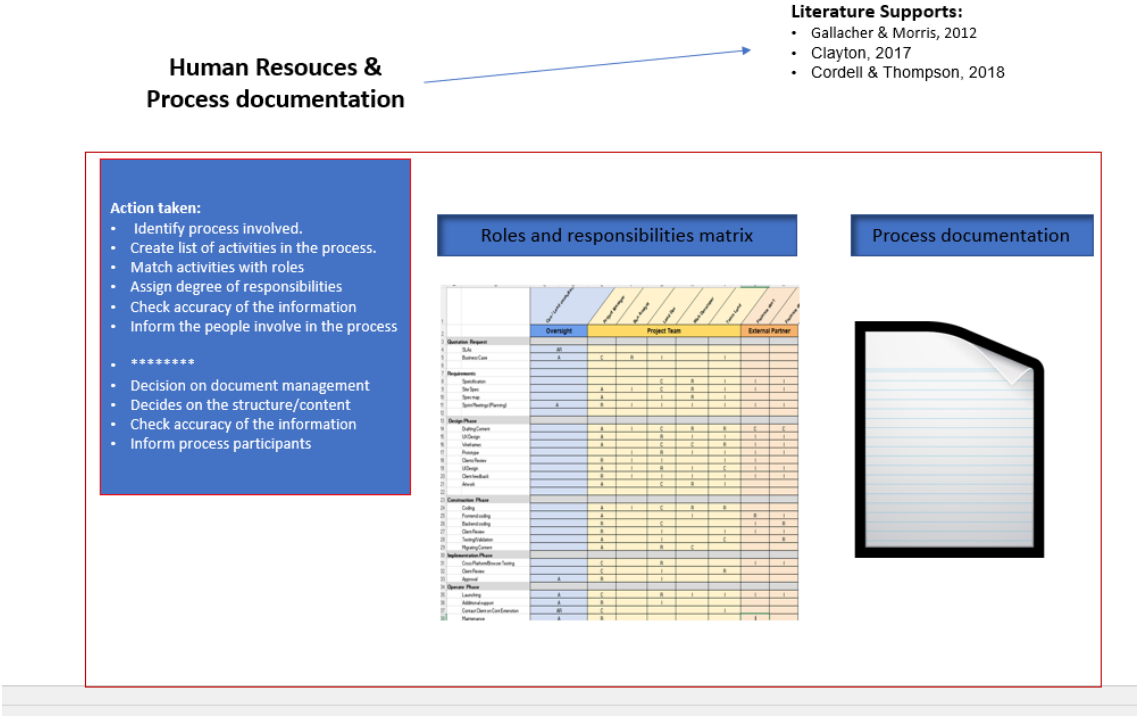


Figure 21. Outcome summary of step 4 & 5:

Assigning roles and responsibilities and process documentation

5.4 Summary of the initial proposal for process improvement and formalization.

This section summarizes the initial proposal for this thesis. The initial proposal for improving project development process in the case company was made based on the conceptual framework and co-creation session for this thesis. The proposal utilizes important service design methods, process improvement methods, ideas on assigning roles and responsibilities, and process formalization in addressing the key weaknesses identified in the case company's project delivery process. While the double diamond model, Stage-Gate and value co-creation concepts were among the key concepts used in enhancing client participation in this proposal. The RACI matrix provided the needed tools in assigning roles and responsibilities for this proposal. Furthermore, process formalization concepts were also employed in addressing the key issues and building this proposal. The Figure 26 below is the visual summary of this proposal.

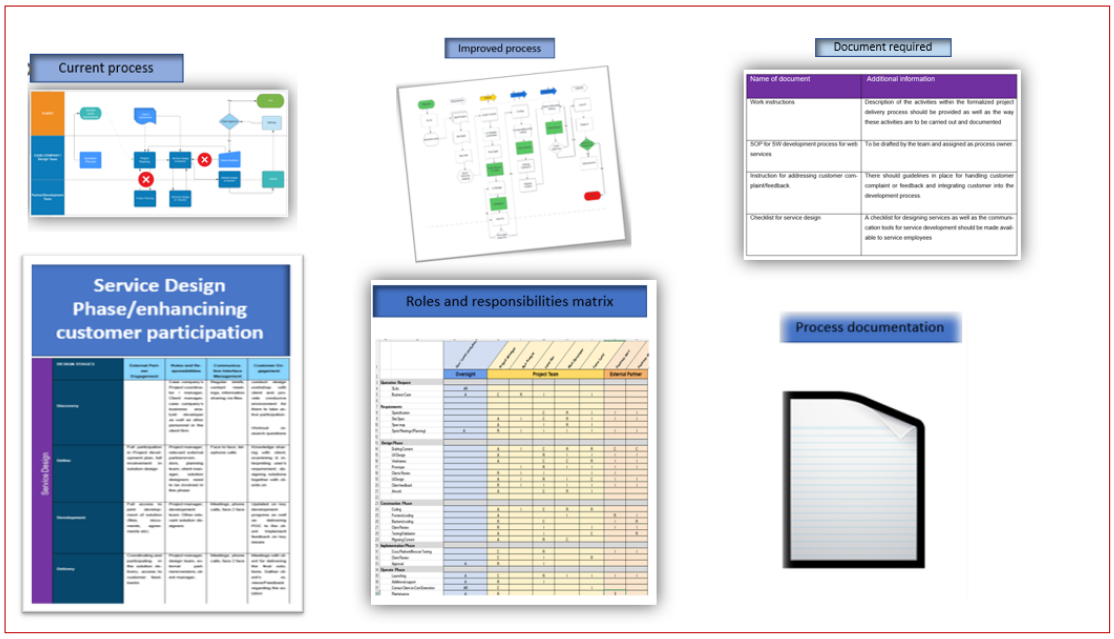


Figure 22. Visual summary of the initial proposal

As seen in the figure 26 above, this initial proposal is divided into six parts. Each of the six parts represents the steps taken in solving the problems identified in chapter 3 (CSA) of this study. These parts are distinct yet complementary to one another.

In building the initial proposal, efforts have been made to tailor the fundamental concepts found in literatures with the best practices in addressing the specific needs of the case company. The steps taken for solving these business challenges begin with the identification of the current delivery process in the case company. Then, the process is improved by redefining/rearranging the flow chart of the activities involved. Afterwards, an improved process map is constructed following the adjustment made on the process activities. Later, a section of the SW development process (Design phase) is delineated and linked with value co-creation ideas for integrating and enhancing customers participation in different stages of the project development process. The steps continue with the identification of necessary document required in formalizing the project development process. Afterwards, the roles and responsibilities of the service personnel working in the process were identified and assigned accordingly with the help of the RACI matrix. Finally, a draft on documents for the process formalization was constructed. The next chapter focuses on validating the proposal.

6 Validation of the Proposal

This section of the thesis reports on the results of the validation stage and points to further developments to the initial Proposal. The input in this section makes the Data 3 collection for this thesis. The section is divided in three parts. The first part gives an overview of the validation stage, while the second part shows the further development of the proposal. At the end of this section, the Final proposal for improving and formalizing the SW delivery process in the case company as well as further recommendations are presented.

6.1 Overview of the Validation Stage

This section focuses on overview of the validation stage as well as the recap on steps taken for building the initial proposal. Validation in this context refers to testing of the initial proposal and the feedbacks on its performance.

The initial proposal for improving the SW development process in the case company was built during the workshop held with the stakeholders in chapter 5 (Data 2). The co-creation workshop was set up to formalize and improve the SW development process, clarify and assign roles and responsibilities for the service personnel, and enhance clients' participation in the case company's project development process. Accordingly, the workshop was attended by four key participants who are responsible for services creation and delivery in the case company. These participants include the case company's lead developer, an external partner (freelance developer), business analyst, and the team lead. A brainstorming session was held immediately, recommendations from the participants were gathered, and consensus was reached on how to develop the initial proposal as well as what to include in it.

In this validation stage, the goal is to evaluate the initial proposal. Thus, the first meeting was organized with the top management of the case company. The reason for the meeting was to present the consensus reached during the co-creation session (chapter 5) in detail and seek approval for the adoption of the proposal in the case company.

During the meeting, the stakeholders agreed to evaluate the initial proposal by testing it on a newly selected SW project. The rationale for selecting this validation method is because the case company is a small consultancy company with limited resources.

Moreover, the nature of the business challenges uncovered during the CSA is more of a practical problem which requires concrete solution alongside practical test to confirm whether the proposal can solve the problem in real life situation.

Consequently, the case company's personnel who are involved in the CSA and proposal building were informed about the decision. The project on which the initial proposal was to be tested was expected to commence immediately and the feedbacks from the service personnel reported.

After the initial proposal have been tested on a real project and feedback received. Another round of meeting was held with the case company's top management. The purpose of the meeting was to present the test results, discuss, analyze, get feedbacks, and further improve the initial proposal. The meeting was attended by the case company's CEO, lead developer, project manager and team lead. The following section briefly discusses the service personnel's comments on application of the initial proposal on the Test project.

6.2 Employee's feedback on Testing.

The try-out of the guidelines in the initial proposal was conducted between 3rd of November to 17th of November 2022. It is important to note that although the try-out went well in general, but the researcher had to admit that the test was limited to only one project at the point of writing this section of the thesis. Therefore, this limitation should be considered regarding the outcome of the test and the employees' feedback.

During the testing, email was sent to the service personnel requesting them to report on their observations and experiences in implementing the guidelines laid out in the initial proposal. The reports were to cover important questions regarding the ease of use of the initial proposal, its impact on productivity/quality of service output as well as on team communication and coordination, whether the guidelines are comprehensive enough, what works and what does not work, and any improvement suggestion. The Table 10 below is the summary of the feedbacks received from the service personnel who are involve in the test.

Table 10. Summary of the service personnel feedbacks on the initial proposal try-out

Section in Initial proposal	Summary of employees' feedbacks
SW delivery Process Map	• Easy to comprehend and apply to the project • Activities are well defined and flow easy to understand • Provides comprehensive framework for service improvement • Provides good visualization and directives in monitoring work progress
Service Design	• It is useful tool for service development • More details should be provided on this for easier adoption and implementation • It will be better to align this part with the RACI charts • More details about this section are needed for optimal customer engagement, co-ordination, and cooperation.
Documentations	• Need to be made into a single document with different sections addressing various phases of the delivery process. • The content of the procedure needs to be strengthened and the table on content should be added.
Roles and responsibilities	• It's very helpful for team cooperation and coordination • Well defined and easy to use • Need to pay attention to the process workflow and update the RACI matrix to match activities. • Demonstrated significant improvement for work co-ordination

As shown in the Table 10 above, the feedback from the service personnel were arranged in key area in the initial proposal. On the average, the comments received on the implementation of the guidelines in the initial proposal were positives. Few areas of improvement were identified. This were presented to the management in the next section where improvement was made to the drafted proposal.

6.3 Developments to the Proposal (based on Test results)

This section focuses on improving the initial proposal based on the outcome and feedbacks on the tests conducted. The case company's management recommendations for the improvement have been summarized in the Table 11 below.

Table 11. Summary of improvement suggestions (findings of Data 3) for the Initial proposal.

	Element of Initial proposal	Part commented in validation	Description of comment	Development to the initial proposal
1	SW development process	Retaining the flow of activities in the delivery process, expatiate more on the activities in the operating procedures.	The management recommended retaining the flow of activities in the initial proposal since the process map is concise and easy to understand. However, more details of its descriptions are needed in the SOP concerning the tasks.	The SW Process map is retained as it is. Requires more visibility in the SOP documentation.
2	Service Design (Enhancing client's participation)	Retaining the generic approach in defining the content. However, the Design phase of the process should be revise. More details are required in the documentation especially on enhancing customer participation in the delivery process	The Design methods adopted should complement the delivery process and enhance customer participant in the overall process. More clarity is needed for the documentation. Even though the generic approach is retained	The introduction of hybrid model in managing the design. In this regard, the Gate phase is added to the double diamond model. The guidelines were also updated to further enhance client's participation in the SW delivery process.
3	RACI matrix	The roles and responsibilities are updated to reflect the changes made in the Service Design phase of the delivery process.	The management suggest updating the RACI matrix to reflect the changes made to the Design phase of the SW development process	The addition of extra roles for checking and monitoring the important details is added after each phase of the Design.
4	Documentation	The document needed for the process improvement and formalization need to be revised.	Recommendations are made in expatiating details in the SOPs and arrangement of the contents in the documents	Merging of the guidelines for enhancing customer participation with work instruction. Updating of the SOP in reflecting changes made in the Service design.

As seen from the Table 11 above, the input from the stakeholders (Top management) has been summarized in four different parts. The first part relates with the top management's recommendations on the SW development process, while the second part focuses on the Design part of the delivery process, the third part concentrates on the management's recommendations on roles and responsibilities matrix and the fourth part focuses on the SOP and other documentations needed for the process improvement and formalization. The following sub-chapter explain in detail the management's comments and suggestions during the second round of meeting held after the testing of the initial proposal.

6.3.1 Stakeholders' recommendations on SW development process

This subsection addresses the top management's recommendation relating to the delivery process in the initial proposal. The figure 29 below shows the process map for the final proposal.

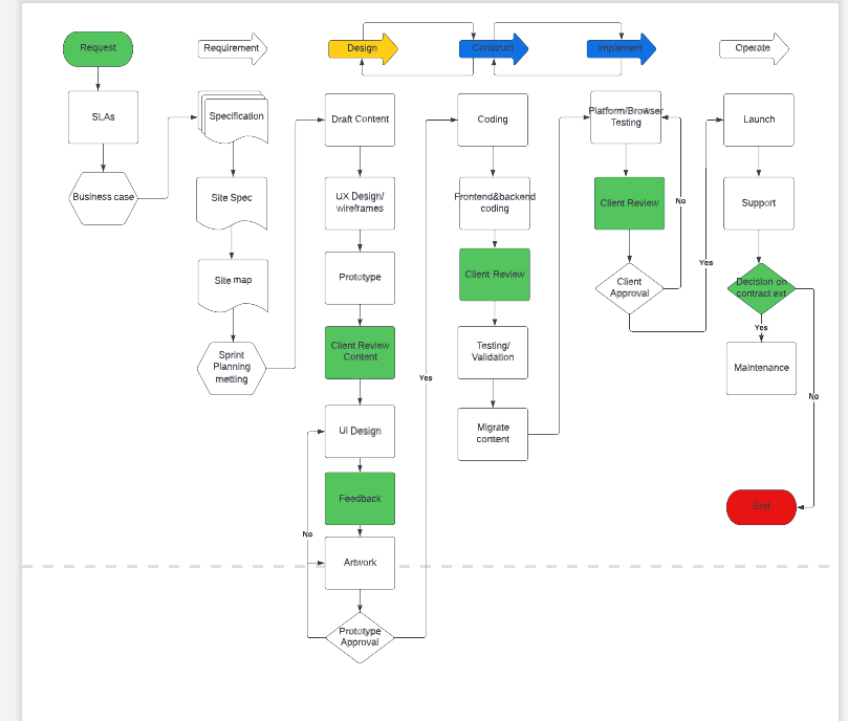


Figure 23. SW development process

Upon testing of the initial proposal on a new development project, the case company's management commend the clarity in the process steps and have decided to retain the SW delivery process as it in the drafted proposal. The reason being that the workflow in the process demonstrated significant improvement compared to the previous delivery process in the case company and has transcended into better quality of the output during the tests. Moreover, the service employees have also expressed their satisfaction on the ease of understanding and use of this aspect of the initial proposal as they are now. The only comment made by the management in this regard is the need to provide more explanation on the process workflow in the documentation (SOP specifically for web development process).

6.3.2 Enhancing client's participation

This sub-section of the thesis focuses on aspect of the service design in the initial proposal. The Table 12 below shows the final guidelines regarding this area of this thesis.

Table 12. Service Design.

	DESIGN STAGES	External Partner Engagement	Roles and Responsibilities	Communication Interface Management	Customer Engagement
Service Design	Discovery		Case company's Project coordinator / manager, Client manager, case company's business analyst/ developer as well as other personnel in the client firm.	Regular briefs, contact meetings, information sharing via files	conduct design workshop with client and provide conducive environment for them to take active participation. Gather project requirement together with clients. concepts development must be done/share with clients. Workout research questions
	Gate 1 (project manager, client's manager)				
	Define	Full participation in Project development plan, full involvement in solution design	Project manager, relevant external partners/vendors, planning team, client manager, solution designers need to be involved in this phase	Face to face, telephone calls	Knowledge sharing with client, examining & interpreting user's requirement, updating client on plans for solving problem and seek client's contribution
	Gate 2 (Project manager, client manager)				
	Development	Full access to joint development of solution (files, documents, agreements etc)	Project manager, development team. Other relevant solution designers	Meetings, phone calls, face 2 face	Updated on key development progress as well as delivering POC to the client. Implement feedback on key issues
	Gate 3 (project manager, solution designers, team lead)				
	Delivery	Coordinating and participating in the solution delivery, access to customer feedbacks	Project manager, design team, external partners/vendors, client manager,	Meetings, phone calls, face 2 face	Meetings with client for delivering the final solutions. Gather client's reviews/Feedback regarding the solution

The Table 12 above is the description of the design part in the final proposal. The highlighted green and yellows part in the proposal reflects the improvement made by the management to the initial proposal. These improvements suggestions were made after considering the test reports and feedbacks from the services personnel. The management agreed to retain the generic guidelines for enhancing customers participation in the delivery process. This was deemed necessary to accommodate and respond effectively to the changes in clients' requirements. Furthermore, rationale for this decision stems from the fact that the guidelines stipulated in this part of the Final proposal was aimed at complementing the SW development process which has been specifically tailored for the SW development process in web services. The management believes that a rigid or narrowly defined guidelines would create unnecessary bottleneck during implementation.

Furthermore, based on the results of the testing, the management recommended slight changes to the discovery phase. This includes the gathering of project requirements with the clients, participation of the client in the concept/idea development for the project. The rationale behind this recommendation is that this inclusion will allow better participation and involvement of the clients at the early stage of problem discovery phase in the project development.

At the problem development phase, the management have also suggested updating the clients on status of the project while putting higher weight on the contribution/feedbacks of the clients in project development. This is expected to provide additional check to the client approval shown on the process map.

Another notable change to the initial proposal is the addition of the "Gate phase" after each stage of the development phase in this Final proposal. This recommendation came as a medium of check and approval for each phase of the design. The stakeholder's reason is that this step will ensure that the project manager as well as the other solution architects are aware of the latest development in the projects, able to apply better customer centric approach to the development process and respond appropriately to any deviation from plans. Additionally, this also complement the feedbacks and approval designated in the SW delivery process. They recommend that this additional responsibility will ensure that the most important details regarding the project have not been left uncheck before proceeding to the next stage of the service design. As stated by the CEO

"*We should add this model (referring to the Stage Gate model) with the current double diamond, it will boost the services development…. With this addition, we can use the model (proposal) in different project without worrying about important steps or activities being omitted. I also need to point out that having someone to check the accuracy and completeness of each of stage of the design phase is an extra caution which is very necessary ".*

6.3.3 Role and responsibilities

This sub-section focuses on the recommendations made regarding the RACI matrix in the initial proposal.

In this regard, the management suggested adding another role for checking the completeness and compliance in the development process. Therefore, the "check gate" in the Service Design is added as a role in this RACI matrix to ensure that the customers are adequately carried along with the project development. The Table 13 below shows the role and responsibilities in the final proposal.

Table 13. RACI matrix for the final proposal.

	Ceo / Lead consultan	ProjectManage	Bus Analyst	LeadDev	WebDevelope	Team Lead	Freelancedev1	Freelanced
	Oversight	Project Team					External Partner	
Quotation Request								
SLAs	AR							
Business Case	A	C	R	I		I		
Requirements								
Specification				C	R	I	I	I
Site Spec		A	I	C	R	I	I	I
Spec map		A		I	R	I		
Sprint Meetings (Planning)	A	R	I	I	I	I	I	I
Gate Check								
Design Phase								
Drafting Content		A	I	C	R	R	C	C
UX Design		A		R	I	I	I	I
Wireframes		A		C	C	R	I	I
Prototype			I	R	I	I	I	I
Clients Review		R	I	I		I	I	
UI Design		A	I	R	I	C	I	I
Client feedback		R	I	I	I	I	I	I
Artwork		A		C	R	I		
Gate Check								
Construction Phase								
Coding		A	I	C	R	R		
Frontend coding		A			I		R	I
Backend coding		R		C			I	R
Client Review		R		I		I	I	I
Testing/Validation		A		I		C		R
Migrating Content		A		R	C			
Implementation Phase								
Cross Platform/Browser Testing		C		R			I	I
Cleint Review		C		I		R		
Approval	A	R		I				
Gate Check								
Operate Phase								
Launching	A	C		R	I	I	I	I
Additional support	A	R		I				
Contact Client on Cont Extension	AR	C				I		
Maintenance	A	R					I	

As shown in the table 13 above, the role and responsibilities matrix for the final proposal has been updated based on the feedbacks on the testing of the initial proposal. The highlighted blue part is the additional role to the development process. As acknowledged by the stakeholders during meeting, many of the roles stated in this matrix are not permanent and should be updated to reflect the need of the development project the company works on. As stated by the project manager during the meeting

"It is not about allocation of roles and responsibilities right now; the most important thing is that all roles and responsibilities are assigned at the start of new project. So, we can leave that open for now".

6.3.4 Document for formalization.

This section focuses on the changes made to the initial proposal concerning the documentation for the process formalization.

In this regard, the management recommended changes to the drafted SOP. First, the management agreed to consolidate the checklists for service design with the previously separated instructions on addressing the customer feedback. In addition, the table of contents in the SOP is included in the final document. The Tabel 14 below shows the revised table of content in the Finalized SOP for the SW development process.

Table 14. Table of content for the SOP for SW process development

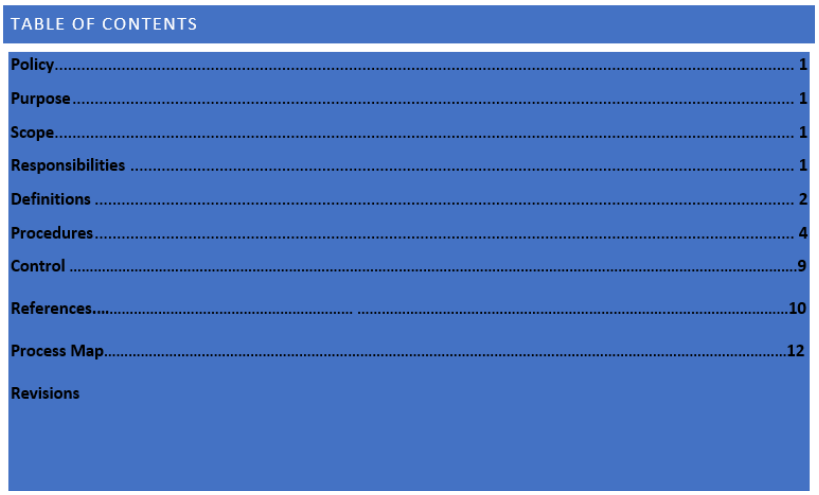


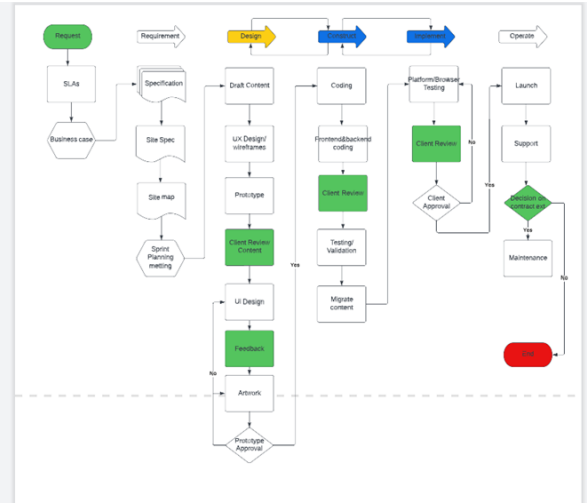
TABLE OF CONTENTS

As shown in the Table 14, the lists of content for the SOP for SW development process are now included and the content of the SOP now updated to reflect the changes agreed on in the meeting.

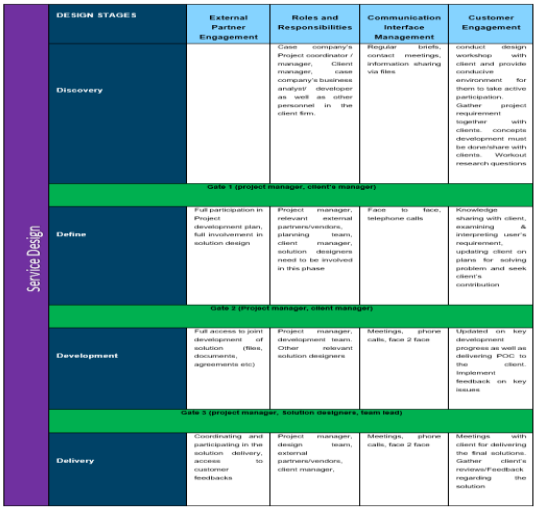
The next section is the summary of the Final Proposal for this study

6.4 Final Proposal

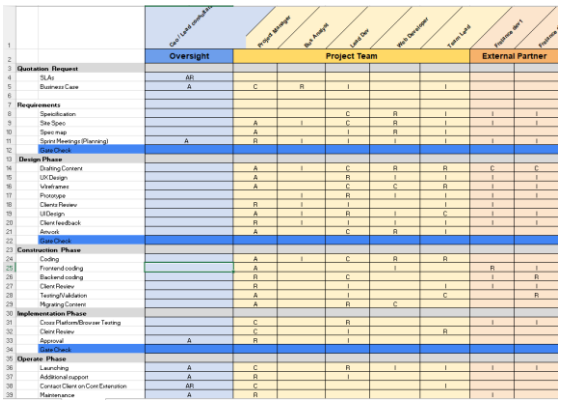
This section presents the Final proposal for this thesis. The Figure 33 below is the graphical representation of the preproposal



process map



Service Design



RACI chart

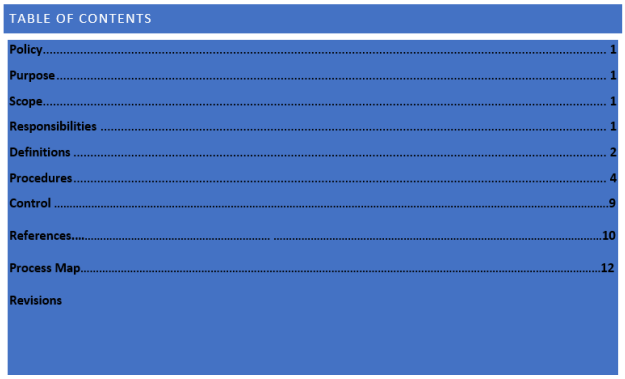


Figure 24 Final Proposal for this study Final proposal

The Figure 33 above is the Final proposal for this study. As expalined earlier in section 6.3, the proposal is a guideline made for improving services in the case company. The proposal consist of four parts: SW development process map, Service Design, RACI matrix, and document for formalizing the process.

Each of the four parts in the Final proposal are distinct yet complementary to one another in bringing service improvement to the case company's operations. The SW development map gives the graphical description of the steps and workflow required to for SW development process in the case company. The Service Design part combines the Double Diamond design method with the Stage-Gate model in enhancing customers participation in the case company's project delivery process. The RACI matrix gives a clear role and responsibilities for the service personnel operating in the SW development process. Lasty, clear explanation about the whole process is written in formalization documents.

The next chapter focuses on the conclusions

7 Conclusions

This chapter focuses on the executive summary and managerial implication for this thesis. Closing words were drawn at the end.

7.1 Executive Summary

The objective of this thesis was to develop guidelines for service improvement in a case company that is experiencing drastic decline in the level of customer satisfaction with its services.

Applied action research methodology which consist of a cycle of planning, acting, observing, and reflecting, was chosen for conducting this thesis. Consequently, the research design for this thesis follows the stages in current state analysis, conceptual framework, building of initial proposal for improvements, and ends with the validation of the proposal.

The Current State Analysis (CSA) stage examined the case company's internal documents, guidelines and procedures regarding service design and developments. The Data collection method used for this stage includes interview of the case company's service personnel as well as clients survey and interviews. The result of the CSA reveals lack of adequate guidelines for project delivery process, disconnection between teams, weak client's engagement is the delivery process, and lack of clarity in roles and responsibilities among the service personnel as the main causes of problem in the case company.

Aferwards, a review of the existing knowledge and best practices on service design, process improvement, process formalization, assigning role and responsibilities and ideas on enhancing customer participation in delivery process were explored. Among these concepts and tools explored, the double diamond model, stage gate model, RACI matrix, Deming cycle (PDCA), DMAIC, framework for value co-creation and process formalization were selected in solving the case company's problem.

In building the initial proposal a workshop was organized. The workshop was attended by the stakeholders who are responsible for service creation and delivery in the case company. After the workshop, a brainstorming session was held, suggestions from the

participants were gathered, and consensus was reached on what to include in the proposal as well as the direction to take in improving the project delivery process.

The initial proposal for this thesis, consist of four parts which includes process map, service design, RACI matrix, and documentations.

The first part in the proposal, is the process map which is constructed for SW development process in the case company. It consists of the requirement, design, construct, implement and operate phase of the SW development process. The second part is the service design which was delineated from the main development process to focus on enhancing client's participation in the delivery process. This part combines the double diamond method with the Stage Gate model for service design. Thus, the discover, define, develop, and deliver stages were highlighted in the column section. While, the row depicted external partner engagement, customer engagement, communication interface management, role, and responsibilities. The third part is the RACI matrix which was used in assigning roles and responsibilities to the service personnel. The Last part consist of the documentation needed in formalizing the SW development process. This part consists of the standard operating procedure created in formalizing the other sections of the proposal.

The proposed guidelines were validated through testing on a new project in November 2022. The service personnel involved in the testing gave their feedbacks. Afterwards, changes were made to the initial proposal in conjunction with the management team. Then, the Final proposal was built and approval giving.

Implementing the guidelines proposed in this study will improve the case company's services and increase customers satisfaction level with its services. This in turn will have positive impact on the company's revenue, operation, and concomitantly help in positioning the company as a leading force in the IT consultancy industry.

7.2 Managerial Implications (Next Steps and Recommendations toward Implementation)

The guidelines were designed with the goal of supporting the development and delivery of SW projects. The growth in global IT services as well as IT consultancies means that there will be more demand for SW development projects in the future. This framework is set to help in guiding the service personnel, improving team co-operation, and enhancing customer's participation in the SW development process in the future.

To achieve these aforementioned goals, here are few recommendations to take into account when implementing this framework.

First, update systems to reflect changes in operations. Since the guidelines recommended in this framework will have implications not only on service design and processes but also on the entire operation in the firm. Therefore, it is important to update necessary systems in order to align the changes in work operations with the other organizational functions.

Second, enable accessibility to the guidelines throughout the firm. In this regard, both the service personnel who are involved in service development and the top management will have common understanding of the service levels, offering, operations and expectations. This recommendation is important in onboarding new personnel and for better alignment of the firm's operational goals with its strategic goals.

Third, assign process owner to manage the process, monitor the compliance, and keep the guidelines up to date. The IT consultancy field is a fast-paced industry with new technology being developed every day. This has the consequences of making processes obsolete overtime. Operating in this competitive environment requires staying at the top of development and updating work procedures from time to time. Therefore, assigning someone to manage the processes is crucial for staying at the forefront of innovation and work development. Moreover, regular update is required to make the guidelines adaptable to changes in market demand and customer requirements.

7.3 Thesis Evaluation

This section of the study focuses on assessing the thesis to evaluate whether the thesis result meet its initial objectives as well as the writer's personal reflection on the entire thesis process.

7.3.1 Objectives vs outcome

The objective of the thesis was to develop guidelines for service improvement in the case company. To achieve this, a research plan was design for conducting the thesis and current state analysis was executed accordingly. The CSA results were instrumental in pinpointing to the problem area in the case company operations. The identified problems include lack of formalized delivery process, unclear roles and responsibilities, and weak clients' participation in the project development process. These revelations eventually influence the focus area for the conceptual framework which were later used in building the proposal for the thesis.

On the other hand, the outcome of the thesis is a guideline for improving the SW development process in the case company. This was developed based on the problem uncovered during the CSA. To specifically addresses the problem uncovered, the proposal was divided into four parts which includes the process map, service design, RACI matrix and process formalization documents.

Having highlighted the interconnection and interdependencies between the objectives and outcome of this thesis. One can agree, to some reasonable extent, that the thesis objective is met since the case company now have practical guidelines which addresses the key business challenges the company was facing prior to the time of conducting this thesis.

Regarding the quality of the thesis work. One can fairly say that the quality is good, especially with consideration to the circumstances under which the thesis was conducted. In this regard, several steps were taken to improve the quality of this thesis. First, the credibility of the outcome of this thesis was ensured by co-creating the solution with the stakeholders and involving them from the beginning to the end of the thesis. Additionally, triangulation was applied to data collection and the research methods use for the thesis. Second, the transferability of this thesis was ensured by documenting of the research procedures adopted, its findings and interpretation of the results. Third, the

dependability of the thesis outcome was ensured with the adoption of clarity in setting of the thesis objectives and explanation of the findings. Thus, the use of unnecessary, ambiguous, and complicated terms was avoided throughout the thesis.

Having reflected on the quality of the thesis, it goes without saying that this thesis has its limitations. In other words, there is still room for improvement. One of such areas of improvement is the aspect of proposal building for the thesis which could have been done differently by involving external experts besides the case company's services personnel, external partners (freelance developer), and management. In all fairness, customer survey and interviews were conducted in gathering Data during the CSA and their recommendations for solving the problem were also considered during the workshop held at the proposal building stage. In addition, there could be a case for argument that the case company is only a small consultancy firm with limited resources (human and material resources) available at the disposal of the company. Which consequently influence the decisions to conduct the proposal building the way it was done. Notwithstanding this stage could probably have been done differently for a better outcome.

7.4 Closing Words

This thesis was conducted for a small consultancy firm experiencing decline in the level of customer satisfaction with its services as well as loss of revenue. As a result, the case company was searching for solution in fixing this problem. This thesis is very relevant to the case company since its objectives was to develop guidelines for service improvement. In specific, the Final SW development process introduced in this thesis has been designed to solve the case company's business challenges and the management have expressed wiliness to adopt the proposal. This decision will have implications not only on the service development and delivery but also on the entire business operations in the case company.

In the future, there will be need to continuously improve other areas of the case company's operations. This thesis has provided the groundwork on which future development can be made and ensure that the case company's service delivery process is flexible and adaptable to changes in market demand.

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Appendix 1: The aggregated result of the SERVQUAL survey for the Clients

The aggregate result of SERVQUAL survey for Clients

"XYZ" would like to find out what you feel about the company's service. Please help us by filling the following survey. Do not give your name. Result will be grouped, and all individual comments will be kept anonymous.

Please indicate your ratings to the quality of service provided by "XYZ", by putting the sign (X) on the appropriate box below. Scale 1 being the lowest while scale 5 is the highest.

SERVICE ATTRIBUTES	SCALE				
	1	2	3	4	5
Responsiveness and assurance					
Willing to help				4	
Prompt service			3		
Employee's consistent courtesy				4	
Never too busy to respond			3		
Understanding of customer's need			3		
Reliability					
Provision of exact service		2			
Solving client's problem		2			
Completion of promised tasks			3		
Provision of right service		2			
Empathy					
Convenient operating hours				4	
Individual attention by the company		2			
Personal attention by the employees				4	
Having client's best interest					5
Resources and corporate image					
Adequate capacity		2			
Sufficient resources regarding employee's service knowledge				4	
Projection of quality service image			3		

Appendix 2: The interview questions for Customers/Clients.

Research topic: Guidelines for service improvement

Interview type: Semi-structured interview

- What type of services did your organization acquire from XYZ?
- What was your expectation of the services?
- How would you describe the access to the XYZ?
- How would you describe the expertise of XYZ regarding the services they provide for your organization?
- How would you describe the services of XYZ regarding to meeting your organization requirement?
- How would you describe the communication and cooperation from XYZ's staffs during the service development?
- How happy is your organization with the services provided by XYZ?
- Which aspect of the services is good and which aspect needs to be improved?
- Based on your experience, what could have been done to improve the quality of the services?

Appendix 3: Interview themes for Employees of the Case Company

Research topic: Guidelines for service improvement

Interview type: Semi-structured Interview

Basic questions:

Name:

Title:

Personal responsibilities:

- **Theme 1: Service design**
- What type of services does your unit/organization provides to the clients?
- What kind of tools do you used in creating those services?
- how do you monitor the quality of the services during the time of creation?
- What are the biggest problems you encountered while creating those services for the clients?
- Do you have suggestion for improvement?

Theme 2: Communication

- How would you describe the communication structure in your company?
- How would you describe the communication and cooperation among your team members during the process of service development?
- How would you describe the communication and cooperation with the clients/customers during the process of services development?
- Do you have any concerns regarding the current communication structure with the clients? and if any, what do you think should be done to improved it?

Theme3: services coordination

- What type of process do you currently follow when designing a new service in your unit?
- Why is the current procedure adopted?
- What is the outcome of the current process adopted?

- How does the current process support co-creation with the customers?
- How does the current process support documentation and archiving so that the knowledge can be used in designing new services or improving the existing ones in the future?
- What guidelines are established within the company for employees to follow while designing the services?
- Are there any problem encountered during the service implementation which can be attributed to the process/procedure adopted in your unit? If yes, what are they.
- Do you have any suggestion for improvement?

Appendix 4: Interview themes for Employees of Case company

- **Basic information about participants:**

Name: ******

Title: Project manager

Personal responsibilities: managing project execution, client communication, team management

Interview date: 11.08.2022

Interview duration: 75 minutes

Documentation: Field notes, audio recoding

Interview Question	Field notes
What type of services does your unit/organization provides to the clients?	Mobile apps, software dev, testing, hosting, web designing, consulting etc
What kind of tools do you used in designing those services?	bootstraps, azure app service, curs, stack overflow etc
how is the quality of the services monitored during the design phases?	Comparing outcome with client's requirement
What are the biggest problems encountered while designing new services for the clients?	In availability of human resources, getting the client onboard, especially the ones that are not decisive on what they want or need.
How would you describe the communication structure in your company?	Its formal communication structure. From up to down.
How would you describe the communication and cooperation among the team members when designing services/solutions for the clients?	The team have good communication and work relation. It's been positive so far
How would you describe the communication with the clients/customers during the process of designing the services?	One the average, it has been good. However, better means of communication is needed for enhancing clients experience
What are the concerns regarding the current communication structure with the clients? and how can it be solved/improved?	Getting clients to help more in service design as cocreator. Different customer group need different approach.
What type of process do you follow when designing a new service?	Mostly use waterfall and agile design models
What are the current procedures/processes for designing new services in your unit	Utilizes WF model phases in service designing. Requirement, design, implement, verification, and maintenance
Why is the current procedure adopted?	It is industrial standards.
What is the outcome of the process adopted?	Wide ranges of IT service products
How does the current process support documentation and archiving so that the knowledge can be used in designing new services or improving the existing ones in the future?	Not much archive is in place currently. Continuous improvement hasn't been put in place
How does the current process support co-creation with the customers	Has not been giving enough thought
What guidelines are established within the company for employees to follow while designing the services	Not well defined. Heavy reliance on employee's prior knowledge and experience for executing task

Appendix 5: Interview themes for Employees of Case company

- **Basic information about participants:**

Name: *******

Title: external partner (freelance dev)

Personal responsibilities: software development, coding, backend and frontend, testing

Interview date: 12.08.2022

Interview duration: 30 minutes

Documentation: Field notes, audio recoding

Interview Question	Field notes
What type of services does your unit/organization provides to the clients?	provide web hosting, mobile app services to the clients.
What kind of tools do you used in designing those services?	It depends on projects. For example, we use AWS, Kubernetes etc
how is the quality of the services monitored during the design phases?	It's hard to explains in few words, most of the time the project manager checks the outcome. But they also use the SLAs and client's requirement
What are the biggest problems encountered while designing new services for the clients?	Working with other teams without knowing what they are doing on a tier ends.
How would you describe the communication structure in your company?	Depending on what project, team etc.... But can be better
How would you describe the communication and cooperation among the team members when designing services/solutions for the clients?	Its poor at the moment. Information sharing is really poor. There also a feeling of lack of co-operation between the teams. The development team and design team work also in silos
How would you describe the communication with the clients/customers during the process of designing the services?	Well, no access to the customer during the service design. The only link of communication is the project manager who might not be available in some cases
What are the concerns regarding the current communication structure with the clients? and how can it be solved/improved?	There is no real communication. Everyone working designing the service should have access to communication channel with the clients.
What type of process do you follow when designing a new service?	No generalize process to follow. It depends mostly on individual service personnel
What are the current procedures/processes for designing new services in your unit	No formalize procedures, everything is based on individual skills and experience. The outcome is the focus
Why is the current procedure adopted?	
What is the outcome of the process adopted?	Mostly is the solution developed for the clients
How does the current process support documentation and archiving so that the knowledge can be used in designing new services or improving the existing ones in the future?	Not well documented process and difficult to see any documentation supporting the process. Things are not
How does the current process support co-creation with the customers	To some extent it does. But mostly, solutions are design without the customers involvement
What guidelines are established within the company for employees to follow while designing the services	No real guidelines in place. Employee works on intuitions.

Appendix 6: Interview themes for Employees of Case company

- **Basic information about participants:**

Name: ******

Title: development lead

Personal responsibilities: managing solution building process**,** directing the dev team, tech guidance, team support, deployment.

Interview date: 11.07.2022

Interview duration: 45 minutes

Documentation: Field notes, audio recoding

Interview Question	Field notes
What type of services does your unit/organization provides to the clients?	The company develops mobile and real time web applications services for the clients. They provide wide range of full-cycle application including design, maintenance, and integration services to support client's digital transformation.
What kind of tools do you used in designing those services?	It depends on the services.
how is the quality of the services monitored during the design phases?	Check against the client requirements
What are the biggest problems encountered while designing new services for the clients?	Understanding customers challenge and creating solutions to address those challenges.
How would you describe the communication structure in your company?	Friendly
How would you describe the communication and cooperation among the team members when designing services/solutions for the clients?	Its professional, cordial
How would you describe the communication with the clients/customers during the process of designing the services?	In most cases, it has been good. Some are engaging and showing wiliness to assist wherever we need them.
What are the concerns regarding the current communication structure with the clients? and how can it be solved/improved?	Well, the customer differs and their willingness to involve with our service development varies. In most cases, the development team do not engage directly with the clients. the project manager has been the communication links between them. Direct access will improve the situation.
What type of process do you follow when designing a new service?	There is a service design model with different phases of discovery, define, develop, and deliver. However, the model has not been fully implemented in the service development.
What are the current procedures/processes for designing new services in your unit	The company have internal process which is highlights the most important phases in the design: starts from new business need then to agree and document business requirement, design solution, develop solution and finally delivers the output to the client.
Why is the current procedure adopted?	It is the standard procedure used in the IT industry. It is easy for the employees to understand and facilitate collaboration with external participants and user involvement in developing the solutions.
What is the outcome of the process adopted?	Mostly IT products: software, web apps etc
How does the current process support documentation and archiving so that the knowledge can be used in designing new services or improving the existing ones in the future?	Documentation is missing in most cases. it's difficult to find archive for previous solutions developed
How does the current process support co-creation with the customers	The company uses customer centric process which enables knowledge sharing with the clients at various phase of the solutions development.
What guidelines are established within the company for employees to follow while designing the services	No formalized guidelines. The employee relies on individual competence in most cases

Appendix 7: Interview themes for Employees of Case company

- **Basic information about participants:**

Name: *****

Title: CEO/Lead consultant

Personal responsibilities: overseeing the projects/company, managing customer communication and relationship, advisory services to client.

Interview date: 6.07.2022

Interview duration: 70 minutes

Documentation: Field notes, audio recoding

Interview Question	Field notes
What type of services does your unit/organization provides to the clients?	Providing IT services, IT solutions, and advisory services.
What kind of tools do you used in designing those services?	Accelo, Kanban, visual studio, stack overflow, Jira etc
how is the quality of the services monitored during the design phases?	Utilizing QA methods, checking variation from specification
What are the biggest problems encountered while designing new services for the clients?	Managing customers' expectations, last minute changes in requirement, human resources, and sustaining client engagement
How would you describe the communication structure in your company?	In terms of management, its ok. When it comes to operation it can be better
How would you describe the communication and cooperation among the team members when designing services/solutions for the clients?	Won't say it's in chaos but definitively needs some form of improvement.
How would you describe the communication with the clients/customers during the process of designing the services?	Sometimes its easy and everything go smoothly. Other times, there is noticeable disconnection.
What are the concerns regarding the current communication structure with the clients? and how can it be solved/improved?	Needs to find a better way of engaging with the customer should be prioritized. The CRM has not been adopted fully.
What type of process do you follow when designing a new service?	Personnel are mostly professional, and everyone have their unique ways of working.
What are the current procedures/processes for designing new services in your unit	No real formalized process in place. Utilization of models that supports iterative service designing.
Why is the current procedure adopted?	Easy to adapt to swift changes in demand/requirement
What is the outcome of the process adopted?	IT product services
How does the current process support documentation and archiving so that the knowledge can be used in designing new services or improving the existing ones in the future?	Presently, no real documentation in place or are not well defined. Works are done on project basis and afterwards, moved to the next.
How does the current process support co-creation with the customers	Too much reliance is placed on the contact person for the firm rather than establishing process for co-creation with the customers
What guidelines are established within the company for employees to follow while designing the services	No standardized guidelines in place. Management still in the middle transitioning

Appendix 8: The interview for Clients (interview 6)

- **Basic information about participants:**

Name: *****

Title: Project manager

Interview date: 11.08.2022

Interview duration: 60 minutes

Documentation: Field notes, audio recoding

What type of services did your organization acquire from XYZ	Web development services
What was your expectation of the services	We expected them to guide us in choosing the right tech and web to scale our business. We expect quality from them
How would you describe the access to the XYZ	It was great, we had access to them through their lead developer
How would you describe the expertise of XYZ regarding the services they provide for your organization	They are professional with high technical skills and experience.
How would you describe the services of XYZ regarding to meeting your organization requirement	Their services were good. We knew we need to use IT in improving our business and getting more customers, but we just didn't know how to go about it. So, their advisory and web services really helped us in achieving our goals
How would you describe the communication and cooperation from XYZ's staffs during the service development?	The communication was not so good. We didn't have so much communication with them beyond the beginning when we had meetings to discuss various possibilities and how they can help us. They did the web and help us to lunch it.
How happy is your organization with the services provided by XYZ?	The web they built for us works. So, we are okay with that.
Which aspect of the services is good and which aspect needs to be improved?	The technical aspect of their services was good, their responsiveness was also commendable. Maybe the empathy needs to be improved a little bit. In this sense, I mean they need to prioritize each of their clients
Based on your experience, what could have been done to improve the quality of the services?	The services experience would been better if they communicate more with us and carry us along with update on development of the web.

Appendix 9: The interview for Clients (interview 7)

- **Basic information about participants:**

Name: *****

Title: Service Team Lead

Interview date: 18.08.2022

Interview duration: 1.2 hours

Documentation: Field notes, audio recoding

What type of services did your organization acquire from XYZ	Web development and advisory services
What was your expectation of the services	Quality IT services: a functioning website that can help us to scale our business
How would you describe the access to the XYZ	We didn't have much access to them. I mean their workers
How would you describe the expertise of XYZ regarding the services they provide for your organization	There is no doubt that the expertise was there. Their staffs were knowledgeable in different area of IT.
How would you describe the services of XYZ regarding to meeting your organization requirement	Its very poor. Not because they didn't know what they are doing, but because our feedbacks were not included in the solution, they made for us. For instance, when they were developing the web app for us, we inform them that we prefer to change certain aspect the web navigation but only for us to see that it wasn't changed in the solution they deliver to us
How would you describe the communication and cooperation from XYZ's staffs during the service development?	Like I said before, we didn't have direct access to their staff, so the communication wasn't that great. Their response to our complain is slow. Maybe its just few times but the feeling we got is that they have other stuffs they are doing, and we are not their priority at that point.
How happy is your organization with the services provided by XYZ?	On the scale of one to ten, maybe four. I said four because we didn't have a good experience with their services. the communication wasn't there during the development process etc
Which aspect of the services is good and which aspect needs to be improved?	Communication and feedback handlings are not good. Their staffs are tech savvy, but the delivery just wasn't good enough. Customer communication should be improved.
Based on your experience, what could have been done to improve the quality of the services?	Can't really point out to a single thing that should be done to improve their quality. Maybe it's their whole delivery process. Again, we (customers) do not have access to them, so we don't know what is going on internally in their firm.

Appendix 10: The interview for Clients (interview 8)

- **Basic information about participants:**

Name: *****

Title: Project manager

Interview date: 12.08.2022

Interview duration: 40 minutes

Documentation: Field notes, audio recoding

What type of services did your organization acquire from XYZ	Developing mobile app
What was your expectation of the services	Quality mobile app for our services
How would you describe the access to the XYZ	We had access to them to aa reasonable extent, but it was limited only to their CEO. We didn't have direct contact with people working behind the scenes to develop the mobile app
How would you describe the expertise of XYZ regarding the services they provide for your organization	Obviously, they have good technical know-how of mobile app development and IT stuffs in general.
How would you describe the services of XYZ regarding to meeting your organization requirement	There was difference in what we agreed on in the requirement and what was delivered to us. It got to know about it late because there was no communication on their part and when the final app was delivered to us, it was too late to make major changes.
How would you describe the communication and cooperation from XYZ's staffs during the service development?	It was poor. They need to improve this if they want to retain us as clients. we were not aware of the solution development form them until the final delivery was ready.
How happy is your organization with the services provided by XYZ?	We are not happy because the app keeps crashing every now and then and it is difficult to contact them. Their response has been poor so far.
Which aspect of the services is good and which aspect needs to be improved?	Their response to client request and complaint need to improve. They have the tech expertise but that's not enough to for delivering great services. clients view should be taken into consideration too.
Based on your experience, what could have been done to improve the quality of the services?	Better communication structure. Many of the problem we experience with their service could have been minimized with better communication.