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Developing Service Design for Afghanistan's Banking Connectivity

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PREFACE

I would like to mention here that this 5 months period of thesis writing, though short and unpredictable has become the most valuable and comprehensive period of my life. I could never have imagined the impact of these 5 months on my life as I lived it everyday and night, breathing in and out the scholarly articles, concepts and other business methodologies. Having said that, I can proudly claim that my first white hair also appeared during the same passage of time.

Therefore, I would like to thank all those involved directly and indirectly in making this research a reality. My first and foremost gratitude and love towards my beloved (late) father who left me very near to the finish line, he was the reason I exist and he will always be the reason behind all my achievements. Secondly, my dear friend Dr. Ghufran Hashimi for motivating me to study again after a long interval, my beloved wife Aisha for baring it all with me throughout the difficult times, she stood by me even when I fell at times and her support during my father's sickness period is beyond told. Furthermore, I would like to thank my company for letting me initiate and explore the desired research, my work colleagues, partners and banking sector customer for investing their precious time in bringing together this study into a logical conclusion.

And finally, I would like to present my utmost respect and gratitude towards my instructors from the Industrial Management Program. I have to say that I have never met a group of professionals as distinguished and sound as them. I would specially like to thank Thomas Rohweder and Satu Teerikangas for giving me direction and motivating me at every stage of the process, Zinaida Grabovskaia for guiding us with her spot-on observations, Juha Haimala for the much needed liveliness and energy, Sonja Holappa, James Collins for their valuable contribution in refining our thesis, and last but not the least, Dr. Marjatta Huhta for being there as our fairy god mother even after her retirement to make sure that we make it to the finish line.

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This study explores developing a service design framework for an ISP serving the Banking sector of Afghanistan. Continued war in Afghanistan has destroyed majority of terrestrial communication infrastructure. The satellite based 'Internet service' is the most common source of communication among banks, which fails to serve the purpose due to high time latency factor. The studied service design aims to provide foundation for a low latency 'Data service' to the case company, which will ensure provision of value proposition not only for the banking sector customer but also for the teleport partners.

The study utilizes action research approach as the research methodology considering its logical and iterative approach towards problem solving and identifying improvements towards practical business challenges. The research design consists of 5 steps, which incorporates the use of available literature and best practices to create a framework to target and analyze the case company's current state of service offering.

Resultantly, the outcome is a framework level service design, which incorporates the key elements as CVP, earning logic, value co-creation, service processes and resource management, required by the case company to address the challenge faced by the banking sector of Afghanistan. Moreover, the proposed service design is positioned specifically in line with the realities of warzone keeping in view the case company's strengths while answering its weaknesses. Finally the study concludes with the next step recommendations and practical implications towards the key stakeholders.

Keywords	Service Design, Service Dominant Logic, Service Building Blocks, Value Co-creation

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1 Introduction

With the progressing business economies and emerging markets on the eastern and western corners of the world, huge political instability, humanitarian crises and insecurity has been witnessed during the last few decades in its central regions specially Middle-East. Wars and political uprisings have been an unfortunate but ongoing activity in those regions, affecting trade and limiting economic progress. Economic progress and prosperity of those regions depends upon several key indicators as show in table 1.

Table 1. War Zone Economies 2014 (http://www.mauldineconomics.com)

War zone countries as a % of total world...	
Population	11.7%
Oil production	9.0%
Foreign direct investment	3.8%
GDP	3.0%
Trade	2.6%
Gross capital formation	2.4%
Corporate profits	0.8%
Equity market capitalization	0.7%
Interbank claims	0.5%
Portfolio investment inflows	0.4%

Sources: IMF, United Nations, BP, MSCI, Bloomberg, BIS, World Bank, WTO.

As evident from above table, war hit economies are struggling with major economic indicators, while having the richest resources available. Due to lower trade and investment levels, GDP growth is exceptionally low compared to developed and progressing economies. However, despite the turmoil and security conditions, the local businesses are determined to progress and to bring about a positive change. The urge for peace and the need to catch-up with growing economies are opening doors for business potentials and services that can really bring a positive change in that region.

Therefore, the objective of this thesis is to discuss the development of a service design for an established business sector in a warzone. The purpose of the service design is to serve as a foundation to support a newly improved technical solution by the case company already serving that business sector. The resulting service design outcome can not only assist the case company in improving the current state of the business sector but also help in the tapping into the profitable business potential.

1.1 Case Country Background

Figure 1 provides some current era statistics of Afghanistan since start of 2001 war.

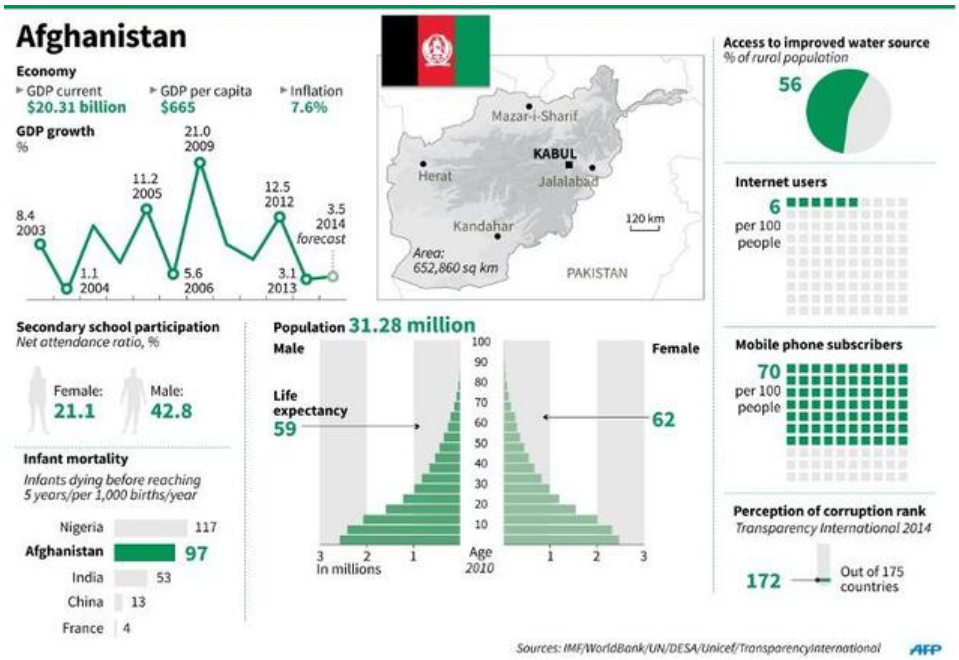

Figure 1. Afghanistan Statistics (www.dailymail.co.uk)

As reflected in figure 1, Afghanistan, being literally in the centre of the world has been a constant stage of war and turmoil since last few centuries. Its said that war runs in her soul therefore, throughout the ages, Afghanistan has been home to various people and witnessed numerous military campaigns, notably by Alexander the Great, Muslim Arabs, Mongols, British, Soviet Russians, and in the modern-era by Western powers. (www.Wikipedia.org) Due to continuing instability and turmoil, the Afghan population, standard of living, literacy, economy and businesses have taken the most of the toll and this chaos seems to continue with every passing day.

Due to almost 4 decades of war, banking and communication infrastructure within Afghanistan perished to near extinction. As more Banks started operating in the country post ISAF/NATO invasion in 2003-2004, service penetration and regional coverage became a challenge due of lack of terrestrial communication infrastructure such as Fibre optics network, Cellular tower infrastructure, centralized network etc. However, despite all the odds and difficulty, Afghanistan is on the track of rebuilding and determined to achieve peace and prosperity. The government is eager to establish all relevant institutions that can ensure Economy, public health, education, safety, utility and

growth. Starting 2004, the researcher chose to work in Afghanistan with the case company in order to contribute to the rehabilitation process and to get first hand experience of the ground realities and challenges, businesses are facing there.

1.2 Case Company Background

The case company is a medium sized UAE origin satellite based ISP and solutions provider company working in the Middle East MENA, South East Asian and the West African regions. Founded in 1998, it started its operations in Afghanistan in 2003 after the NATO/ISAF invasion and has since been providing Internet, GSM Backhauling and Data Communication services to various National and International organizations working in all fields of life to facilitate the peace and rehabilitation of Afghanistan. The list of clients include offices of United Nations, NATO, ISAF, USAID, World Bank, European Union Delegation, European Union Embassies, State Bank of Afghanistan, Cellular companies and other International and local NGOs. The case company is also a member of Afghan ISP association with strength of over 100 employees and is currently operating 10 satellites over the region with satellite teleports located in both Europe and China.

1.3 Business Challenge, Objective and Scope

> The Financial Sector Strengthening Project for Afghanistan received an unsatisfactory performance outcome with substantial risk to development outcome. Both the Bank and the Borrower received moderately unsatisfactory performance ratings. (World Bank report 2014)

With the emerging hope of security and stability in Afghanistan, more business segments started to emerge as well, including the most relevant Financial and Banking Sector with over 12 million potential customers. Banking and financial organizations in war-affected countries are more inclined towards satellite-based services for more centralized and robust connectivity. However, this configuration alone does not solve the issue of smooth financial operations within the Banking Sector due to the fact that most real-time financial applications (Java platform based) are latency hungry (requiring negligible time factor of up to 400ms or less).

Whereas satellite teleports present outside Afghanistan only allow higher latency Internet channels of up to 800ms (double hop connectivity). In order to expand their business and commercial growth, banking sector requires a satellite teleport within Afghanistan to provide data services while bypassing Internet cloud to bring down the time

latency below 400ms (single hop connectivity. Therefore, the case company needs to establish a commercially sensible and technically viable service to enable the Afghanistan banking sector to tap in the significant end-customer potential.

With the understanding of current challenge, the objective of this thesis is to propose a framework level service design to the case company. The outcome is the new service design, which will enable the case company to step-by-step place its proposed technical solution over the designed service parameters and test its functionality. Comprehensive research is required to collect vital input from key stakeholders, market segment and telecom best practices to design a service, which can overcome the present connectivity challenges of the banking sector while keeping within the competitive commercial range.

The scope of this service design construct is primarily focused towards banking sector of Afghanistan. The case company has planned to introduce the new service by summer of 2016. Therefore, keeping in mind the shortcomings of the existing provided services to the banking sector, and the cost of implementing the new services without using an efficient service design. The proposed service design research will serve as the foundation for the new technical service, while also keeping in mind the cost efficiency and practicality of the service for all stake holders.

1.4 Key Concepts

Banking systems throughout the developed world requires strong connectivity channels between their national and international branch offices and global partners. The robust connectivity ensures their regional dispersion, which benefits not only the ordinary banking costumers to be able to process and transact funds, but on the other hand also create vital value for all the stakeholders. Certain special regions require special connectivity services that are designed only to provide services to such extremely affected areas.

Service design concept answers these special needs by taking in the user's perspective of value creation and builds the services around them. It is a process, which is carried out by applying skills and knowledge in a particular service area, management and process engineering. (Stickdorn & Jakob 2011) The development of service design also includes the assessment of the framework by all key stakeholders in order to vali-

date the newly proposed services. Therefore, these characteristics of service design are also considered in this research study.

Section 1 of the thesis highlights the key concepts, case company background, the challenge it faces while competing in the market with existing Internet services and the objective of this thesis. Section 2 describes the methodology and data collection approach used to conduct the research. Section 3 explains the development of the required conceptual framework using best practices on service design in the field of Telecom with the help of service dominant logic and relevant building blocks of service design. Section 4 highlights the current state analysis of the existing services employed by the case company in order to determine the area of improvement. Section 5 proposes an initial service design proposal to the case company using the initially developed framework. Section 6 of this thesis focuses on validation of the service design proposal by the key stakeholders. Finally in the end, section 7 concludes the thesis by summarizing the whole project and providing recommendations to the case company in terms of reliability and validity of the new proposed service design framework.

2 Method and Material

This section focuses on the way this research is carried out and the kind of methods being utilized. In the first part, the research approach is discussed followed by the research design. The second part presents the data collection and data analysis approach followed by the research validity and reliability plan.

2.1 Research Approach

The research, being a qualitative study is defined by Baxter and Jack (2008: 544) as follows.

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

The qualitative research is carried out using action research approach for the case company while focusing on service design. Action research approach is not only a sequence of events and method to problem solving, but it is also a research concurrent with action. (Coughlan et al 2002). The primary reason for choosing action research approach is for the case company to improve its existing services and develop a service design. Moreover, the most important factor is that action research is always relevant to the participants. Relevance is guaranteed because the researchers, who are also the primary consumers of the findings, determine the focus of each research project. (Sagor, R. 2000) A classic action research methodology incorporates an iterative approach of focusing on a target area, diagnosing its weaknesses, designing improvements, implementing and evaluating the performed actions. However in this research, as shown in figure below, the action research approach is optimized to achieve the specific results inline with the required service design.

Figure 2. Action Research Concept

As briefly shown in figure 2 and further detailed in figure 3, the process starts with focusing on a specific target area where improvement is needed followed by progressive phases. The first phase requires developing a conceptual framework design using best case practices and relevant available studies. The second phase utilizes the designed framework to analyse the current state of the problem in a more efficient manner. This is followed by the implementation and reflection phases, where the proposed improved design is implemented and eventually validated. The goal is to move from the current state to a desired acceptable state while being able to execute the project realistically. (Bradbury, H. 2015)

2.2 Research Design

The research design follows the approach as discussed earlier in the previous section. The study starts with the thesis objective and progresses through the different phases as shown in figure 3 below.

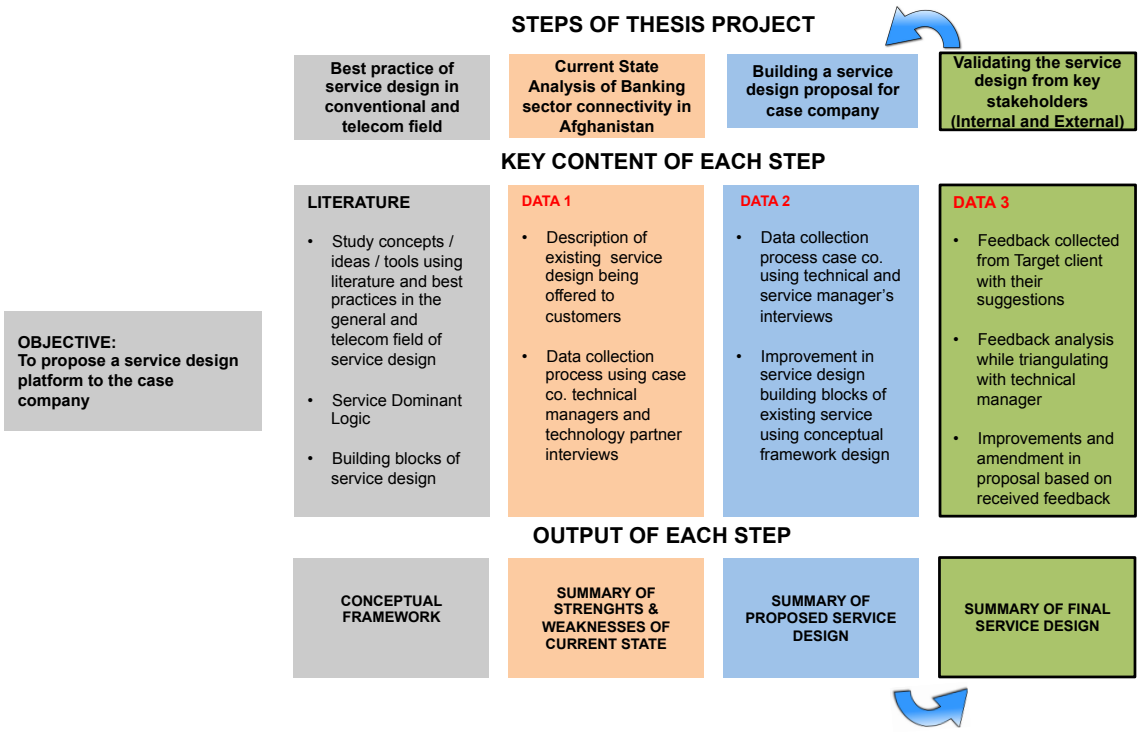

Figure 3. Research Design of this Study

As shown in figure 3, the research approach is quite linear however it has room for iterative improvements in the final stages. The process starts with the study of available knowledge and literature related to best practices, tools and concepts available in service design. Service dominant logic is a crucial study here to understand the concept of providing service as an value offering rather than goods. It will also enable the researcher to understand the concept of value creation from a customer's perspective

while developing the new service design. In addition to above, the building blocks of service design are included in the list of research studies both in the general service and telecom service perspective. The studies will enable the researcher to narrow down the scope and look towards the current state analysis from a conceptual lens, which will serve as the conceptual framework for this research.

The second phase of research design represents the current state analysis. Current state analysis illustrates the current happenings of the case company with respect to focus problem area. This section analyses the current service being offered by the company to its customers and determine its core strengths and weaknesses. The strengths and weaknesses are further analysed based on the acquired documentation about the current service and conducted interviews of the key stakeholders such as the technical managers and technology partners. The data collected in this phase is referred to as Data 1. The outcome of this phase is a summary of strengths and weaknesses of the existing service offering. The core of this analysis is to determine the right connection between the conceptual framework and the weaknesses in the existing service design in order to propose a solution to the case company.

The third phase of this research involves building an initial proposal for the case company using the synthesis of conceptual framework design and current state analysis. In this section, Data 2 is gathered using interviews from the product and service managers. Furthermore, this data is processed to produce improvements to the current weaknesses and merged with the existing strengths of the service in order to create a summary of the proposed service design. This summary is further validated in the fourth phase by acquiring feedback from the stakeholders in the form of Data 3. Interviews are conducted from the customers while discussing with them the proposal summary. Based on the vital feedback from the customers, the proposal is further improved and optimized in order to fulfil the requirements of all key stake holders and a final service design summary is presented to the case company.

2.3 Data Collection and Analysis

This section describes the different phases of data collection conducted during this research and how the collected data was analysed accordingly. The research was conducted during the first quarter of 2016 with the interviews being conducted in the month of March and April. Case company SLA was consulted to gather vital data. Individual interviews were conducted on Skype from key individuals in the case company

related to technology and service management domains. Data triangulation was achieved not only by interviewing key individual from partner company related with the present service scenario but also by interviewing target market customer. The subject of the interviews was related to CVP, technology transfer (resource sharing), financial parameters (earning logic) and key businesses processes (see section 3.5). The first data collection phase, Data 1 starts with the current state analysis as shown in the table below.

Table 2. Data 1 Interviews

Data Type	Participants	Topic Description	Date	Length	Document
Interview	Chief Technology Officer (Case company)	Discussed the working of current service offering from technical and analytical perspective to identify its pluses and minuses	03-03-16	70 min	Interview Transcripts (appendix 1)
Self Assessment	Project Manager (Researcher) (Case company)	Evaluation of gathered data from stakeholders through personal experience of target business sector and available service offering	Throughout the study	-	-
Interview	Networks Manager (Case company)	Discussed the current state of network topology and its advantages and disadvantages	08-03-16	60 min	Interview Transcripts (appendix 2)
Interview	Teleport Manager (Partner company)	Discussed the limitations of 'Internet service' along with having satellite teleport in a distant geography	12-03-16	55 min	Interview Transcripts (appendix 3)

As show in table 2, the data in the first phase was collected by conducting interviews and assessments from the key individuals that are relevant for providing input within the case company. The partner company's teleport manager was also included for data collection due to his understanding of the current service scenario, using satellite based Internet as a medium of communication between banks and their branch offices. In this phase, the collected data was analyzed in order to determine the present service offerings by the case company to its customers. The collected data also reflected the strengths and weaknesses of the present service design of the case company.

In the second phase of data collection namely Data 2, data was collected to facilitate the initial proposal building process for the case company as shown in table 3.

Table 3. Data 2 Interviews

Data Type	Participants	Topic Description	Date	Length	Document
Interview	Chief Technology Officer (Case Company)	Discuss about technology transfer and its technical calculation	24-03-16	40 min	Interview Transcripts (appendix 4)
Interview	Product Manager (Case Company)	Discuss about the prerequisites of setting up a satellite teleport in Afghanistan	25-03-16	43 min	Interview Transcripts (appendix 5)
Interview	Teleport Manager (Partner Company)	Triangulation of information received from both the above interviews	23-03-16	30 min	Interview Transcripts (appendix 6)

Data 2 was collected using interviews with the technical and product manager of the case company. The gathered data was also triangulated by interviewing partner company's teleport manager. The purpose of data collection in this phase was to improve the weaknesses form the current state and develop an initial proposal summary for the case company keeping in mind the strengths of the existing service offerings.

In the third phase of data collection process namely Data 3, vital feedback from the stakeholder was collected as shown in table 4.

Table 4. Data 3 Interviews

Data Type	Participants	Topic Description	Date	Length	Document
Interview	Banking Service Customer	Explained the initial proposal and discussed about potential improvements to further validate the proposal	18-04-16	79 min	Interview Transcripts (appendix 7)
Interview	Chief Technology Officer (Case Company)	Validated the suggested improvements by the banking sector customer	20-04-16	39 min	Interview Transcripts (appendix 8)

Based on the interview conducted with the key-banking customer as shown in above table, the case company can receive first hand feedback directly from the end-customer. This feedback will assist the case company to further amend and improve

the service design proposal keeping in view the service limitations and end-customer input.

2.4 Validity and Reliability Plan

The concepts of rigor, validity and reliability are used to determine whether the conducted study meets the requirement of systematic research. Rigor questions whether the study investigated what it was supposed to investigate, whether efficient and sufficient methods were used for data collection and whether the research is considered logical. (Quinton and Smallbone 2006) Validity for a qualitative research measures how much correct and evidence based description is provided and how a research is analysed and interpreted. (Huhta, M. 2015) Reliability ensures how credible, authentic and consistent the research approach is in case the research needs to be repeated. (Dooley 1995) Validity and reliability in a research as presented by Quinton and Smallbone (2006) can be tested by looking at the internal, external and construct validity along with the research reliability.

Due to the fact that the research follows an action research approach towards a qualitative study, internal validity of this research was maintained by explicitly stating the business challenge within the relevant internal circle of the organization with the aim to find a solution. On the consent of the CEO, interviews were conducted with the technical team of the company in order to establish the current state of the service. Extensive brainstorming and resource planning was done in order to come up with an alternative which can serve as the answer to the business challenge. Internal validity was also incorporated by discussing the business challenge and conducting interview with the partner Teleport Company in Hong Kong. The attendees and interviewees further validated all internal discussions and interview transcripts.

The focus of this research is to target a specific business segment of the case company therefore, external validity lies outside the context of the objective of this research design and hence not being discussed here. However, the construct validity was maintained by using multiple sources of existing knowledge and best practices in the telecom and general service design fields along with feedback gathered from customers on the proposed solution. Therefore, by establishing the fact that the research was conducted using reliable evidence having data supported by multiple sources, the validity of this research was secured.

The reliability as explained by Quinton and Smallbone (2006) states that a study, which would produce the same findings if the research is repeated or if it is conducted by someone else other than the researcher. However, in a qualitative study, Reige (2003) argues that due to the absence of non-static measurements or numbers as in a quantitative study, the level of reliability is often lower. Therefore, in this study, reliability factor was maintained by doing recorded interviews to avoid loosing valuable data. It was further ensured that individuals taking part in data collection process can monitor the different stages of research in order to determine if the information provided is being handled and processed correctly.

The concept of validity and reliability will further be discussed in section 7.3.2 under the conclusion section. However, the next section sheds light on the existing knowledge and best practices available on service design along with its building blocks, which will help the researcher in designing the conceptual framework for this study.

3 Available Knowledge of Service Design

This section aims to present the best practices and available knowledge on service design. Since the research is for a case company related with telecommunications field, the focus in this chapter is on the service design, both from a generic and a telecommunication perspective. Moreover, Service Dominant Logic is explored to understand the shift from product dominance to service dominance, as well as value co-creation. Finally, the building blocks of service design are studied in order to create a conceptual framework, which will work as a lens to precisely understand the current state analysis later in chapter 4 of this study.

3.1 Introduction to Service Design

This section focuses on providing a general and analytical version of service design theory. The aim of this section is to explain and understand various definitions on service design throughout available literature. Upon closer look, however, it can be argued that they all point to the same concept of service design.

Ohno,T. et al (2015) defines service design as a process of adapting products and systems so that resources meet human needs and wants and solving problems by working creatively and iteratively within various societal, economic, and other constraints.

Furthermore, Stickdorn et al (2011) argues that service design is an interdisciplinary approach that brings together different methodologies and tools from various disciplines in order to achieve an operative level.

> Service design is the activity of planning and organizing people, infrastructure, communication and material components of a service in order to improve its quality and the interaction between service provider and customers. (www.service-design-network.org)

Figure 4 represents the service design culture of the present business world, and the various steps it requires to build a successful service offering.

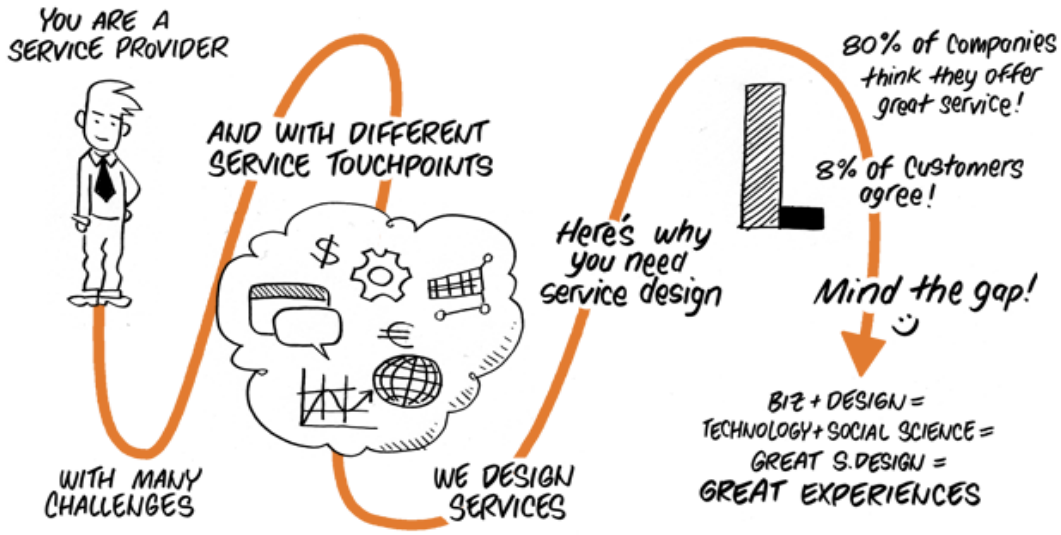

Figure 4. Service Design Culture (Ojeda 2014) (http://www.servicedesignmaster.com)

Based on the definitions and illustration in figure 4, a service design can be explained as a complex process of planning and implementing intangible deliverables i.e. ones that cannot be measured easily. Service design is a conceptual framework and process including human resources, materials, communications, technology and infrastructure that can improve the relation between a service provider and a customer. The requirement for service design comes from the need of providing better customer experience. Whenever a non-existing or an existing process requires improvements or initialization in order to enhance customer experience, the service design concept comes into play.

The core idea behind the service design concept is to mend the gap between how the companies claim to provide the best services to the customers and how much the customers feel unconvinced about it. As stated by Clatworthy, S. (2011) a good service design takes into consideration the various touch points which the customer might comes across in order to experience a better service. For example a banking customer would require touch points such as physical access to building, online banking facility, ATMs, bank cards, printed material and much more.

Service design is not a straight-line process of ensuring the right service for the right purpose. On the contrary, it is a repetitive process, which takes periodic inputs from external actors and stakeholders to refine itself (Chen, X. 2015), as shown in figure 5.

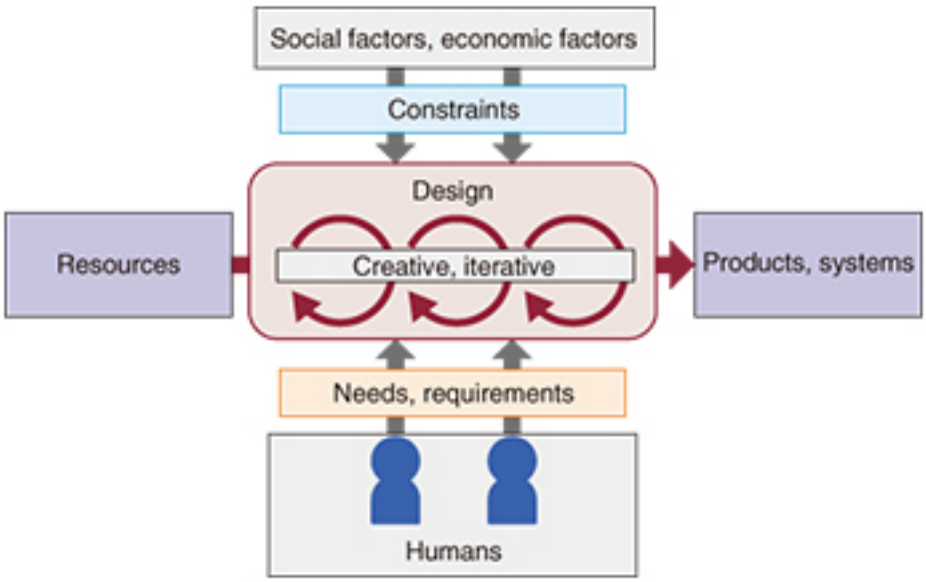

Figure 5. Analytical View of Service Design Process (Ohno,T. et al 2015)

Figure 5 illustrates that there is a constant iteration of design process while creating a service and repeating the procedure in order to refine it using external inputs. The external inputs can be a customer's needs and requirements, they can also be the socio-economic factors that surrounds the business domain along with its valid constraints.

Among various modules and building blocks of service design which are explained later in this study, idea generation and is considered one of the most critical module of service design in order to create ideas for new services. (Robinson and Moak 1997) Ideas can arise from within the organization based on extensive experience and knowledge or can be collected from customer feedback and market competition. However, regardless of the number of internal or external factors affecting the design of a service, it is extremely important to keep in mind customer's validity and satisfaction.

3.2 Service Design in Telecommunications

> The demand for new and sophisticated telecommunications services with multimedia characteristics is increasing. These services require more flexible access, management, and charging mechanisms. Therefore, it is necessary to assist, in a systematic manner, telecommunications service designers in the development of new services. (Adamopoulos, D. et al 2000)

In the present competitive era of technology and advance telecommunications, it is pertinent for telecom organizations to provide services to customers that can place

them ahead of their competition even for a short period of time. It is crucial for organizations to retain customers, but it is even more crucial to win new customers. A good service design and planning ensures both retention and addition of customers through positive recommendations. In the field of telecom, it is often seen that the perception of a better service and better value for money counts, rather than the extraordinary network features. With such a highly competitive market, it is often a challenge for telecom operators to win the loyalty and satisfaction of the customer.

> Most service providers will offer enticements to prospective customers by listing a set of features that they might want (e.g. 300 min talk time per month; download capability of 2 Mbits/s; free voicemail). Their intention is, of course, to make the customers feel that they need something tangible that they can/will use. (Successful Service Design for Telecommunications)

In order to provide customers with the right service characteristics, telecom organizations need to design the service with customer focus. A generic view of telecom service design can be seen in figure 6.

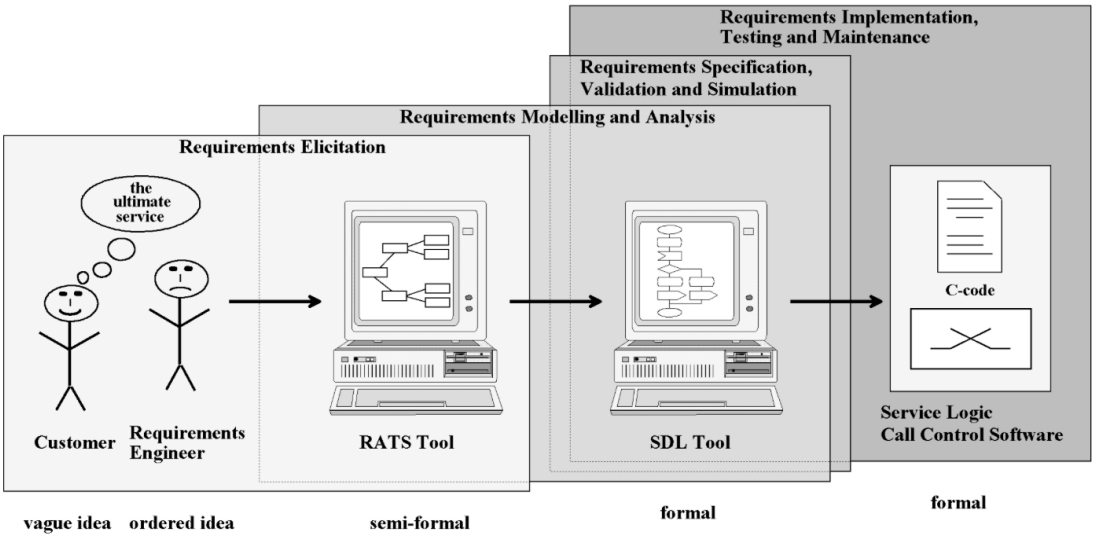

Figure 6. Generic Methodology of Telecom Service Design (Eberlein, A. et al 1998)

As illustrated in figure 6, it is evident that a sound service design in telecom field requires customer interaction in the first phase. Customer provides vital input and feedback to support service design process. The subsequent phases requires Requirement Analysis Tools (RAT) in order to analyse the requirement and extract the right value from it for both the service provider and the customer. Service Dominant Logic (SDL)

takes over the role of harnessing the extracted value, shaping and testing it and presenting it back to the customer in the form of an acceptable service.

Further elaborated by Sauming Pang (2009) in table 5 and later shown in Figure 7, a telecom service design and process cycle comprises of the following key essential tasks.

Table 5. Essentials of Telecom Service Design (Successful Service Design for Telecommunications)

Designing and using suitable telecommunication network technologies
Designing and using suitable IT systems that manage those technologies
Designing the Business Support Systems (BSSs)
Designing the Operation Support Systems (OSSs)
Operational processes that perform the customer and service management functions across all parts of the company

As presented in table 5, the key to telecom service design is to determine the right telecom technology while using the most suitable IT system design to implement that technology. In order to maintain a robust service, both business and operation support systems needs to be defined and must be reflected in all related sectors of the organization to ensure customer service management.

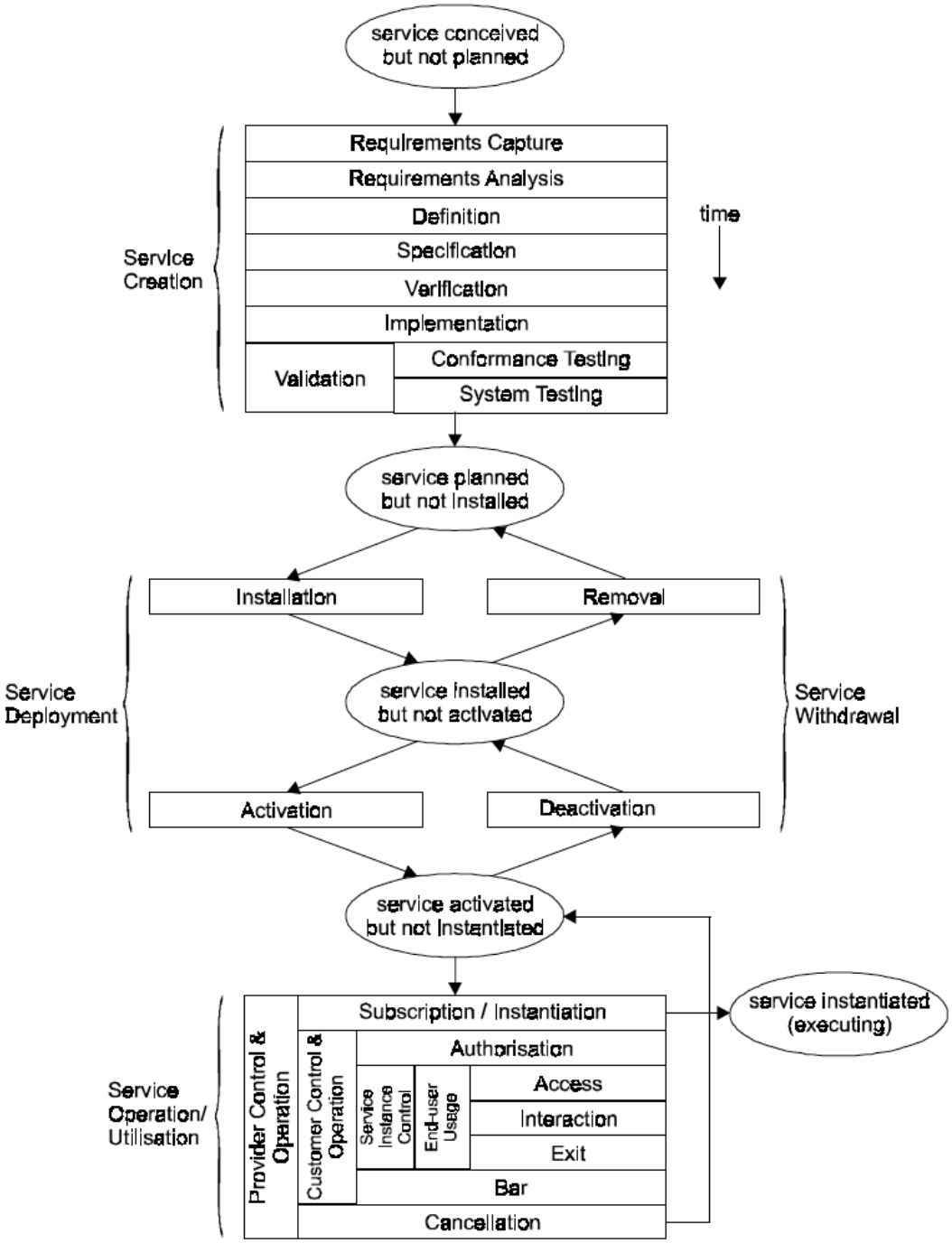

Figure 7. Telecom Service Design Process Cycle (Adamopoulos, D. et al 2000)

The process cycle, as graphically shown in figure 7 depicts the various phases of service design starting from the acquisition of initial requirement form the customer till the service utilization by the customer. The various phases representing the service creation, deployment and operational utilization are illustrated in different geometrical forms. The rectangles are the actual actions performed during a particular phase, for example installation or activation of a service during service deployment process. The

ellipses are the main states a service goes through, for example service installed but not activated during the service deployment phase. Business and operation support system takes over in service utilization phase by facilitating customer interaction through various touch points, for example subscription, customer access and service cancelation.

Both the general and telecom service design methodologies focus on two important characteristics of service design, that is customer participation and service dominating over goods as a medium of exchange and value generation. The next sub-section sheds more light on how essential customer participation is in service generation and how intangible deliverables can act as a core value of exchange, while products and goods act only as facilitators of that value.

3.3 Service Dominant Logic and Value Co-Creation

This section provides understanding of the customer's gradual switch from a tangible goods dominant logic to an intangible service dominant logic. It further elaborates the importance of customer's participation in the service design process in order to co-create value for the key stakeholders. As stated by Chesbrough, H. et al (2006)

> The service sector has grown over the last 50 years to dominate economic activity in most advanced industrial economies, yet scientific understanding of modern service is rudimentary. Here, we argue for a service science discipline to integrate across academic silos and advance service innovation more rapidly.

Lusch, F. et al (2007) gives another detailed definition of increasing service dominance.

> The SDL is based on the understanding of the interwoven fabric of individuals and organizations, brought together into networks and societies, specializing in and exchanging the application of their competences for the applied competences they need for their well being. It is a logic that challenges management at all levels to be of service to all the stakeholders. A logic that recognizes the firm and its exchange partners who are engaged in the co-creation of value through reciprocal service provision.

Even though, both the definitions provide a clear understanding of service as a dominant medium of value exchange between organizations and customers. It is pertinent to identify the purpose of shifting from a more tangible Goods Dominant Logic towards a more intangible Service Dominant Logic. Because of prevailing GDL and due to the fact that services and goods compliment each other, it has been difficult to entirely shift

the focus from products to consumers. Savitt (1990) describes that, business and marketing before the 1960s was seen only as transferring ownership of physical goods, as shown in figure 8. Trade and marketing was only viewed as “application of motion to matter”. (Shaw 1912: 764) Units of outputs and exchange were physical goods and commodities that can be measured in terms of price mechanism and value in-exchange. (Vargo and Lusch 2004) The concept of adding more value to a product by packaging it with service was hardly a thought among businesses and organizations.

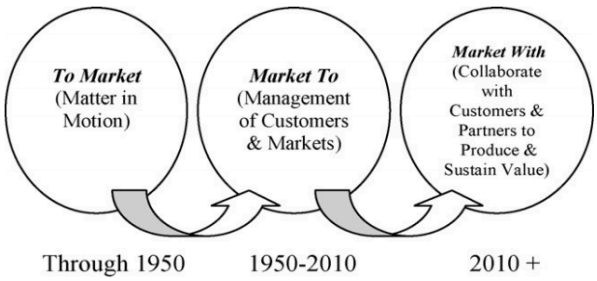

Figure 8. Evolution of Marketing. (Lusch, F. et al 2007)

However, as shown above in figure 8 and further described in table 6, with the rise in megatrends and emerging technologies, marketing became more mature and focus started to move from product orientation to consumer orientation and customer participation. Starting 2010, the core idea was to understand the exceptional value a service can bring to its customer without completely overlooking the importance of the product. In other words, we can say that SDL super-ordinated the process of providing benefits to the customers in the form of service. (Lusch, F. et al 2007)

Table 6. From GDL towards SDL (Vargo and Lusch 2006)

Goods-dominant logic concepts	Transitional concepts	Service-dominant logic concepts
Goods	Services	Service
Products	Offerings	Experiences
Feature/attribute	Benefit	Solution
Value-added	Co-production	Co-creation of value
Profit maximization	Financial engineering	Financial feedback/learning
Price	Value delivery	Value proposition
Equilibrium systems	Dynamic systems	Complex adaptive systems
Supply chain	Value-chain	Value-creation/network constellation
Promotion	Integrated marketing	Dialogue
To market	Market to	Market with
Product orientation	Market orientation	Service orientation

The conceptual transition of goods to service is reflected in table 6. The key concept is to determine how and where to shift the focus from products to consumer service by

wrapping it with the right marketing techniques. As Gummesson (2008) states that the S-D logic may set the stage for actual implementation of the marketing concept. Similar idea was earlier adapted by Vargo and Lusch (2004) as a revised logic, focusing entirely on intangible resources, value co-creation and relationships, therefore competing in market on the basis of service and not goods. Later in 2007, Lusch, F. et al further refined their dominant logic concept as shown in figure below.

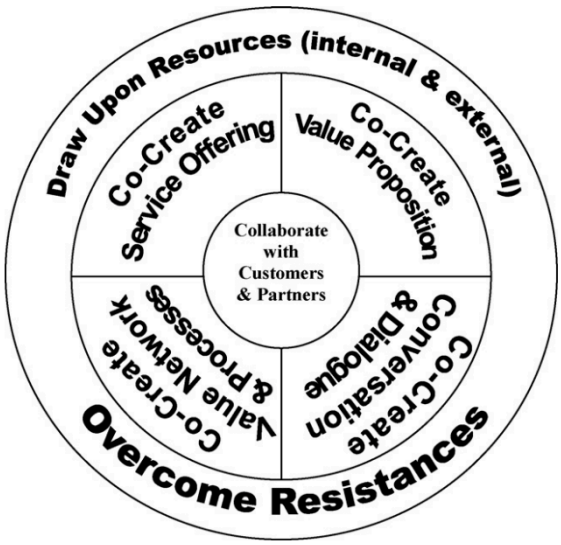

Figure 9. Service Dominant Logic (Lusch, F. et al 2007)

As visible from above figure as well as from earlier study, the core strength of service dominance is in collaboration and co-creation with the customer. The customer needs to participate actively within the provider's sphere in all relevant domains such as the value proposition, conversation and dialogue, value network and service offerings. Provider on the other hand overcome resistance and facilitates customer participation while drawing up internal and external resources. Having understood the core concepts of SDL, let us take an in-depth view of customer participation and value co-creation.

As generally stated, (Grönroos 2008; cf.Nordin and Kowalkowski 2011; Vargo et al. 2008) any process that increases customer's well being in a way that the customer gets maximum advantage out of such process in some way is termed as value creation. In the service business, value creation is a continuing process that takes customer experience into consideration, its logic and its ability to extract out value from a particular service. (Grönroos and Voima 2012) However in current industry perspective, value creation comes as a challenge for the companies to survive the emerging megatrends of the service business by constantly evolving and innovating around its existing ser-

vices to better handle customer requirements. By utilizing the right methods, companies can ensure their survivability in the relevant industry by providing a technically acceptable and economically feasible solution to the customer which will not only place the company ahead of its competitors but in addition will create value for all stake holders.

While conventional analyses still argue that the provider controls value in exchange by performing inter-organizational activities providing customers with peace of mind. (Woodruff 1997) Another concept called value co-creation emphasizes the participation of both the service provider and the customer to perform actions resulting in value creation. (Grönroos and Voima 2012) Recent studies suggests that as customers are becoming more knowledgeable and aware of their input and negotiating power, more businesses have started to feel the pressure to alter their strategy and to accept customer's input during value creation. Unlike in the past, today's customer is more aware and better informed due to a transparent business environment. The customer has more leverage over service providers due to negotiating powers and therefore directly participating in the value creation process as shown in figure 10. However, the burden of value co-creation shifts between the company and the customer depending upon the nature of the product or service and the environment within which it is created. Automobile makers and Cosmetic surgery clinics can be considered as examples of value co-creation cases due to constant customer participation and feedback process influencing the outcome of the product and services. (Prahalad and Ramaswamy 2004)

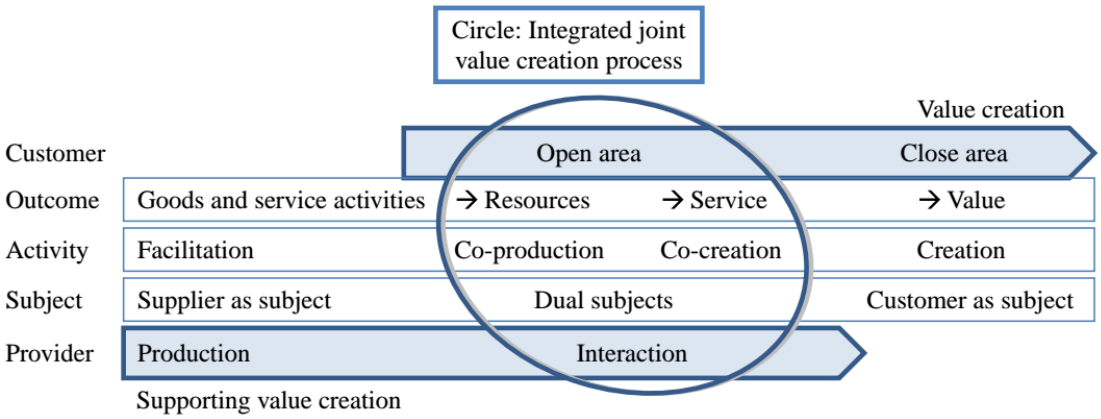

Figure 10. Value Co-Creation (Grönroos and Ravald 2011)

As shown in figure 10, value creation sphere consist of both the provider's production domain as well as customer's participation domain. In order to provide service satisfaction, customer-provider interaction is vital for service conception, design and develop-

ment. The outcome is a co-created value that is achieved by allowing customer's knowledge and experience incorporated with the provider's production and manufacturing capabilities. A Customer is a resource capable of promoting market and efficiently dealing with other resources, a collaborative partner who assists in co-creating value. (Lusch, F. et al 2007) The Customers capture the most value out of a product or service when they have more knowledge and influence over the product or service through a negotiation factor or when they have substitute products available with either none or very low switch over cost. An example of such a case would be online portals for hotel or airline bookings where customers can directly interact with the provider and get the best deals available. (Prahalad and Ramaswamy 2004)

3.4 Building Blocks of Service Design

> You step off the plane, weary from a long flight. As you walk through the terminal, you can't believe your eyes. The airport is immaculate with walkways as wide as roadways and not a speck of litter anywhere. As you move deeper into the terminal, you see a butterfly garden, an outdoor swimming pool, playground equipment, a four-story slide, napping rooms, spa treatments, and entertainment venues including movie theatres and video-gaming stations. Airport employees eagerly greet you with smiles and ask how they can help. (Kaufman, R. 2012)

Designing a service is similar to designing a house, which requires certain essential building blocks such as land, layout, material, space, orientation and other key elements. (Sauming Pang 2009) Similarly, present economy is service-based economy, service surrounds every business operation and it is a universally accepted fact that every successful service should be customer oriented. However, we can still witness a deep disconnect between the volume and quality of service we usually require in comparison with what we receive. Businesses needs to realize the fact that it is not the demand that drives the service, instead it is the basic human requirement of being taken care that fuels the service paradigm. (Kaufman, R. 2012) Therefore, in order to provide the best customer experience and satisfaction, every service requires design elements and building blocks that can blend in together in the form of a package as shown in figure 11. These building blocks can be tangible assets like buildings, financial and human resources, or intangible assets such as market reputation, expert knowledge and customer relations.

Figure 11. Service Design Building Blocks (http://www.upyourservice.com/building-service-cultures)

As shown in above figure, in order to build up a successful service, various building blocks are required in their right proportions. The most important building blocks provide the service foundation for example customer profile, customer feedback, service modelling, key processes, staffing and business earning logic. Services last longer when they are designed with the right composition and proportion of every building block. For example over-staffing can sometimes result in added cost for the service provider or neglecting the service KPIs can result in service quality degradation eventually resulting in dissatisfaction of customers. Similarly customer participation beyond a certain ascertained level can cause key processes to act abnormally resulting in added damage control cost. A service is not considered successful if it only serves the customer's or the provider's interest. However, on the contrary, a successful service always serves as a win-win platform for both the customer and the provider both in terms of monetary gains and elevated experience.

The next sub-sections shed light on some of the essential building blocks of service design, along with their derivatives. The researcher has taken a broad and shallow approach to cover some of the vital building blocks and service elements, which will further contribute in laying foundation for the conceptual framework design for this research.

3.4.1 Customer Value Proposition CVP

> A clear and effective value proposition should be the basis of a firm's functional, psychological and economic value, with related benefits. It shows how to "gain customers and beat competitors" (Capon and Hulbert 2007: 251)

As stated by Hudadof, P. (2009), a customer value proposition is the understanding and realization of experiences that a customer would feel upon a usage or purchase of a product or service. The feeling of customer being taken care of, being treated specially or the realization of comfort while dealing with provider also contributes to value proposition concept. Besides providing the elevated level of comfort and satisfaction, CVP answers the important question of why a customer should buy a particular service at a particular price and how it is different from its available alternatives in the market. The providers should be able to explain how their service offering outmatches that of their competitors on the requirements and criteria that matters most to the customer. (Anderson, J. et al 2006) The following figure shows the CVP and its main derivatives.

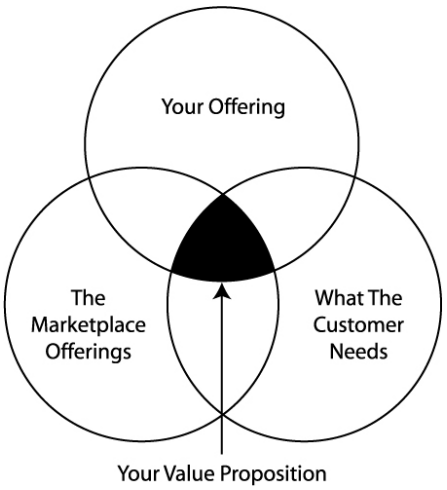

Figure 12. Customer Value Proposition (Lustig, C. 2003)

As shown from above figure, a good CVP is the created when a provider clearly understands its customer needs and requirement, its present market competitors and alternate offerings, and use these essentials to provide its own differentiated offering to the customer. However, it is pertinent to understand that the proportion of all of the CVP derivatives should balance each other in order to come up with the right value proposition for both the provider and the customer.

3.4.2 Earning Logic

For any business to be sustainable and effectively carry on its operations, the economic compensations and earning logic should be well defined and acted upon. Economic compensation not only includes the profitability of the service provider in terms of return on investment (Kaplan and Atkinson 1998) but also includes the customer's perspective in terms of achieving best value for money and how customer generally perceives value. (Hassan, A. 2012) An example of such a case would be Kairos Planet service, which offers attractive remuneration to its paid subscribers in return for virtually using their personal computer's processing power as shown in figure below.

Figure 13. Provider and Customer Compensation (www.kairosplanet.com)

As shown in the figure above, the service offers four different packages with a onetime non-refundable guarantee fee. The customer in return needs to install specialized software on their personal computer with a pre-committed 10 hours run-time per day. The provider earns not only through the service subscribers but also from its corporate customers by providing them virtual computing power. The subscribers on the other hand earn by receiving a daily rental fee for running the software on their computers. The corporate customers also earn by saving a significant amount of investment for setting up their own computing and processing facilities, making it a win-win for all stakeholders.

3.4.3 Customer Profiling

> One of the challenges encountered now days by sales and marketing specialists is customer profiling. Knowing where your clients live and what their characteristics are becomes a necessity. In order to survive and be competitive a company needs to make its market transparent and to know exactly who to target in marketing campaigns. (Badea, R. et al 2009)

As Weidmann et al (2001) describes that a company's ability to build and strengthen long-term customer relationships via individualised offers will depend on its ability to use customer data to plan, develop and control interactions with its customers. Understanding the customer is the key to profitability and sustainable business. Customer profiling is a core requirement for companies and service providers to categorize their offerings based on the different customer categories. Profiling of existing customers also serve as a tool to attract and gather new customers. Below figure provides an illustrative way of targeting the B2B and B2C customers.

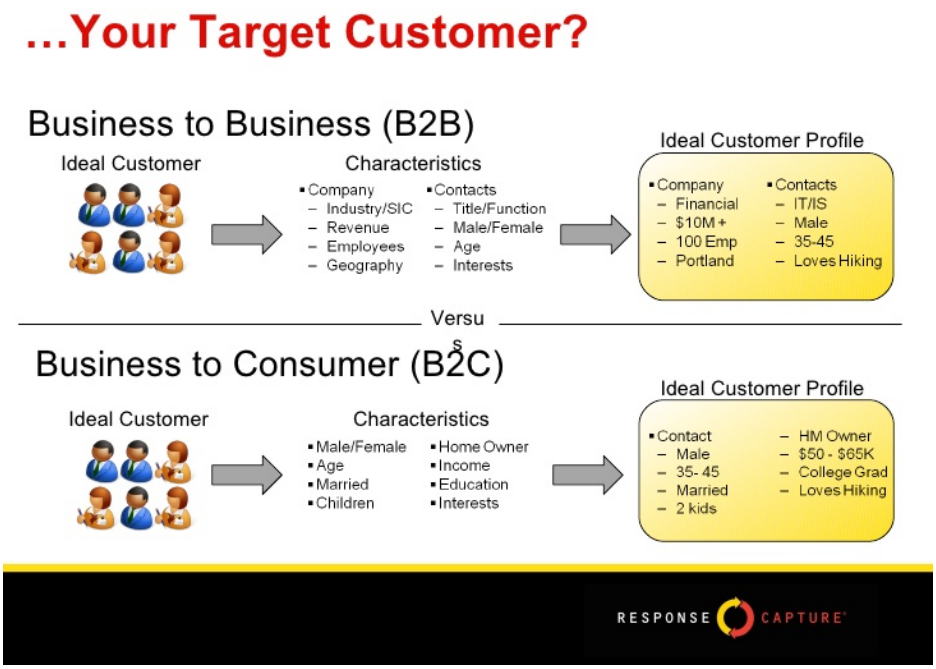

Figure 14. Customer Profiling in B2B and B2C cases (www.responsecapture.com)

As show in above figure, there are different factors to consider when dealing with B2B and B2C cases. The characteristics of B2B are more business oriented such as nature, size and strength of business, interests and position of decision makers. On the other hand, B2C profile focuses more on personal attributes such as personal status, income, interests and gender. Knowing these attributes is vital for companies to design the service around the needs of their target customer. (Weidmann et al 2001)

3.4.4 Organizational Resources and Resource Sharing

Every organizational structure and activity is built on multiple resources that are needed in order to capture value and achieve growth. As shown in figure below, these resources include both tangible and intangible such as capital, human resources, financial resources, market reputation, expertise and organizational culture. Ensign Prescott (2004) explains that in order for an organization to flourish, the existing resources as well as those needed for the future must be considered and aligned with the organization's strategy to achieve the competitive advantage.

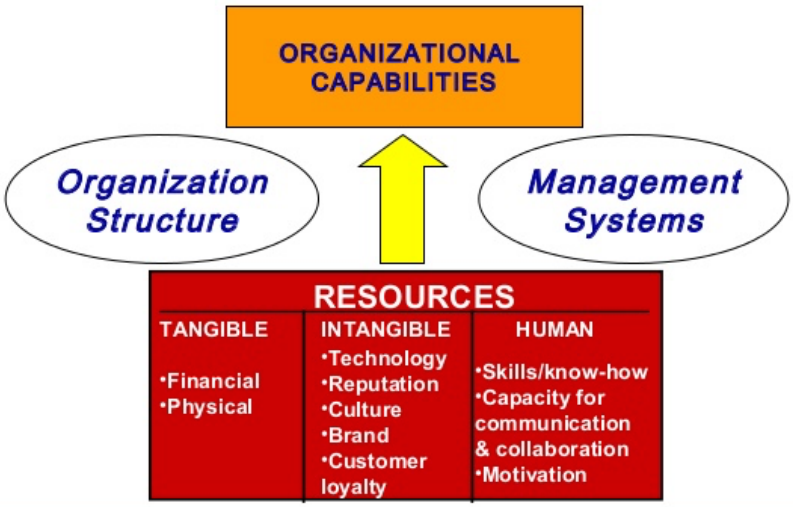

Figure 15. Resource Management and Outcome (Grant, R. 1991)

As shown in above figure, organizational resources can be divided into 3 categories. The tangible resources such as assets and finance form the physical structure of the organization. The intangible resources such as market reputation, technology and branding form the operational structure of the organizations. Whereas, the human resources such as specialized skills and motivation develop the organizational capabilities when integrated with the rest of the systems and resources. Besides developing own resources, businesses usually require resource sharing with other organizations in order to reduce cost and create a competitive edge in the market. As Chul, K. (2013) states that no organization has enough resources to keep up with the growing trends and technological change under present competitive environment. Therefore it is extremely vital for organizations to share resources in order to overcome the resource limitations. Such kind of shared resources might include human expertise, technology sharing, infrastructure and financial collaboration either within the same geographic region or in a different one.

3.4.5 Key Processes

In any business scenario, integral to the universal applications of sales and purchase, demand and supply, manufacturing and distribution, are certain key processes as shown in figure below, that works in parallel to compliment these vital business functions. Efficient service processes need to be integrated with external stakeholders. (Daniel, B. et al 2011) Service providers should facilitate smooth integration of service processes (e.g., R&D, service improvement, customer support, operation support, Marketing) with their own physical backstage processes (e.g., production and manufacturing) in order to achieve operational excellence and provide customer satisfaction simultaneously. (Rust and Kannan, 2003)

Figure 16. Business Process Integration (http://www.jitterbit.com)

As shown in above figure, all the key processes are integrated with each other in order to facilitate the exchange of goods and services between the manufacturer and the customer. The key processes ensure smooth and efficient delivery of goods and services to the customer. The whole idea behind process integration is that organizational platform should be lightweight and flexible, so that the processes can be revised, altered or developed if required. Furthermore, it is also important to regularly investigate the effects of business processes by evaluating the quality of products and services, since they are a direct reflection of the efficiency of the processes. (Elzinga et al 1995) Therefore, it goes inline with Powell's (1995) statement that better integrated processes generate improved products and services, reduces costs, satisfies customers and employees, and improves bottom line financial performance.

3.5 Conceptual Framework for Service Design

This section highlights the key service building blocks in the form of a conceptual framework as shown in the figure below. The conceptual framework is an extract of available knowledge and best practices in the service design field. The framework will provide a wide focused lens to analyse the strengths and weaknesses of the case company's current state of service in a broad and thin manner.

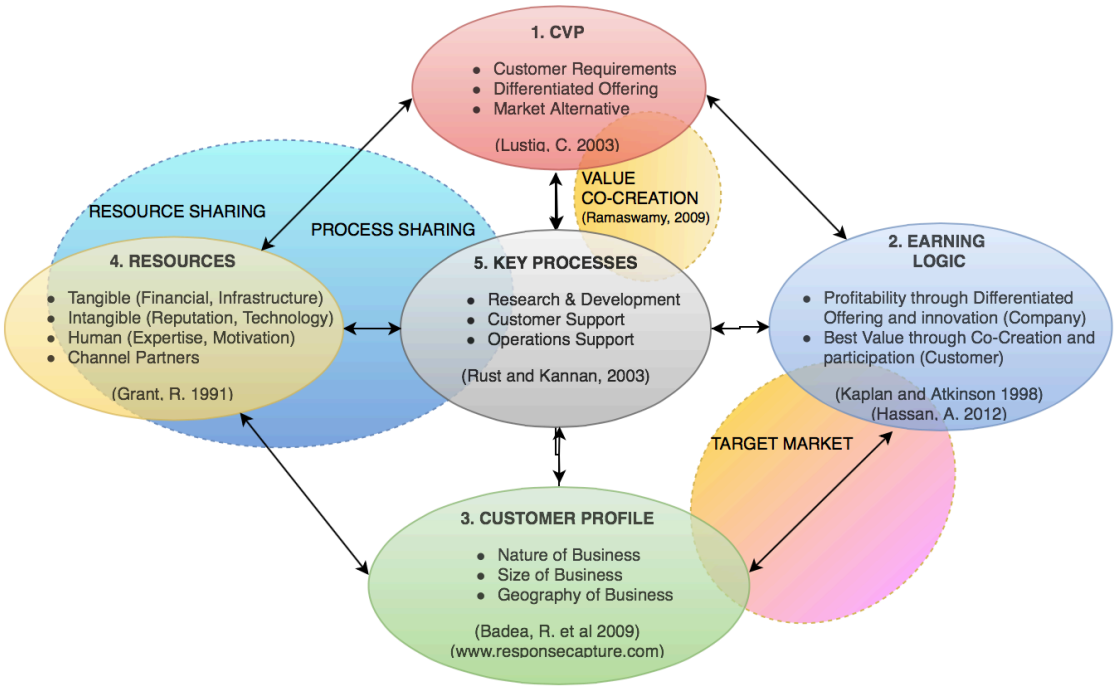

Figure 17. Conceptual Framework

As show in above figure, the five key elements of service design provide the case company with the concise tool to conceptualize and design the right service for its customer segment. Priority should be given to CVP, as it provides the customer with the sense of getting differentiated and exclusive service as compared to available market alternatives. Customer participation and value co-creation along with the provider plays an extended role in providing customer with the sense of getting value proposition. Therefore, the case company needs to design its service from a perspective, which includes customer input and output in the form of feedback and participation. Moreover, in order to justify the exchange gains from a service, the case company needs to put the earning logic on the second priority level. Every service should have a defined earning logic in a way that the service offering is differentiated from the available alternative services not only to fill a service vacuum but also to create value for stakehold-

ers. For the provider, the earing can either be good return on investment and profitability or reputation and placement in market. However, for target market customers, the earning is not only getting good value for money but also the differentiated feeling of being able to participate in service creation.

The third key element for the case company is to determine the target market and the target customer profile. Not every service suits either B2B or B2C profiles and therefore needs to be directed towards the right market segment. Further more, the magnitude of the market segment and its geography should be determined before hand in order for the case company to allocate resources, which constitutes the fourth key element of this conceptual framework. The internal and external, tangible and intangible resources needs to be weighed and lined up including the financial, infra-structural, geographical, technical and human resources.

Moreover, the fifth key element that binds all the other framework elements together are the key processes. The research and development process needs to be conducted by the key stakeholders including the case company, its partners and the customer. A new service targeted towards a specific customer segment needs to be backed up by adequate customer support process, which ensures smooth customer management and support hence facilitating CVP. Finally, in order to maintain a robust service, both business and operation support processes needs to be defined and must be reflected in all related sectors of the organization.

4 Current State Analysis

This section describes the current state of service of Banking Sector connectivity in the case company based on data gathered from interviewing key stakeholders. The section is divided into 3 parts and their relevant subsections. The first section starts with an overview of data collection process and its relevant themes by providing key information to analyze the current state of case company's business challenge. Further, it explains the existing available services and technical functionality challenges, while also concentrating on the key processes related to existing service offering of the case company. The second section extracts the key data from conducted interviews and highlights the strengths and weaknesses of the existing service process. The third section synthesizes the summary of CSA in light with the conceptual framework design, which will further help the researcher to develop a proposal for the case company.

4.1 Data 1 Collection Process

The data gathered in this section is referred earlier in section 2.3 as Data 1. The CSA was conducted in the case company during first and second week of March 2016. The CSA focused on investigating the current service functioning of the case company while keeping in mind the CVP, available resources, key processes, service deliverables, earning logic and the target market customers, as identified earlier in the CF.

Subsequently, The CSA was initiated by enquiring case company's CTO and network manager to determine the existing technical and organizational processes which supports service delivery to the customer. These two interviews provided information about how the current service was planned, technically conceived and implemented in the target market. Moreover, alternate market offerings targeting the same target market were also identified during these interviews.

Being the project manager in the case company, the researcher's own analysis of current market and current service offerings was also included in the CSA. Furthermore, the data collected from the case company was triangulated using partner company's input to determine if the data provided by the case company personnel has been accurate and valid. The teleport manager provided vital and critical information about current technical barriers in serving target customer segment using satellite communications technology.

4.2 Description of Existing Service Offerings

This section provides the understanding of the current service scenario available to the target market segment while dealing with the geographical, technical and operational aspects. It also provides insight on the current challenges faced by all key stakeholders both from a technical and an analytical perspective.

4.2.1 Existing Service Setup and Challenges for Banking Sector (Technical)

> Presently, with approximately 12 banks, the operational cost of existing poorly maintained networks to establish inter-office/branch connectivity is unbearably high due to Telecom monopoly. (CTO, Case Company, appendix 1)

The first interview with the case company's CTO provided data about the current available service scenarios and challenges, banking sector is facing as shown in figure below. Presently, cellular operators are charging inter-connectivity using their Cellular-Network coverage between branches based on per kilometer basis rather than fixed flat rate charges. This method increases the connectivity cost thrice fold for the banks leaving them with minimum profit margins. This setup minimizes value proposition for the banks and for its respective customers due to lack of value added services and interactive banking features otherwise available in International banking.

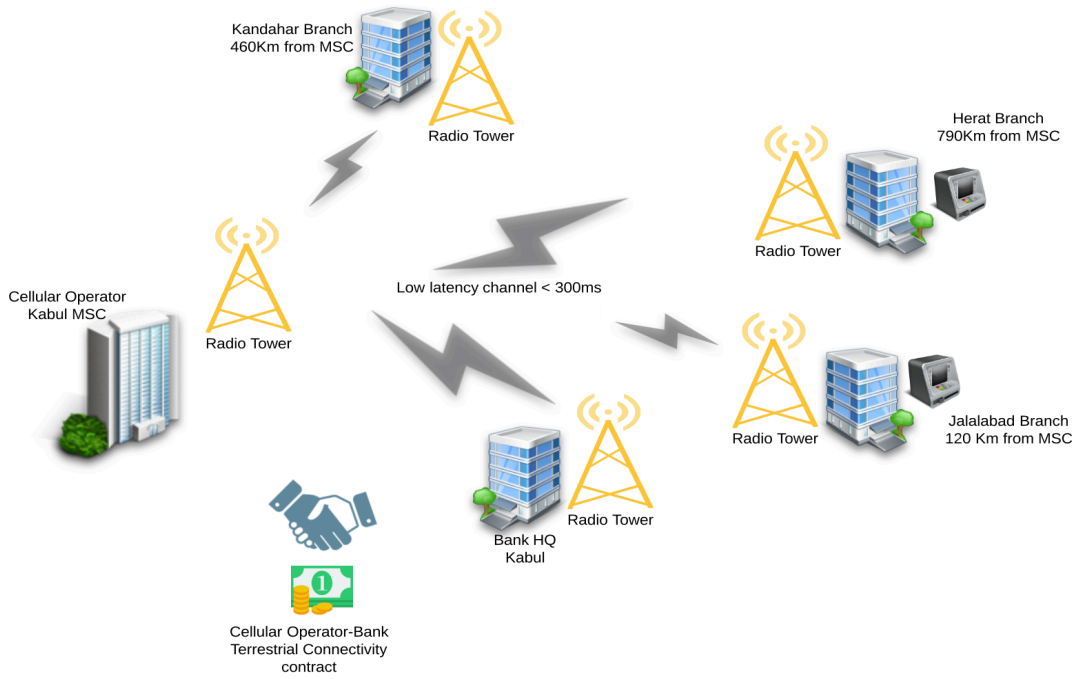

Figure 18. Terrestrial Communications Network (CTO, Case Company, appendix 1.1)

Figure 18 illustrates that the Cellular Operator's MSC is responsible for inter-branch connectivity which is located in capital city Kabul along with Bank's HQ, whereas, the Bank's branch offices are located several hundred kilometers away from the MSC location in cities of Kandahar, Herat, Jalalabad and many more distant provinces. The P2P terrestrial transmission medium though efficient and adequate for running banking system applications still poses a cost challenge as its tariff multiplies with every growing kilometer putting more cost on the Bank to establish vital communication between its HQ and branches. With each bank having several branches spread across 34 provinces, terrestrial communication topology turns out to be one of the most expensive scenarios thus limiting banks facilitating its customers by expanding and adding more value added services.

> Regardless of the geographical location of Teleport, once the application goes over Internet service, it is certain to experience double hop phenomenon thus resulting in delay above 800ms delaying banking transactions (Teleport Manager, Partner Company. appendix 3)

The IT/Network manager of the case company provided useful information about the reason why banking transaction experiences delay over Internet as follows.

> Core Banking Applications are usually Java based software, which are relatively heavier to function over Internet, therefore they require certain specific minimum latency factor to operate without timing out. (IT/Network Manager, Case Company. appendix 2)

The fourth interview with the teleport manager sheds more light on the alternate service offering available to the banking sector. Presently, 58 ISP companies (http://atra.gov.af/en/page/6986/6997) including the case company are operating satellite communications services to provide Internet connectivity to banking sector to somehow tackle their requirement of connectivity and cost reduction. VSAT terminals act as mini earth stations to transmit and receive satellite signals to and from the Teleport, geographically separated from the client's region of business. Therefore, irrelevant of the geography of the teleport, the application will experience above 800ms time delay over double-hop Internet connectivity. This phenomenon is clearly visible in Figure 19 where inter-branch connectivity is established over Internet between different geographical locations.

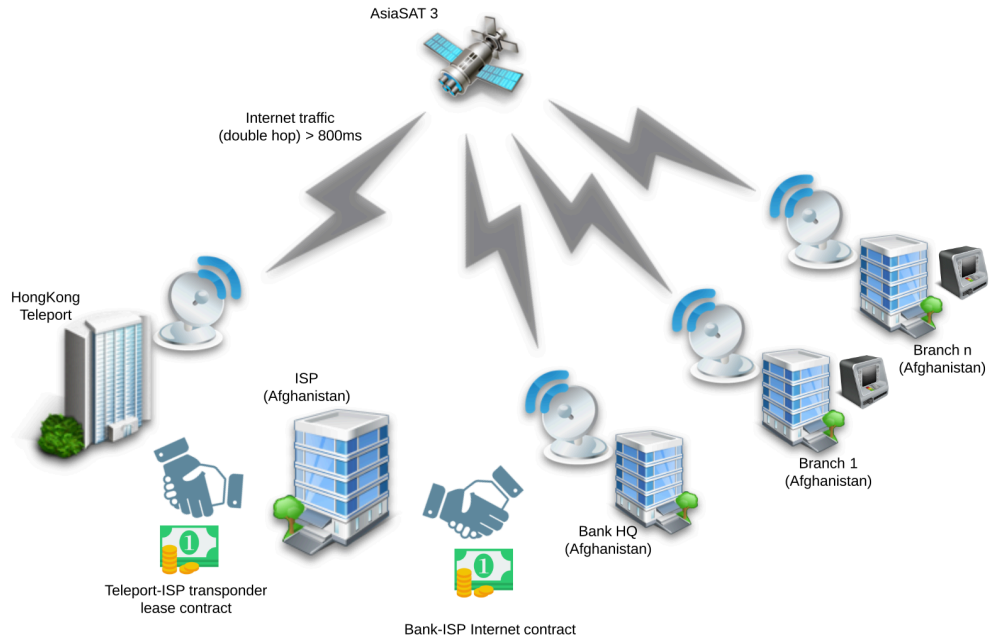

Figure 19. Satellite Internet/Double Hop Network (IT/Network Manager, appendix 2.1)

As illustrated in above figure, VSAT satellite terminals works as stand alone terminals deployed at client's premises without the requirement of any terrestrial infrastructure dependability, however, the inter-office/branch connectivity over Internet causes high latency (over 800ms) causing financial applications and transactions to timeout e.g. an ATM application timeouts over standard satellite based Internet link. The high latency and delay is due to the fact that Afghanistan doesn't have any private Satellite Teleport with closest commercial teleports located throughout China, Far East and Europe. In such scenarios, the ISP only works as a licensed distribution company establishing vital connection between the Supplier (Teleport) and the consumer (Bank) provided there is no direct business relation between both supplier and consumer.

Being the project manager with a decade of on-ground experience, the researcher considers that the biggest challenge faced by the Banking sector of Afghanistan is penetration and dispersion within regions while maintaining quality of service, reducing operational cost and providing better customer support to the end user. Terrestrial network investment which includes e.g. erecting communication towers, laying fibre-optic networks throughout the cities and managing interconnect is beyond monetary reach of the banks and neither is their domain of responsibility. The cellular companies are charging X + n (where X is a fixed cost and n is a variable which is directly proportional to distance in Km) from the banks for interconnectivity. The farther the branch office from HQ, the greater the value of n thus the greater the connectivity cost.

Alternatively, banks have already invested in purchase of satellite terminals called VSATs for each of its branch offices for the use of Internet facility but due to higher time latency factor, most of their important financial applications tend to timeout. ISPs lease satellite transponders from International Satellite Operators from China or Europe depending upon the respective satellite footprint over Afghanistan. Banks pay a flat Internet fee to ISPs per every 1 Megabit satellite connectivity per branch/office, this per Megabit capacity per branch cumulatively amounts to a complete 37 Mhz transponder space of satellite which is owned and operated by the Satellite operators and configured using specialized sophisticated equipment worth millions of dollars.

4.2.2 Case Company Existing Service Function (Analytical)

As described earlier in section 1.2, the case company is an ISP working in a warzone to provide satellite communications services to its customers. Therefore, due to its distinctive geographical positioning and customer focus, the case company incorporates its current service delivery process inline with the available resources, exclusive positioning and customer segment. The limitations in terms of technical resources and service critical processes are also reflected in the case company service functioning. The service process as shown in figure below illustrates the main service components and their arrangement in its existing order. Furthermore, this illustration will help identify the strengths and weakness in the case company's current service delivery process in the next section (see 4.2).

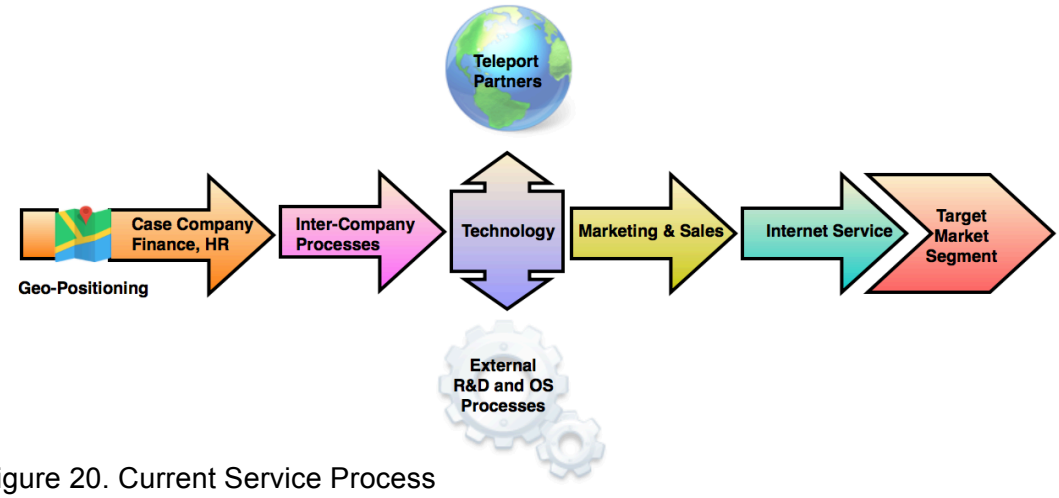

Figure 20. Current Service Process

As illustrated in figure 20, the case company's existing service delivery process is based on various components including its geographical presence in the case country, HR, infrastructural and financial resources. Additionally, it further incorporates key

business processes such as business support, customer support and service improvement processes. These are followed by the technology sharing and operation support processes between the case company and its international teleport partners. Some of the internal and external processes are distributed due to the fact that the international technology partners do not share the same geographical location with the case company. Finally, the sales and marketing section of the case company packages and delivers the outsourced, leased technology to its customer segment in the form of Internet services.

4.3 Identifying Strengths and Weaknesses

As the case company needs to establish a commercially sensible and technically viable service for the banking sector of Afghanistan in order to tap into the significant end-user potential. Therefore, after exploring the current state of service delivery by the case company and understanding the challenges faced by the target market segment through the gathered interview data, this section focuses on providing analysis of key areas of strengths and weaknesses of the case company's current service process. The individual strengths and weaknesses of the current service offering are discussed and analyzed in order to build a service design proposal for the case company (see section 5.3). The figure below identifies the key areas of strengths and weaknesses in the current service process while later analyzing each segment separately.

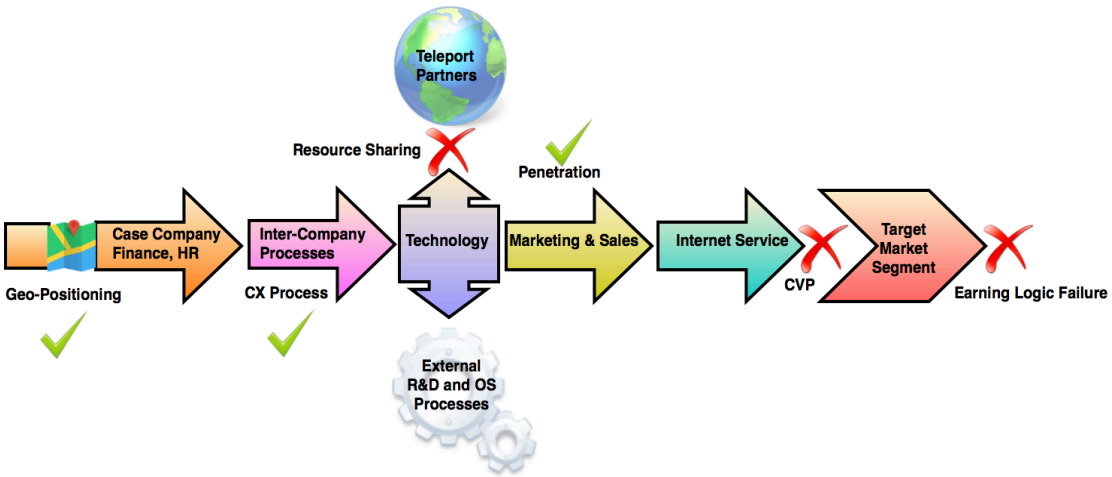

Figure 21. Strengths and Weaknesses of Current Service Process

As illustrated figure 21, the strengths and weaknesses are clearly identified in the current service process at different stages. The strengths are represented by (✓) whereas the weaknesses are represented by (✗). The strengths comprises of the following aspects as shown in table below.

Table 7. Strengths of Current Service Process (appendix 1)

Unit	Service Area	Strengths
1	Case Company Location	The case company shares the same physical geography with the target market segment inside a warzone.
2	Case Company Processes	The case company operates and maintains an on-ground CX process within the same geography without outsourcing or offshoring it.
3	Local Marketing and sales	The case company maintains local penetration capability through its on-ground marketing and sales department.

As briefly but clearly explained in above table, the current service process of the case company holds certain key areas that can be considered its strengths. Those areas involve the case company's geographical location in line with the target market sector, the CX process incorporated by the case company and a local marketing and sales footprint. Similarly, the weaknesses, as earlier illustrated in figure 21 are represented in the following table.

Table 8. Weaknesses of Current Service Process (appendix 1)

Unit	Service Area	Weaknesses
1	Service Offering	The case company cannot provide CVP to the banking sector due to lack of providing differentiated technical offering and an innovatively practical service as per the Banking sector requirement. Current Internet services are insufficient to qualify as a value proposition.
2	Earning Logic	The case company cannot profitize its current service offering with the banking sector due unavailability of technically viable service. Market alternatives are also providing the same service at an even lower cost, therefore the case company is unable to increase its current state profitability.
3	International Teleport Partners	The distant geographical location between the case company and its teleport partners makes it difficult to provide a workable service for the banking sector. The case company lacks its own on-ground teleport facility, which in return affects the service parameters.

Based on the contents of table 8, the weaknesses of certain service areas can be clearly determined and further analyzed. Those areas involve the technological resource sharing, the financial resources and the CVP. Furthermore, the next sub-

sections sheds deeper light into each of the strengths and weaknesses of the current state and analyzes them in order to get the right elements for building up a proposal for the case company.

4.3.1 Analysis of Geographical Location of Case Company (Strength-1)

Generally, It is pertinent for any successful service business entity to share the same geography as its target customers. This is not only important to provide on-time service delivery, but it also helps in maintaining an effective customer support process by quickly resolving customer complaints, eventually contributing to CVP. From the interview data, it seems clear that the case company's physical presence in Afghanistan is itself an advantage for the banking sector. This physical presence can not only benefit the banking sector by getting direct and on-time communications services but it will also help them to expand and extend their business segment. A very important aspect that the researcher raised here based on personal observation while dealing with the banking sector of Afghanistan is that besides the business aspect, the physical presence of the case company in Afghanistan also motivates and strengthens the resolve of the banking sector to work more fearlessly in order to rebuild and strengthen the economic core of Afghanistan.

Based on the interview of the case company CTO and researcher's experience, the figure below illustrates few of the key advantages of maintaining the same geography as the intended target market segment.

Geo-Positioning of Case Company

- **On-ground presence**
- **Faster service delivery**
- **Faster problem resolution**
- **Providing CVP**
- **Knowledge of on-ground business fluctuations**

Figure 22. Advantages of Similar Geo-Location as Customer's

As shown in figure 22, similar geographic location of the case company and target market segment can result in achieving better outcomes in terms of providing CVP, faster service delivery and problem resolution. It also helps the case company to maneuver and alter its product and services according to business fluctuations on ground.

4.3.2 Analysis of Customer Support Process (Strength-2)

The interviews with the Network Manager and CTO also shed light on the advantage of having a locally maintained customer support process in Afghanistan. Considering the regional security and criticality of businesses, the case company has developed a 3-layered customer support system, which enables it to effectively and timely answer the queries of the customer. The 3-layered approach as illustrated in flowchart below represents the functionality and effectiveness of the customer support process maintained by the case company in Afghanistan.

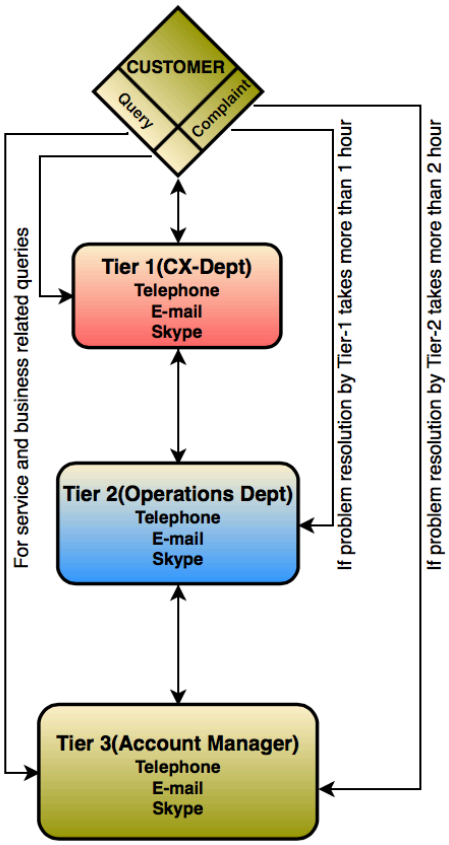

Figure 23. Customer Support Process (appendix 2.2)

As visible from the flowchart in figure 23, the customer support process reflects the working of all of its 3 layers inline with the customer's requirement. The complaints are handled in a systematic time-bound manner to provide quick and efficient problem resolution. Customers are provided with relevant tier contacts along with the respective SOPs. However, for general sales and service related queries, the customers can directly communicate with either the CX department or their relevant account managers.

4.3.3 Analysis of Marketing and Sales Capability (Strength-3)

Businesses are meaningless unless they are able to market and sell their product or services. Marketing people engage the buyer, whereas sales team converts the buyer into profit. This ability gets even stronger with the case company having its sales and marketing setup locally in Afghanistan. The case company manages a central (Kabul) as well regional (Provincial) sales presence in major provinces. The marketing is majorly done using print media advertising and positive recommendations. International satellite communication exhibitions such as CABSAT, GITEX etc. are also used as forums to market the case company's service profile to attract international organizations rehabilitating Afghanistan.

The researcher's own experience of the market exemplifies the fact that the company's on-ground setup has facilitated deeper market penetration and increased sales. Since warzone scenarios are unstable and rapidly evolving along with the customer requirements, therefore, a compacted marketing and sales capability has not only helped the case company engage directly with the customer but has also assisted in forecasting more realistic targets. Below table describes the researcher's perspective on benefits of setting up marketing and sales department locally in a warzone.

Table 9. Benefits of Marketing and Sales Setup in Warzone

1.	Deeper market penetration (regional, segmented)
2.	Better customer engagement (cultural, professional)
3.	Enhanced Customer Satisfaction (one window solution)
4.	Better forecast generation (upcoming, existing)
5.	Better sales milestones (motivational factor in warzone)

Table 9 clearly represents the several key benefits of maintaining local marketing and sales presence in Afghanistan. Considering this capability as strength will not only assist the researcher to propose a new service design to the case company (see section 5.3) but also assist the case company in marketing and promoting the new service to the target market segment.

4.3.4 Analysis of CVP (Weakness-1)

The interview data further analyses the customer value proposition for the banking sector inline with the current service offering. The banking sector according to the researcher holds a great business potential if provided with the right platform and service to cater the needs of around 12 million banking customers in Afghanistan. However, the case company as a service provider is unable to provide the right service offering, which should be aligned with the banking sector requirement. However, The case company is providing higher quality of service in comparison with the competitors but without offering any differentiated technological or innovative feature from the available market alternatives. Below table identifies the various CVP elements that the case company either incorporates or currently lacks in while serving the banking sector.

Table 10. CVP in Current Service Offering

Unit	CVP Elements	Available	Unavailable
1.	Quality of service (QOS)	✓	
2.	Better cost of service		✓
3.	Differentiated technology offering		✓
4.	Target market customer	✓	
5.	Value co-creation with customer		✓
6.	CX process	✓	
7.	Benefits to customer		✓

As represented in table 10, the various elements of CVP either available or unavailable in the case company are identified. It can be noticed that some of the most crucial CVP elements are missing from the service offering such as better cost, co-creation capability, differentiated service offering and benefits to customers in terms of best value for money. Therefore it is evident that current service process and current service offering by the case company is unable to provide value proposition to the target market segment.

4.3.5 Analysis of Earning Logic (Weakness-2)

As understood from the interviews of CTO and Network Manager, in order to overcome the challenge of partnering with geographically distant satellite teleports, the case company needs to either partner with a locally hosted satellite teleport in Afghanistan or develop its own specialized teleport facility. Unfortunately, currently there is no private sector satellite teleport service available in Afghanistan and the ones present are specifically under NATO/ISAF (Military) use. Therefore, the lack of such a facility directly affects the earning logic of the case company, since it fails to deliver the right service to the banking sector thus affecting its profitability and rate of returns. The banking sector doesn't require Internet service to run its operations and will eventually move to better available alternatives. Resultantly, from the gathered data, it can be established that the earning logic of the case company stands directly proportional to the core utility of the service offering, and the availability of the right technology to the right market segment.

On the other hand, the cost of setting up a full-scale teleport is beyond the financial reach of the case company as it requires a multi million $ investment in terms of licensing, infrastructure cost, setup cost, HR, operations and maintenance cost, therefore, adding to the weakness in the case company's current service offering. The actual cost was kept confidential due to company's non-disclosure policy but ideally it ranges between 2 to 5 million $ depending on the teleport features as learnt from the CTO interview. Below table describes the general requirements of setting up a satellite teleport and their respective percentage proportion of the total investment over a period of 5 years.

Table 11. Pre-requisites for Standard Satellite Teleport Operations (appendix 1.2)

1.	Satellite Operator License (From the operating country)	10%
2.	Frequency Spectrum License (From the satellite owner)	15%
3.	Teleport Infrastructure (Equipment and setup cost)	50%
4.	Specialized Teleport HR	7%
5.	Operations and Maintenance Cost (O&M)	18%

As listed in table 10, the most important pre-requisites for setting up and operating a standard satellite teleport are mentioned. The individual percentage of the total invest-

ment for each segment is calculated based on a period of 5 years business cycle. Every satellite teleport is required to purchase a business license from the country it is going to operate in. In addition, the frequency spectrum license is also needed from the satellite owner in order to utilize the leased transponders as per company's requirements. Furthermore, a substantial investment is required in terms of infrastructure and setup cost. Satellite teleport involves specialized electronics, electrical and mechanical equipment that needs specialized human resource for setting it up in a specialized environment. The O&M cost involves daily operational expenses including providing security, un-interruptible power supply, monitoring and maintenance of the teleport.

4.3.6 Analysis of Distant Technical Resources (Weakness-3)

The data collected from the CTO's interview explains that the case company leases the satellite capacity through its international teleport partners, which are located in Hong Kong and Europe. The case company further sells this satellite capacity as Internet services to the banking sector of Afghanistan. Therefore, currently, the case company's role is more of a service distributor equipped with on-ground customer support, human resources and sales segments. However, the different geography of the satellite teleport makes it difficult for the banking applications to work over Internet due to extended time delay (see section 4.2.1). According to the CTO, this resource limitation and different physical location of the satellite teleport is a weakness in the current service design focusing specifically on the banking sector as shown in figure below.

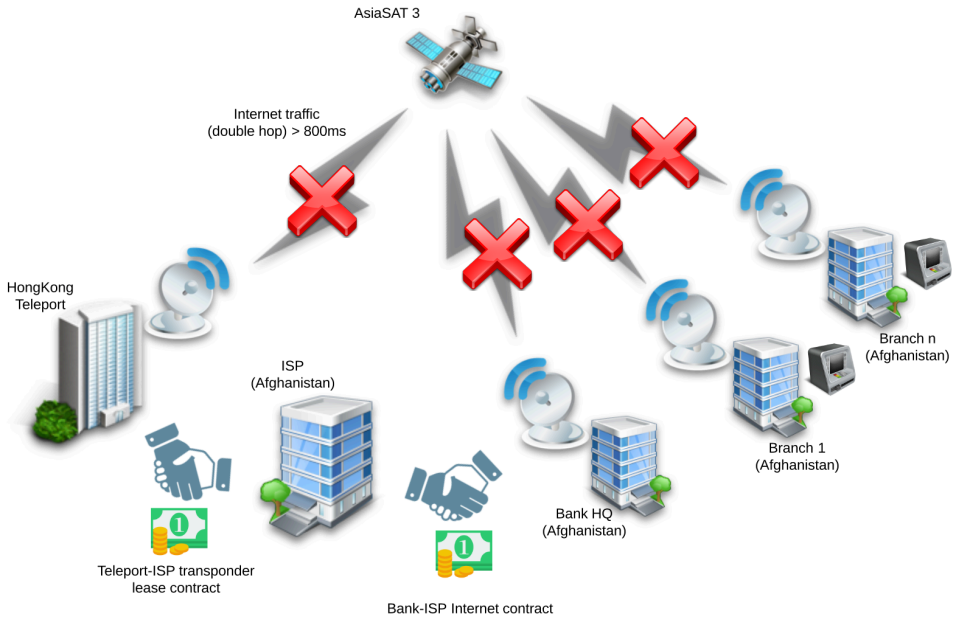

Figure 24. Geographically Distant Teleport Services (IT/Network Manager)

As illustrated in figure 24, the teleport is located in a region geographically distant from the ISP (case company) and its target market segment i.e. the banking sector. The Internet based communication provides more than 800ms of time delay, which causes banking applications to timeout causing disruption in day-to-day banking business.

4.4 Summary of CSA

Based on the findings of the current state analysis, the case company seems to have certain level of clarity in understanding the business challenge. The company clearly knows it geographical positioning and its target market segment i.e. the banking sector. It also understands the problems being faced by the banking sector in terms of functionality, expansion and utility. Through this research, the case company has been able to determine the pluses and the minuses in its current service offering and in the entire service process as a whole. Below figure reflects the key findings from the CSA in the form of key strengths, which will become part of the proposal for the case company in the next section.

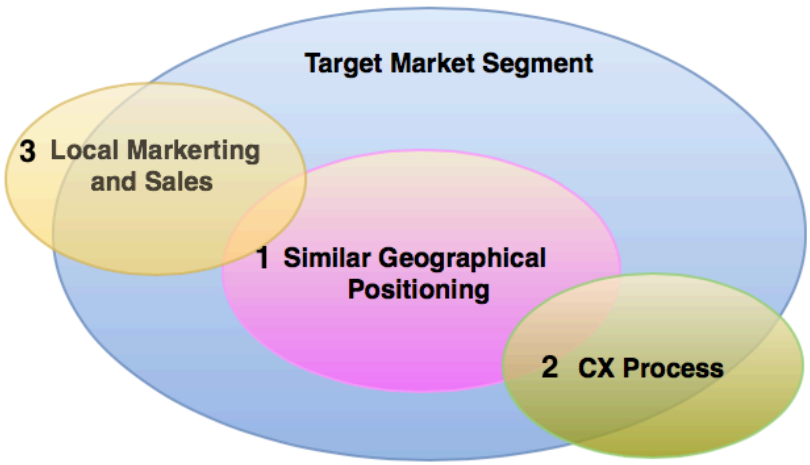

Figure 25. Current State Strengths

As illustrated in Figure 25, all the strengths are within the same domain as the target market segment. The core strength of the case company is its physical presence in a warzone serving the banking sector. This distinguished strength further leads the case company in establishing the marketing and sales capability within the region. It also ensures greater customer engagement and deeper market penetration within the target market segment. Moreover, the well-defined customer support process also enables the case company to wrap its current service offering in a way that it feeds the customer's appetite for service quality, while still lacking the technical viability aspect of it.

The figure below illustrates the behaviour of the weaknesses extracted from the CSA.

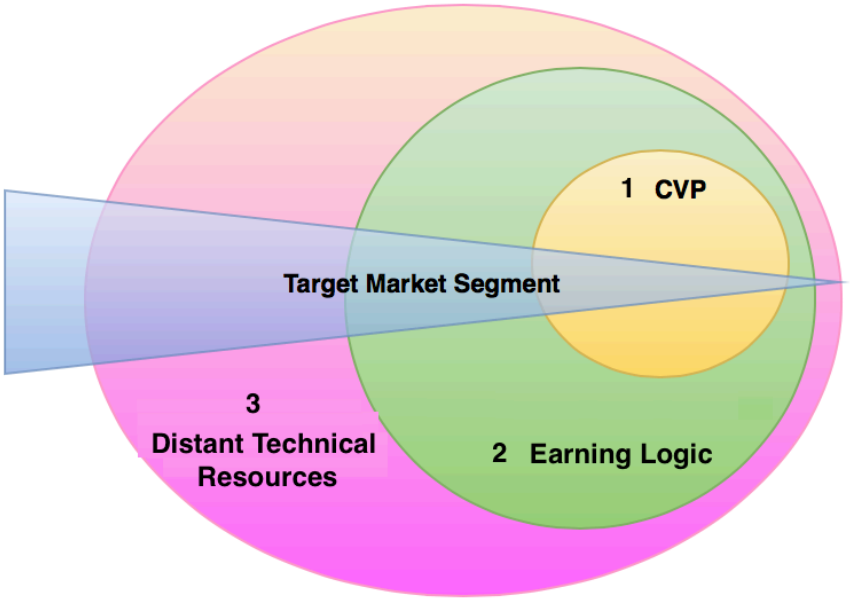

Figure 26. Current State Weaknesses

As shown in figure 26, the weaknesses are illustrated as an onion-layered model. The lack of on-ground technical resources and utilizing of resources from the geographically distant teleport partner subsequently results in case company failing to justify its earning logic, which in return is unable to provide the required service offering to the banking sector, thus lacking CVP. The target market segment provides a cross section layout through the different weaknesses of the current service process and service offering. It can be seen that the CVP covers a very thin part of the target market sector. Furthermore, even as the cross section gets wider layer-by-layer as it cuts through the domains of other weaknesses, it still lacks the sufficient coverage to convert these weaknesses into strengths.

So far, the study analysed individual strength and weakness areas technically and analytically while diagnosing individual strength and weakness in accordance with the business challenge. However, the researcher attempts to re-visit the current state using the conceptual comparison acquired earlier from the available knowledge. Resultantly, if we look through the lens of the conceptual framework (see section 3.5), the strengths and weaknesses of the current state can be identified in the various building blocks of the service design, which the case company intends to develop. Figure 27 establishes the connection between the conceptual framework and the CSA by identifying the key

strengths and weaknesses of the case company's current service offering, with each of its strengths and weaknesses already elaborated in detail (see section 4.3).

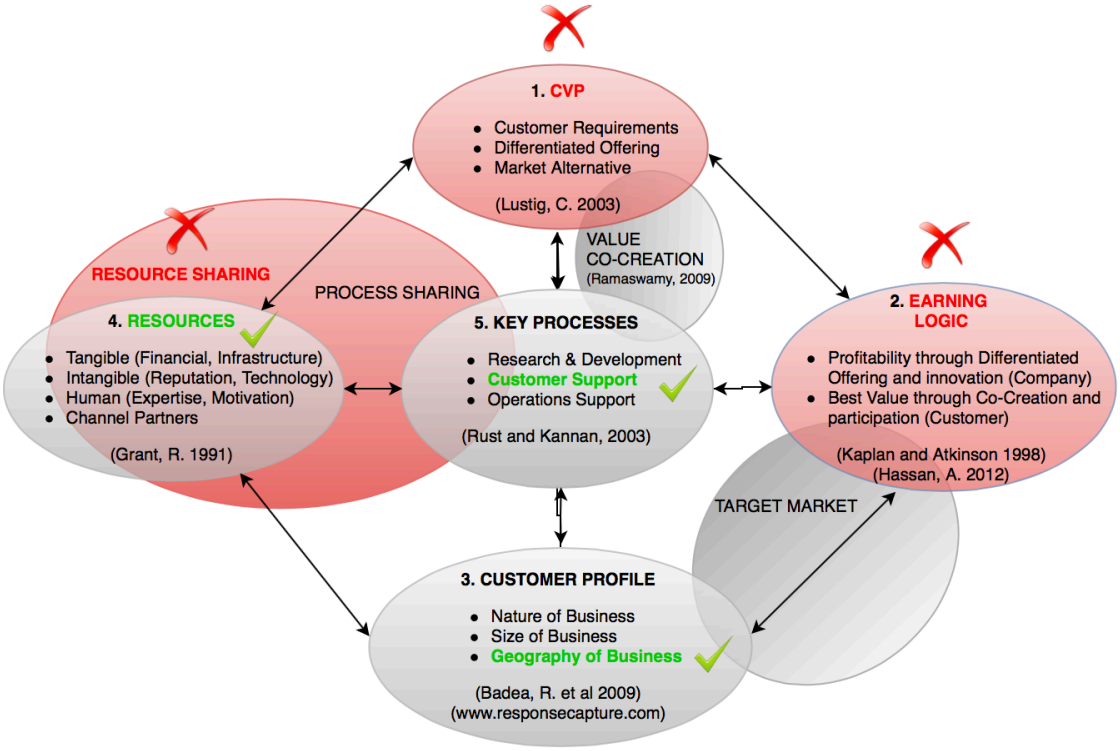

Figure 27. Current State from the Lens of Conceptual Framework

As visible from above figure, the conceptual framework provides the lens to identify the current offerings pluses and minuses. The strengths are represented by (✓) whereas the weaknesses are represented by (✗). The major strength, being the case company geographically present in a war zone as its target market segment. Additionally, the detailed customer support process provides strength to the current service offering by increasing service availability and reducing service downtime. The case company's investments in establishing marketing and sales resources can also be taken as major strength since it allows deeper market penetration and better business yield.

On the other hand, the weaknesses of the current state through conceptual framework are also identified. The case company is unable to provide a viable technical solution to the banking sector due to distant shared resources, which in return is affecting the case company's earning logic by encouraging the customer to switch to available alternatives even on a significantly higher cost (see section 4.2.1). As a result of it, the banking sector is unable to achieve CVP in the form of differentiated offering and sense of purpose fulfillment through participation and co-creation.

The next section focuses on building up a proposal for the case company. The conceptual framework (see section 3.5) will be used to address the weaknesses, combined with the strengths from the CSA. Out of the 3 weaknesses, a particular weakness associated with the distant technical resources will be taken up and addressed in the proposal to the case company (see section 5.2 and 5.3).

The reason for selecting this particular weakness is due to the fact its solution has the key to solve the other two weaknesses in a much easier manner. As long as the technical resources (Teleport) are being shared between different geographies i.e. Afghanistan and Hong Kong/Europe, the required service design cannot be achieved. Therefore, the researcher (Project Manager) plans to address the distant technical resource shortfall in a way that it automatically addresses the shortcomings of the remaining two weaknesses, by channelling them through the concept of resource co-location (see section 5.2), thus facilitating the case company in overcoming the earning logic failure as well as the inability to provide CVP.

5 Building a Service Design Proposal for the Case Company

This chapter focuses on proposing an initial service design proposal to the case company. The core aim is to merge the various strengths and focused weakness as identified from the CSA using the conceptual framework model. The proposal building also gets vital input from the gathered data in the form of ideas and suggestions from the key individuals.

This section starts with the description of data collection process. This is followed by the findings from the collected data regarding improvement in the CSA. The gathered data provides understanding of both an improved technical as well as an improved analytical version of the CSA. Finally, the last section of this chapter proposes an initial draft to the case company regarding the improved service design.

5.1 Data 2 Collection Process and Finding

The data gathered in this section is referred earlier in section 2.3 as Data 2. The Interviews were conducted in the case company during the last week of March 2016. The focus of the interviews was to study the findings from the CSA and to suggest improvements in it by addressing the weakness.

Data for building up initial proposal was collected from 2 key sources. First, the case company's CTO provided improved technical calculation comparing the existing service scenario using geographically distant teleport facility with the alternative scenario. The alternative scenario proposes to shift the Teleport facility within Afghanistan while putting minimum financial burden on any key stakeholder. The second interview with the product manager provided understanding of the on-ground requirements and prerequisites needed to make this Teleport transition take place. The data was triangulated by interviewing partner company's teleport manager who provided acknowledgement in terms of feasibility and technical functionality of the proposed transition plan.

The overall theme, which got generated out of the interviews, was to understand the possibility and feasibility of shifting a very high value and critical technical infrastructure from a geographically distant location (Hong Kong) to the case company's area of business (Afghanistan). The next section also sheds light on the same feasibility by taking a closer look at both the technical and the analytical aspects of this idea.

5.2 Improvement from CSA

This section focuses on providing improvement on the current state of service offering by the case company. The focal point in this section is the particular weakness of distant technical resources identified during the CSA with the help of the CF. This weakness will be addressed and later merged with the strengths to create an initial proposal for the case company (see section 5.3). The next sub-section highlights the technical improvements of the CSA as per the gathered data.

5.2.1 Technical Improvement

The ideas and suggestion acquired from the case company's CTO and Product manager provided clear technical understanding of how the selected weakness can be resolved and how the Teleport transition could take place from Hong Kong to Afghanistan, provided that minimum financial overhead is undertaken by any of the key stakeholders. As described earlier in sub-section 4.2.1, currently all Internet traffic landing in Hong Kong Teleport is using 'X' MHz of satellite transponder space, however, due to latency factor of over 800ms via Internet double hop topology, the banking transactions are timing out. Additionally, the cost per Megabit over Internet 'Y', which the Banking customer pays to the ISP is a fixed flat rate per month and cannot be changed into a variable priced on-demand service (see appendix 4.1). However, this is not serving the customer's purpose, which eventually will cause both ISP and Teleport partner to loose business.

Since the Teleport equipment is divided into different technical sections based on the incoming Internet traffic generated from its respective countries or regions such as Middle East, Africa, and Afghanistan etc. Therefore, if the technical section, only providing services to Afghanistan's customers gets shifted from Hong Kong to Afghanistan into the case company's premises, it will convert the double hop Internet topology into a single hop Data topology. Such a scenario will reduce the communication latency to almost 400ms, thus allowing all banking transactions to work without timing out. Since the case company already has a professional technical setup in Afghanistan with all required licensing to operate as a satellite operator, it will allow a smooth transition and setup without any huge financial overhead, neither on the Teleport partner (since they are already providing equal satellite space), nor on the case company (since it already maintains technical and legal presence in Afghanistan).

As per the Teleport Manager, the only expected cost on the case company is the logistics and one time setup cost of the Teleport Equipment. Additionally, there will be no switch over cost for the banking sector since their on-site VSAT equipment will remain compatible with this new topology. Figure 28 explains the improved technical version of the CSA.

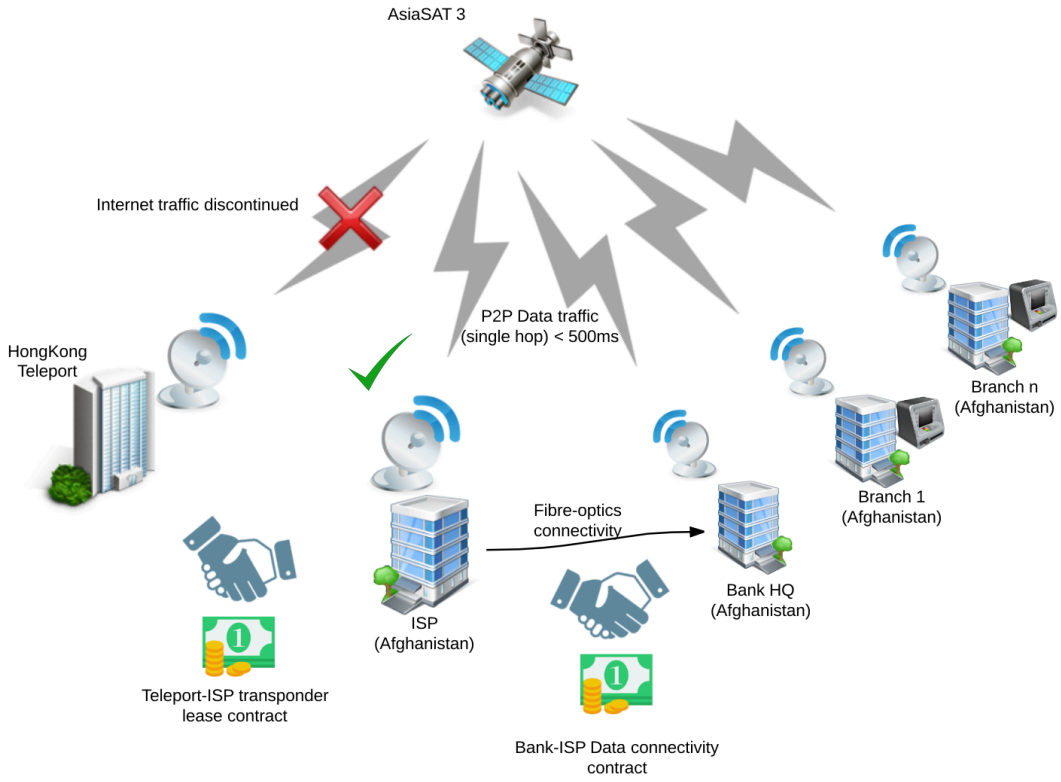

Figure 28. Improved Technical Current State (Appendix 4 and 5)

As illustrated in figure 28, in comparison with figure 20, the Teleport section covering only Afghanistan based customers can be installed and setup in case company's facility in Afghanistan. The case company is already working as an ISP in the same geographic area as the banking sector. Due to the same geography, the case company is locally connected with the Banking HQs via fibre-optics network. The high latency Internet traffic is no longer a barrier due to the fact that all banking application data lands directly and locally within Afghanistan using single hop connectivity saving almost half of delay time i.e. < 500ms. The case company doesn't act as a distributor anymore between the Teleport and the banks, instead it works as a regional Teleport. Whereas, the banks still utilizes 'X' MHz of satellite transponder spacing while paying 'Y' per Megabit over data channel. The 'Y' gets allocated between the case company and its partner teleport in the similar financial manner as before the transition.

5.2.2 Analytical Improvement

This section aims at looking at the improvements of CSA derived from the conceptual framework, from an analytical perspective. It focuses on the weaknesses and addresses them in light of the gathered data. As it is established in CSA that the major weakness related to geographically distant resource sharing between the case company and its partner company leads to lack of provision of CVP and a balanced earning logic. Resource sharing among partner organizations is usually beneficial considering a specialized working domain such as a warzone.

> No business organization can jump into a warzone environment fully prepared to face all business challenges, until and unless it has strong channel partners for supply and logistics, It is not possible even for the strongest of organizations to carry all of the needed resources singlehandedly in such an environment. There is no such thing as a solo flight. (CTO, Case Company. appendix 4)

However, the case company requires shifting of its vital shared resource within its working geography in order to change the existing service offering from Internet to Data service. Such a change will not only improve case company's ability to co-create the newly proposed Data service with the target market customer but will also create value for all the stakeholders.

Additionally, the partner company's investments and revenues will not be affected due to this transition, since they will still remain the primary service provider for both the case company and the target market segment. Therefore, based on potential business growth and historic working relationship, the partner company can shift its highly expensive technical resource to the case company's domain in Afghanistan under certain agreements and guarantees. Figure 29 illustrates the improvements in the CSA from an analytical business perspective.

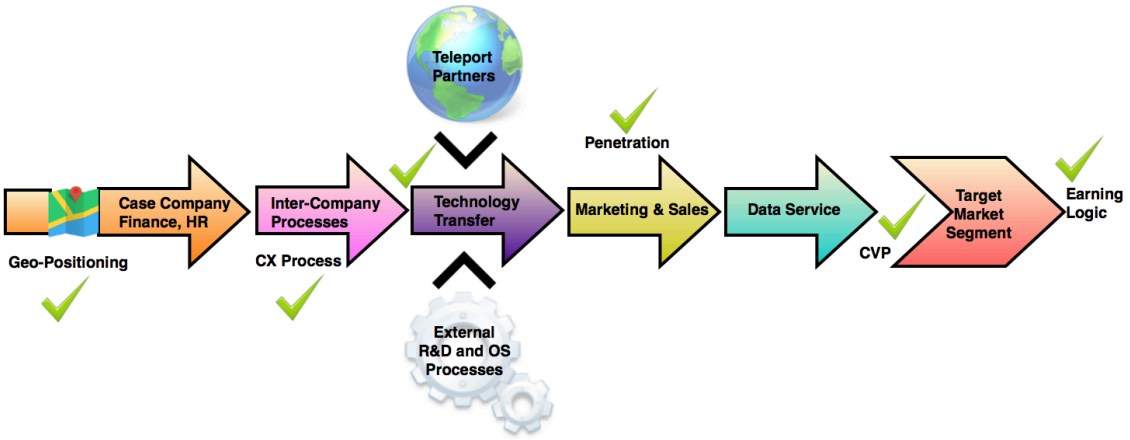

Figure 29. Improved Analytical Current State

As shown in figure 29, in comparison with figure 21, the proposed improvement shows that the distant technical resource from the partner company gets transferred to the same geography as the case company. The impact of this technology transfer would result in changing the existing service offering from Internet service to Data service. Here, Internet can be taken as Goods (GDL) and Data services as Service (SDL). This transition from goods dominant to service dominant through innovation architecture can result in providing CVP to the target market customer. Resultantly, the earning logic for all stakeholders including the case company and the target market customer gets in line with the proposed service offering.

5.3 Proposal Draft

This section produces an initial service design proposal for the case company in the form of a comparitive breakdown of different building blocks of service design. These building blocks were earlier studied during developing of conceptual framework and current state analysis.

Improvements are suggested discretely at every level of the proposed service design building blocks while keeping in mind the interest and benefit of all the stakeholders. The various affects of these proposed improvements for all stakeholders are represented and explained in detail through table 11.

Table 12. Proposed Initial Service Design Summary

Service Design Building Blocks	Case Company		Teleport Partner		Banking Customer	
	CSA	Proposed	CSA	Proposed	CSA	Proposed
Distant Technical Resource	✓ Currently the case company utilizes geographically distant teleport	✗ Proposed idea requires shifting of partial teleport infrastructure to Afghanistan	✗ Currently the partner company consolidates all its technical resources to its own disposal	✓ The partner company requires shifting of Afghanistan specific teleport equipment to the case company	✗ Currently the Banking sector has VSAT equipment installed on each location	✗ The same technical resource (VSAT system) will be used without any addition or changes
Earning Logic	✗ The case company's earning logic is not clearly defined due to non-provision of customer-oriented service resulting in loosing customers	✓ Provision of Data service will ensure banking sector's business growth, hence, ensuring continued and stable business earning for the case company	✓ The partner company's earning logic is not affected due to its continued provision of Internet services to the banking sector	✓ The partner company's earning logic will not change due to provision of satellite space in the form of Data service. It will remain same financially	✗ The banking sector's earning logic is failing due to inability to expand and provide stable and standard banking service	✓ Banking sector will be able to grow rapidly by adding more branches and value added services, thus strengthening the earning logic
CVP provision	✗ The case company is unable to provide CVP to banking sector due to lack of differentiated service offering or better market alternative	✓ Proposed service design can provide differentiated service offering to banking sector by replacing Internet service with Data service	✓/✗ The partner company is marginally providing CVP due to the fact that having Internet service in a warzone is better than no service at all, even without serving the complete purpose	✓ The partner company can provide CVP not only to the banking sector but also to the case company by helping to convert Internet to Data service. The case company can have the first commercial teleport service in Afghanistan	✗ The banking sector is not getting CVP because the available Internet service is not a differentiated market offering in terms of banking requirement or pricing	✓ The Data service will provide CVP to banking sector in terms of fulfilling banking operating and application requirements, better alternative service than the available ones
Geographic Presence	✓ The case company is already present in the same area of service as the banking sector of Afghanistan	✓ The proposed service design also requires the case company to serve the banking sector while being in the same geography as its customer's	✗ The partner company does not need a physical presence in Afghanistan. It is only providing Internet service through HK teleport	✗ The partner company does not need a physical presence in Afghanistan. It is can provide Data service through Case company's teleport	✓ The Banking sector is in the same geography as the case company, including all its present and future branches	✓ The Banking sector remains in the same geography as the case company, including all its present and future branches
Marketing & Sales Resource	✓ The case company has local marketing and sales resources available in Afghanistan for better market penetration and business development	✓ The case company can utilize its local marketing and sales resources to bolster the new Data service beyond the banking sector of Afghanistan	✗ The partner company has no on-ground presence in the same geography as the case company and its target customer segment	✗ The partner company doesn't require on-ground presence in the same geography as the case company and its target customer segment	✗ The Banking sector is unable to do marketing and business development due to technical inability to provide proper banking services to the end user	✓ The Banking sector can aggressively market and expand their business within the consumer sector due to availability of Data service
Customer Support Process	✓ The case company holds local CX process to facilitate existing service offering	✓ The case company CX process will also facilitate the proposed Data service	✓ The partner company provides CX only related to satellite operations	✓ The partner company provides CX only related to satellite operations	✓/✗ The Banking sector receives CX related only to Internet service, therefore marginally getting CX	✓ The Banking sector will receives CX not only related to Internet service but also for Data service
Switch-over/Transition cost	✗ None, due to external technical resources	✓/✗ Marginal cost, due to logistics and setup of teleport	✗ None, due to existing setup being done already 20 years ago	✗ None, because case company pays for the equipment shift and setup	✗ None, due to already purchased VSAT equipment for Internet service	✗ None, the existing VSAT equipment is also compatible with Data service
Customer Participation	✗ No customer participation due to service monopoly	✓ Customer participation is required to expand Data service offering	✗ No customer participation due to service monopoly	✓/✗ Marginal participation by the case company due to local Teleport setup in Afghanistan	✗ Customer has no opportunity to participate due to non-flexibility of current service offering	✓/✗ Customer has limited participation opportunity by providing test benches for the proposed service
Value Co-Creation	✗ No value co-creation due to limited Internet service offering	✓ Value co-creation is ensured by customer participation and input	✗ No value co-creation due to limited Internet service offering	✓ Value co-creation is ensured by case company's participation and input	✗ Customer cannot co-create value with the case company due to Internet service	✓/✗ Customer can co-create value by educating case company about their banking application functionality
Color Coding	**Weakness**	**Strengths**	**Unavailable**	**Available**	**Value added**	**Marginal state**

As represented in table 11, the proposed service design features for all key stakeholders are listed out. Comparison has been created between the CSA and the initially proposed idea in terms of 'before' and 'after' methodology. The available and unavailable states are represented by (✓) and (✗) respectively, whereas, (✓/✗) represents a marginal state while using different colour codes for all the three different states.

As mentioned earlier in CSA, addressing the key weakness holds the key to solving the other weaknesses and to strengthen the service design proposal. The building blocks are divided into three colour codes, the **first** represents the weaknesses, the **second** represents the strengths while the **third** represents the value added factors. The transition of distant technical resource to case company's premises automatically converts the Internet service (double hop) into Data service (single hop). This conversion facilitates the earning logic of the case company as well as the banking customer without affecting the teleport partner, since their satellite space will be used regardless of the on-ground arrangements. Similarly, provision of Data service provides differentiated service offering from the current market alternatives, since all the market competitors are providing only Internet services, thus providing CVP to the banking sector.

Moreover, the existing strengths of the case company also add more strength to the proposal in terms of strong on-ground presence, solid CX processes and available marketing and sales resource. Existing strengths tends to compliment the proposed improvements by providing them room to manoeuvre and alter if needed. Finally, the value added building blocks adds further appeal to the proposal. The zero switchover cost for both the teleport partner and banking sector encourages them to facilitate the case company in moving forward with the idea of hosting a local Teleport in Afghanistan. The case company itself bears marginal cost of logistics and setup of Teleport equipment, provided that it maintains a proper on-ground infrastructure. Additionally, stakeholder's improved participation in the service design process results in co-creation of value not only in terms of revenue, but also in terms of better service experience.

The next chapter focuses on validating and getting feedback on the initial proposal draft from the target market segment i.e. the banking sector of Afghanistan. Based on the feedback, the proposal will be reviewed, amended and improved further in order to produce a final proposal summary applicable to all the stakeholders.

6 Review and Validation of Proposed Service Design by Stakeholders

This chapter focuses on getting feedback on the initially proposed service design proposal to the case company. The target-banking customer needs to review the initial proposal and provide vital feedback based on its own experience and suggestions, which will further improve the service design. Once the banking sector customer validates the proposal, it is triangulated and further verified from the technical manager of the case company for finalization. The core aim is to merge the various ideas and suggestion from all stakeholders to produce a validated, implementable and viable service design proposal.

This chapter is divided into four parts. The first part describes the feedback collection process from the banking customer in light of their own business experience and challenges. The second part analyses the provided feedback while further triangulating it with the case company's technical manager to ensure logical integration of the given feedback into the proposal. The third part produces proposed recommendations for the final service design, which includes all the suggested improvements after validation from the key stakeholders. Finally the fourth part produces the final service design.

6.1 Feedback Collection Process and Finding

The data gathered in this section is referred earlier in section 2.3 as Data 3. The Interview was conducted with the banking customer during the third week of April 2016. The aim of this interview was to obtain vital feedback from the target market customer to further improve and validate the initial proposal.

Feedback was collected by interviewing the IT Manager of XYZ Bank (anonymous), which is currently an existing client of the case company. The bank currently uses Internet service provided by the case company for its inter-branch connectivity. Data for building up final proposal was collected in 2 different phases. Firstly, the researcher as the project manager explained the current state of service offering to the banking customer. Based on the CSA, the initial proposal recommendations was presented to the customer for further analysis and feedback from a different angle. Secondly, the obtained feedback is then presented to the case company's CTO for further validation and integration into the final proposal. These steps are important to ensure that both

the case company and customer recognizes each other's resource capabilities and limitations while designing the final proposal.

6.2 Analysis of Feedback

This section provides customer's feedback on the initial proposal from an improvement perspective. After understanding the complete proposal and its advantages, the IT manager of the XYZ Bank presented a valid concern and reservation about the content security of the banking application data which will travel through the case company's technical infrastructure.

> Since your company will be providing Data service not only to our bank, but to other regional banks also, what measures are being taken to prevent data overlapping and content security? Previously with Internet service, our data could also get compromised but now that your proposal bypasses Internet, how do you plan to answer this concern of data security. (IT Manager XYZ Bank. appendix 7)

This shows a very valid and crucial concern from a banking sector since all their business growth depends on the level of transactional security and service reliability they can provide. The case company indeed plans to market the new service to all the banks in Afghanistan with the intention to facilitate their rapid outreach and growth. However, it has to make sure that the individual bank's transactional confidentiality and data security stays paramount as reflected in figure below.

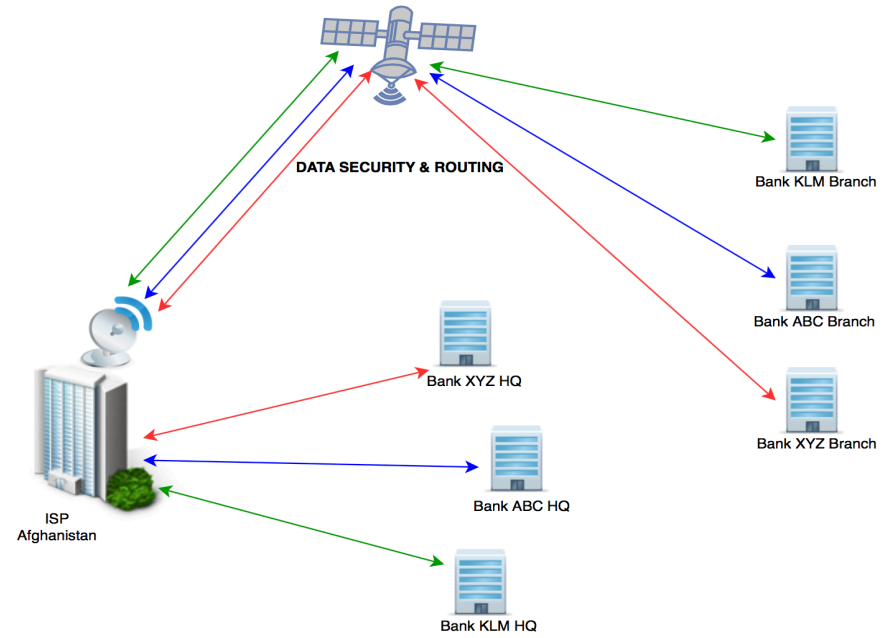

Figure 30. Banking Data Application Security

As illustrated in figure 30, the banking sector requires end-to-end policy routing and data separation of individual banking traffic in order to ensure data confidentiality and security. The case company in future might serve multiple banks at the same time, therefore, its is highly important to ensure that individual banking transaction while passing through case company's infrastructure remains secure and separated from other bank's data traffic.

Therefore, In order to make the initially proposed service design model more robust and efficient, the Banking sector customer suggests the case company to setup a network security team in partnership with the bank's IT departments. The suggested team will be comprised of shared human resource and expertise from individual banks to define policy and security for all the banking data traffic. The proposed network security team will initially be based in the case company's proposed teleport. The purpose of this team will be to identify and implement protocols for data segregation and data security, compatible to banking applications. As the data service will get matured and tested with time, the Network Security team will move back to their regular positions in their respective banks while continuously monitoring the setup.

The concerns and suggestion from the banking sector customer were discussed with the case company's CTO who agrees with the idea of improved customer participation and co-creation. However, prior to that, the case company requires covering the legality of such a proposal by introducing non disclosure agreements (NDA) and fulfilling other contractual obligations. These steps are vital to ensure that within the team, every bank representative's activity gets monitored and logged to avoid any conflict or damage caused by the misconduct of a team member towards a competitor. Figure 31 illustrates the analytical view of the final validated proposal.

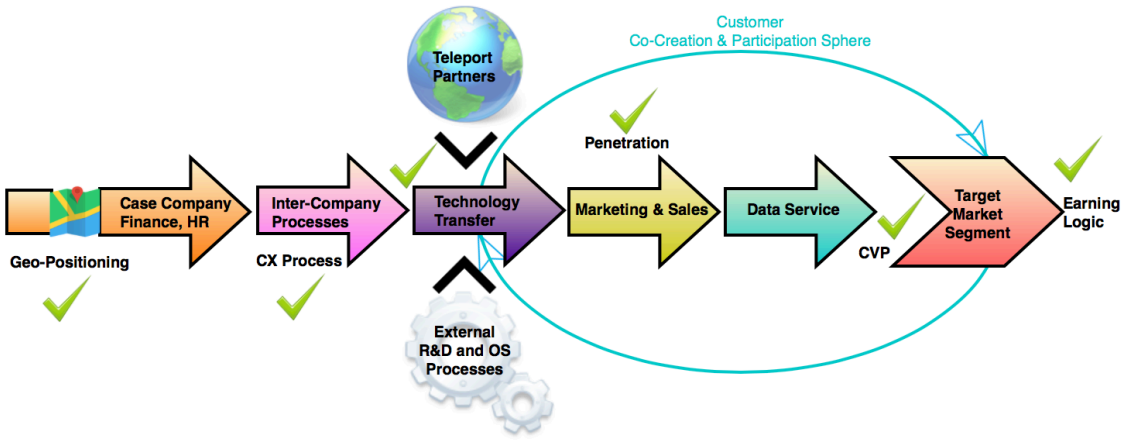

Figure 31. Validated Proposed Service

As shown in figure 31 in comparison with figure 29, besides the initially proposed service process, the validated proposal comprises of the co-creation and customer participation sphere between the technical resource and the target market customer. Each potential customer (bank) will provide a network security expert on temporary basis to the case company in order to implement and test the system while ensuring security and functionality of banking data traffic. This will enable better cooperation and value creation for all stakeholders while protecting each other's interests.

6.3 Recommendations for Final Service Design

This section presents the proposed recommendations to the case company after getting it reviewed and validated from the banking customer sector as well as from the case company's technical manager. These recommendations will help create the final service design for the case company to run its 'Data Services'. Additionally, the suggested improvements by the banking customer sector would enhance the efficiency and viability of the proposal to ensure smooth service delivery with adequate customer contribution. Table 12 below explains the proposed recommendations for the final service design.

Table 13. Recommendations for Final Service Design Proposal

	STAKEHOLDERS		
SERVICE DESIGN BUILDING BLOCK	**CASE COMPANY**	**TELEPORT PARTNER**	**BANKING SECTOR**
1. RESOURCE SHARING • Technical Resources • R & D Resources	Case company proposes shifting of Afghanistan specific technical infrastructure to case company's facility in Afghanistan. This technology transfer will allow to convert the existing Internet service into Data (only) service without the need of internet, while bringing down latency under 500ms **DATA 2**	The partner company requires physical lending of Afghanistan specific teleport equipment to the case company. The Teleport equipment will still be owned by the Teleport but only shifted to a different geography to facilitate a service innovation by the case company **DATA 2**	***The customer proposes to share HR in terms of network security expertise to ensure smooth and flawless service delivery without fear of overlapping or manipulation of banking data.*** **DATA 3** Additionally, The same technical resources (VSAT system) already owned by the banking sector will be used without any addition or changes **DATA 2**
2. CVP PROVISION • Customer Requirements • Differentiated Offering • Market Alternative	Proposed service design can provide differentiated service offering to banking sector by replacing Internet service with differentiated and innovative alternative which will fulfill customers banking requirements **DATA 2**	The partner company can provide CVP not only to the banking sector but also to the case company by helping to convert Internet to Data service. The case company can have the first commercial teleport service in Afghanistan **DATA 2**	The Data service will provide CVP to banking sector in terms of fulfilling banking operating and application requirements, getting better alternative service than the available ones in the market **DATA 2**
3. EARNING LOGIC • Profitability through Differentiated Offering and innovation (Company) • Best Value through Co-Creation and participation (Customer)	Provision of Data service will ensure banking sector's business growth, hence, ensuring continued and stable business earning for the case company **DATA 2**	The partner company's earning logic will not change due to provision of satellite space in the form of Data service. It will remain financially similar as before **DATA 1&2**	Banking sector will be able to grow rapidly by adding and introducing more branches and value added services, hence strengthening its earning logic **DATA 2**
4. CUSTOMER PROFILE • **Geography of Business**	The proposed service design requires the case company to serve the banking sector while being in the same geography as its customer's **DATA 1**	The partner company does not need a physical presence in Afghanistan. It is can provide Data service through Case company's teleport **DATA 1**	The Banking sector remains in the same geography as the case company, including all its present and future branches **DATA 1**
5. KEY PROCESSES • **Customer Support**	The case company already maintains tier level CX process to facilitate existing service offering, which can easily accommodate the proposed service offering **DATA 1**	The Teleport usually provides CX to the case company related to satellite operations, however the shifting of teleport to Afghanistan will extend the spectrum of CX towards the case company **DATA 2**	The Banking sector will receives CX not only related to Internet service but also for Data service in the same manner as it was being provided before **DATA 1&2**
6. MARKETING AND SALES RESOURCE	The case company has local marketing and sales resources available in Afghanistan for better market penetration and business development, the same can be used to bolster the new Data Service **DATA 1**	The partner company doesn't require on-ground sales and marketing resource in the same geography as the case company and its target customer segment. **DATA 1**	The proposed service will enable the banking sector to bolster its sales by aggressively marketing newly introduced banking and value added services to the end user. The provision of a real solution (Data service) will make the banks confident about their marketing and sales strategy **DATA 2**

Strengths Weakness Unchanged State Changed State

As explained above, table 12 contains all the critical building blocks of service design along with their respective proposed affect on different stakeholders. The strengths and weakness areas, identified during CSA are reflected in the final summary. Improvements from the existing service offering are signified as 'changed state' while 'unchanged state' does not require undergoing any particular improvement. Furthermore,

the banking customer's feedback and suggestion are highlighted in *italic* under the 'Resource Sharing' weakness.

6.4 Final Service Design

Based on the comparative breakdown (see section 5.3) and on the gathered recommendations after data validation (see section 6.3), the final service design is developed keeping in mind the relevant strength and weakness areas in relation to the conceptual framework. Figure 32 illustrates the final service design for the case company.

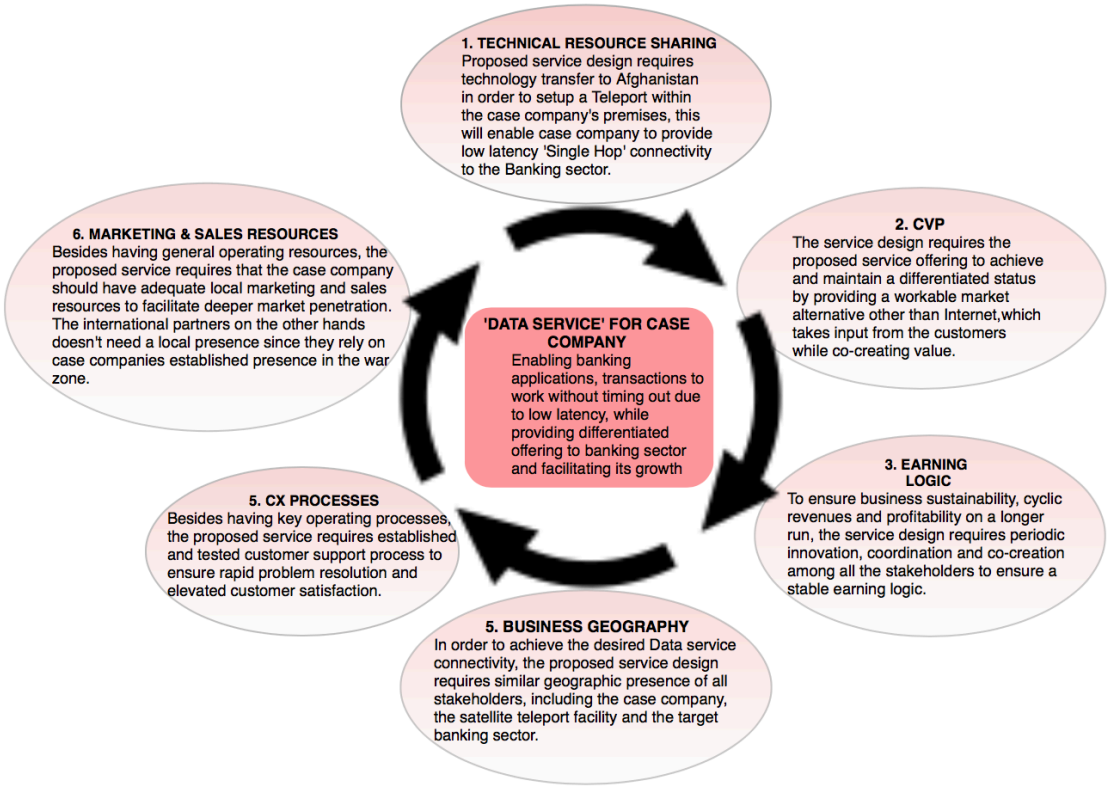

Figure 32. Final Service Design

Figure 32 shows the final service design for the case company as initially promised in the thesis outcome. The service design should act as a platform to support the prospective 'Data service' while enabling the banking sector of Afghanistan to utilize low latency, single hop connectivity to expand its business throughout Afghanistan. The final service design comprises of six key components, which are specifically selected to fit the proposed service parameters intended by the case company.

The first major component in designing the required service is the technology transfer from partner teleport to the case company premises. In case the banks would stop utilizing Internet service due to non-utility, the teleport equipment costing millions of dollars to the partner company will eventually be of no use. Therefore, the case company needs to negotiate and formulate the shifting of Afghanistan specific teleport equipment within the same market as the banking sector to setup a local teleport. Such a cooperation will not only help in designing the prospective 'Data service' for the banking sector, but will also benefit all the stakeholders by efficiently managing their expensive resources.

The second key component that is required in this particular service design is the provision of CVP. Every market competitor is offering similar Internet service, however, banking sector requires differentiated service offering that can fulfil its connectivity requirements while enabling it to expand its business domain. Therefore, the new service design needs to ensure that any resultant service should be able to offer the desired CVP level and ensure customer participation and co-creation. The third required component is the earning logic for the newly proposed service. The case company needs to realize that with the continuity of provision of Internet service to the banking sector, its recurring revenues will eventually diminish. Therefore, to justify a stable earning mechanism, service design innovation is needed to keep the revenues flowing and profits growing.

The fourth key component of the service design is the required presence of all stakeholders in the same geography as the potential banking sector. Since the case company and the banking sector are already located in Afghanistan, the setting-up of a local teleport will eventually bring all three stakeholders in the same geography. The fifth key component required for a successful service offering is the customer support process that should be well defined and tested for problem resolution and after sales support. The stronger the CX process, the more value it will add to the potential service offering. The sixth and final component of the service design is the presence of Afghanistan based marketing and sales resource. In order to promote the prospective 'Data service', and penetrate deeper into the potential market segments, it is highly important for the case company to have an on-ground marketing and sales presence.

6.5 Next Step Recommendations

As we can see that the final proposal summary holds the solution to all of the identified weaknesses in terms of sharing of geographically distant technical resources, providing CVP and making sense of the earning logic. Additionally, the strengths of the proposal adds more value into the proposed service offering in terms of geographic presence of case company, established CX process and local marketing and sales resource. Finally, the customers review and feedback regarding co-creation and participation validates the authenticity and efficiency of the service design proposal.

Resultantly, the final proposal recommendations and service design should first be discussed internally within the case company to determine the feasibility and practicality of moving in and setting up an expensive teleport service in Afghanistan. This trade-off decision between risk and opportunity will be the deciding factor for entering into the next level. Consequently, based on the final service design, it is recommended that the case company devise an implementation and testing schedule in coordination with all the stakeholders. Therefore, the case company needs to start parallel negotiations and discussions with the teleport partner and banking customer to minimize action delay. Moreover, considering the geography of the business area, concrete and binding contractual agreements are needed to secure and monitor every stakeholder's participation and investment. However, as complex as it may seems, the researcher believes that the final service design proposal can surely pave way for introduction of the prospective Data service, which can surely help the banking sector of Afghanistan to flourish.

7 Discussion and Conclusions

This chapter concludes the thesis by discussing about its objective, approach, implications and outcome. The first section presents the summary of the thesis while combining both the technical and the analytical aspects. This is followed by the practical implication of the thesis for the case company. Lastly, the complete research is evaluated in light of Outcome vs Objective comparison and its level of reliability and validity among the eyes of the stakeholders.

7.1 Summary of the Thesis

The research was conducted around a challenge faced by the banking sector of Afghanistan. Continuous decades of war has damaged entire telecommunication infrastructure of the country. Available communication means are only through existing monopolized cellular operator's network or through satellite based ISPs providing Internet service. The banking sector faces financial challenge while using cellular operator's network due to their 'per kilometer' connectivity rates, as it gets highly expensive to connect distant or remote branches. On the other hand, the Internet service through satellite based ISPs, despite being cheaper, poses technical and operational challenge by offering high time latency (>800ms) connectivity. This high latency causes banking applications/transactions to timeout causing problems with daily banking operations. Therefore, to answer this challenge, the case company needed a newly improved service design proposal to meet the customer's requirement.

The challenge necessitated visiting available knowledge and best practice done in (a) service design field (general and telecommunications) and to create an understanding of (b) SDL, (c) value co-creation and (d) service design building blocks. The outcome of this knowledge exploration helped to create a conceptual framework model, which acted as a lens to focus the current state problems being faced by the case company. The conceptual framework comprised of key elements of service design such as (a) the CVP, (b) the earning logic, (c) the customer profile, (d) the case company's internal and external resources, and (e) the key processes for service delivery. Those key elements helped the researcher not only to formulate the data collection process for every phase of the research, but also to identify the target areas while conducting interviews.

Furthermore, while doing the current state analysis, stakeholder's interviews were conducted in order to identify the areas of weaknesses and strengths in the existing service offering. Multiple areas of existing weakness were identified such as (a) lack of CVP provision due to identical service offering (b) lack of earning logic, and (c) sharing of distant technical resources. Similarly, multiple areas of strength in the current state were also identified such as (a) the case company's geographic presence in the same warzone as the customer, (b) the case company's established marketing and sales resource within the same warzone, and (c) the case company's tested CX process. Those areas were deeply analyzed and later addressed by the relevant stakeholders in the form of ideas, suggestions and improvements to create an initial service design proposal. The initial proposal acted as a preliminary draft solution of the challenge being faced by the case company. However, it further needed validation in order to assert its credibility and authenticity. Therefore, the banking sector customer and the case company first validated the initial proposal before being presented to the case company as a final service design proposal summary.

Hence, the outcome of this thesis is a framework level service design, which enables the case company to offer a new prospective 'Data service' to the banking sector. The technical advantage of this proposed service design is that once implemented, it can by-pass 'Internet service' to provide low latency (> 500ms) single hop connectivity to the banking sector, enabling all banking applications to properly function. On the other hand, the business advantage is a newly improved service, which enables provision of a differentiated service offering to the banking sector customer resulting in a more profound value proposition and an earning mechanism. Therefore, the improved service design should not only answer all the shortcomings of the previous offering but should add more strength and practicality to it.

7.2 Practical Implications

As explained throughout the research, the final proposal would be a new and improved combination of various building blocks of service design, that will not only enable the case company to ensure CVP provision through differentiated service offering, but also ensure a logical earning mechanism for the stakeholders. Additionally, this proposal can help secure the confidence of international Teleport partners by encouraging them to invest within a war zone. If this proposal is rightly implemented, it can have immense economical and commercial benefits not only for the case company but also for the

whole banking sector of Afghanistan. Figure 32 illustrates the practical implications of the service design proposal for different stakeholders.

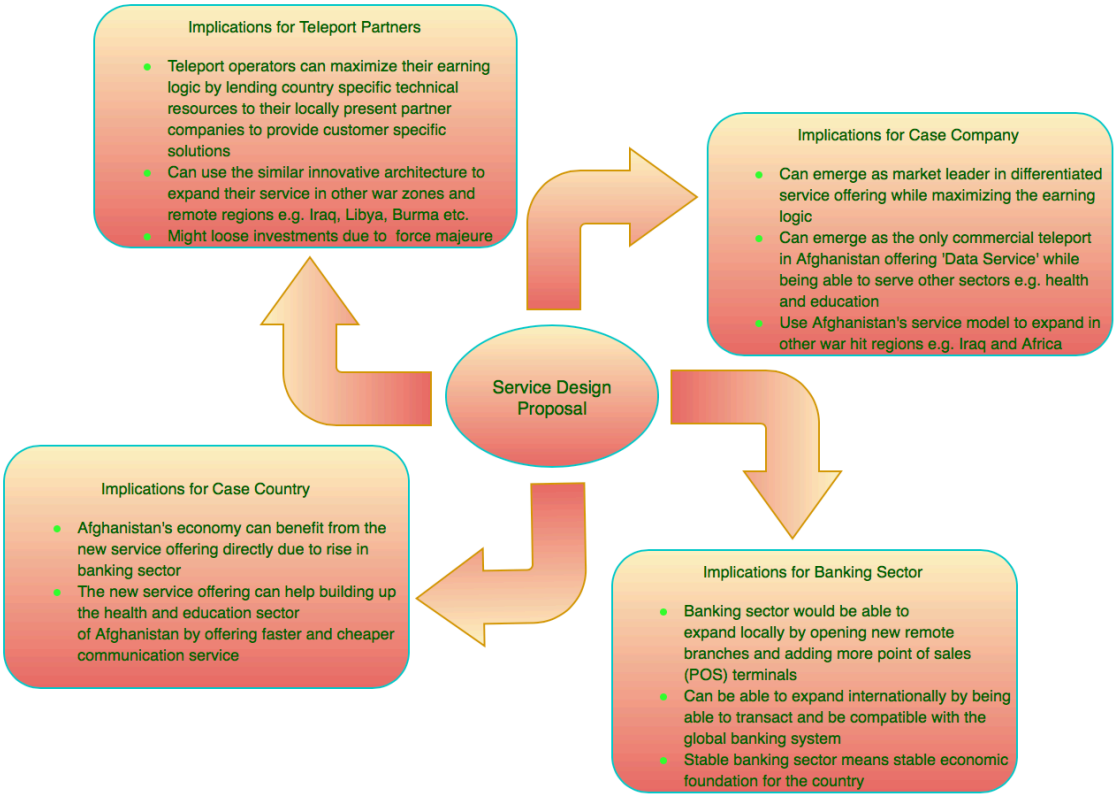

Figure 33. Implications of Service Design Proposal

Figure 33 explains the practical implications of the service design proposal from individual stakeholder's perspective as below.

The service design proposal, once implemented, can place the case company as a market leader by offering differentiated service offering compared to available market offerings. Secondly, being able to run the only commercially available satellite teleport in a warzone will open new business avenues like education and health sectors. Such a propsal can not only benefit the case company in terms of increased sales and revenue, but can also boost its credibility and reputation as an ISP by providing crucial data service in a warzone.

From the Banking sector perspective, this service design proposal can enable the banks to operate and expand widely by opening new branches and introducing value added POS services throughout Afghanistan. Besides local expansion within Afghanistan, the provision of data service will help the banking sector to be able to

connect with the international banking system more efficiently, thus providing economic foundation to Afghanisatn and helping the country to regain stability.

The practical repercussions of the service design proposal for the teleport parnters can both be positive and negative. The positive side involves the teleport being able to sell more transponder space through Data service as compared to Internet service, thus maximizing the earning logic. Additionally, a successful implementation of the service design proposal can encourage teleport partner to invest on establishing teleports with other local regional partners in Iraq, Libya or other war affected regions with similar circumstances. However, despite earning good profits from a warzone, there is always a risk involved of instantly loosing it all due to force majeure, even while having proper binding contracts with the local partner.

It is also important to understand the implications of the service design proposal from the case country's perspective as well. With the rise of the banking sector in Afghanistan, the economic indicators will automatically start to flourish resulting in country's economic growth and stability. Furthermore, the same proposal can also be used to bolster the healthcare and educational system of Afghanistan by enabling e-learning and e-health based solutions to further strengthen the rehabilitation and growth prospect of vital institutions.

7.3 Evaluation of the Thesis

This section evaluates the thesis in terms of outcome and reliability of the research study. Since the proposed service design was approved by the case company for implementation, therefore the proposal can be considered as a solution to solving the current business challenge. However it is important to compare the objective with the outcome to identify any deviation. Similarly, it is also vital to establish the reliability and credibility of the research to ensure that thorough and applicable research was conducted.

7.3.1 Outcome vs Objective

The objective of this thesis was to develop a framework level service design proposal, which can enable the case company to provide a low latency service to the banking sector of Afghanistan. Consequently, the outcome was a service design proposal that

offers the case company to implement an improved ‘Data service’ instead of ‘Internet service’. The outcome was achieved in three stages in this study. In the first stage, a conceptual framework was created by extracting available knowledge, literature and best practices. The framework worked as a lens to identify the key elements of current service offering from an analytical perspective. The second stage was to analyze the current state of service offering using the CF. To further crystallize the service offering the key elements were analyzed by acquiring key data from the stakeholders to identify the areas of strength and weakness. The third stage comprises of gathering feedback from the relevant stakeholders to answer the CSA in the form of a proposal to the case company. The proposal was further validated by the banking sector customer and case company’s technical manager to further strengthen the service offering. Therefore, throughout the different stages of research, the objective and outcome were constantly monitored to avoid any deviation.

7.3.2 Reliability and Validity of Research

Even though section 2.4 already discussed the reliability and validity principals and requirements. Nevertheless, this section requires revisiting the same requirements and principal set to align them with the research process for this thesis. In order to verify if the research was conducted in a thorough and applicable manner, different aspects were taken into consideration.

The first aspect involves ensuring the relevance of the research for the case company, and to authenticate that the research can answer the actual challenge being faced by the case company. The second aspect involves employing a systematic action research methodology to improve the state of current service offering. The third aspect involves interviewing and data gathering by key stakeholders i.e. the case company, the teleport partner and the banking sector customer.

Lastly, data triangulation was achieved between stakeholders to ensure data validity and credibility of proposed solution. Therefore, it can be said that the research meets the validity requirement of this thesis by answering the questions posed by the challenge. However, the researcher believes that more interviews should have been conducted involving more participation from the banking sector customers to further vali-

date the data using multiple banks. But due to time constraints and unavailability of customer's key personnel, it was not achieved.

From the reliability perspective, data reliability was maintained by using authentic documentations from the case company. All conducted interviews were documented and interview transcripts were shared with the interviewees to ensure data accuracy and verification. While conducting the research, it was emphasized that the research holds the potential to be replicated and carried forward at any point of time in future by using clear documentation and accurate data.

To conclude, the researcher would like to highlight few points regarding his personal role in the case company, which might have initiated biases. During the period of this study, the researcher was an employee of the case company and project manager for the proposed service design outcome (Data service). The researcher had direct visibility into the service offering and strategy of the case company, along with its strategic relations with the teleport partners. Therefore, the researcher, at a certain point of time during internal and external management discussions, might have influenced on the decision making process with a clear view to achieve the target service platform. This was done solely to put the case company into a leading position among the ISP sector of Afghanistan.

7.4 Closing Words

From a service provider's perspective particularly in warzones, organizations require constant review of their products, services, resources and processes in order to handle the dynamic and growing needs of the customer segment. A warzone customer heavily relies on its service provider for assisting the customer in carrying out its activities while updating and upgrading the service offering. On the other hand, an organization, that lacks innovation, dynamism and sense of co-creation, eventually fades out in this fast paced market. Therefore, through this research, the case company is also being provided an avenue of innovation and co-creation with its stakeholders to conceive and develop the right service for the right market segment. As Benjamin Franklin believed:

"Well done is better than well said."

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Appendix 1

Master's Thesis Interview (DATA 1)

TOPIC: Current State Analysis

Information about the informant (Interview 1)

Table 1

Details	Interview and Discussion
Interviewers	Adeel Mukhtar Khan
Name (code) of the informant	Informant 1
Position in the case company	Chief Technology Officer (case company)
Date of the interview	03.03.2016
Duration of the interview	50 min
Document	Field notes

Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	**Starting point: the interviewee describes his/her experience in view of the topic/problem**	What is the core offering of the case company and how it is different from the market alternatives?	The case company provides Satellite based Internet service to various national and international organizations in Afghanistan. Besides providing Internet service, the case company has different IT maintenance contracts with United Nations offices and other agencies. Presently there is no service difference between competitors since everyone is providing satellite based internet to the customers. The only difference can be through after sales support or reduced sales pricing.
		What are your actual role and responsibilities in the case company?	I am working as a CTO in the case company, my responsibility involves dealing with all technological needs of the company both internal and external. By internal I mean inter-organizational needs, like setting up, managing and maintaining office work stations, servers and closely coordinating with partner teleport, keeping abreast with the technological

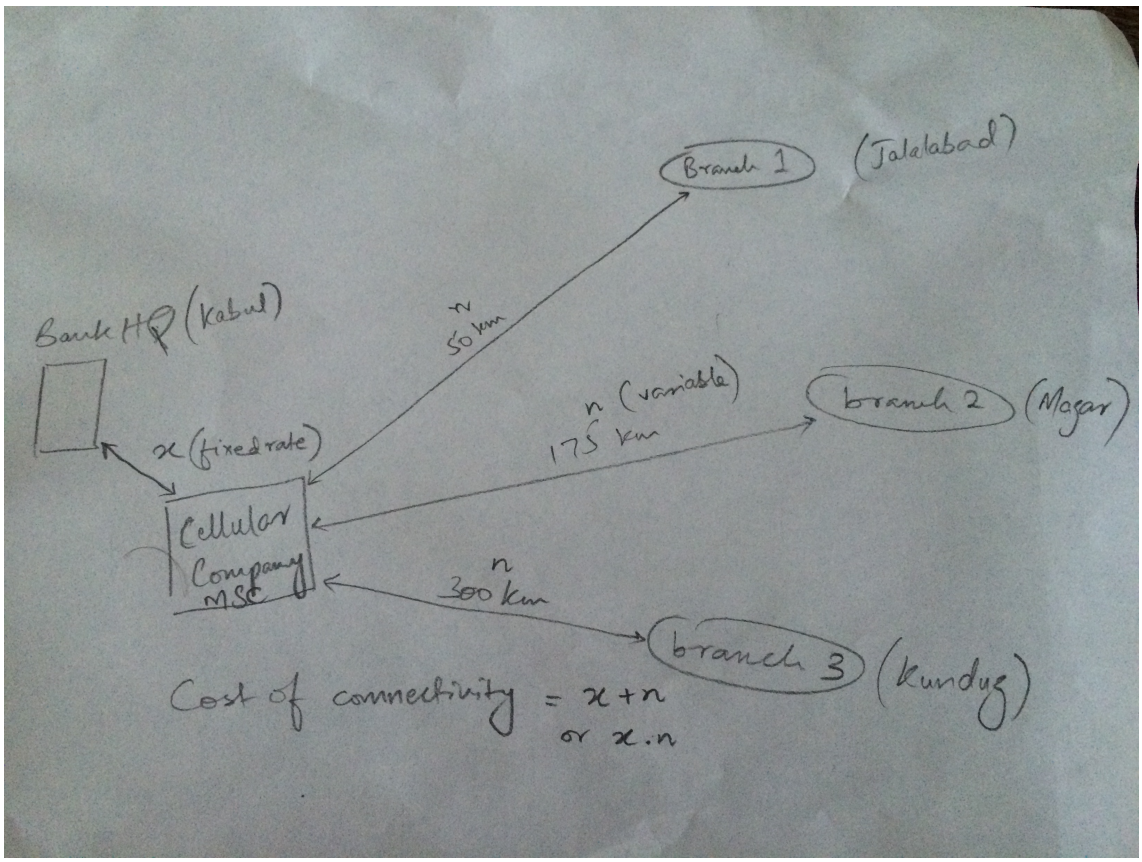
			changes in teleport. By external I mean managing client's technical infrastructure ranging from satellite VSAT equipment to assisting in maintaining of data centers of banking customers.
		What were the main reasons to enter Afghanistan market?	Frankly speaking, high profit margin was a strong reason to enter Afghanistan, after 2001 invasion of allied forces, the ground was ripe for investment opportunities and international community and organizations poured all the money in rehabilitating Afghanistan. All the terrestrial communication setup was destroyed and satellite communication business was the only medium available for connectivity needs. Out of the present 58 ISPs, the case company was among the first 5, which started working in Afghanistan in the early years to provide internet connectivity to its customers.
		What are the main challenges while doing business within a warzone?	Having on ground presence with a complete team within a warzone is not an easy task, usually only soldiers get trained for that. However, the case company still manages to hold impressive presence including a complete infra structure with office space and lodging facilities, an impressive number of international human resource for technical, financial and management roles. Besides having expats, trained local Afghan employees are the company's backbone as they can perform operations and travel within the country with ease without having any major security threat. However, security is always the biggest challenge, we can never be certain of our faith in a warzone. The language barrier is also another major issue while dealing with national level customers. Even though local staff can be trained with basic SOPs, its really difficult to put high level responsibilities on them due to lack of education and skills. Another major challenge that we face is customer's lack of knowledge about their requirements. Due to lack of knowledge and awareness, the customer doesn't know what kind of service will suit its business need.
		Why the specific banking sector was selected?	The banking sector serves as a backbone for every countries economy, in Afghanistan, there are around

			12 million potential banking sector customers but the banks are unable to provide the basic services. If we can assist those banks by offering a service which can help them to grow and provide better banking service to potential end user, then we can able to sustain long term presence and partnership in Afghanistan.
		What are the challenges in banking sector expansion?	The biggest challenge is that presently, with approximately 12 banks, the operational cost of existing poorly maintained networks to establish inter-office/branch connectivity is unbearably high due to Telecom monopoly. There are 2 kinds of communications options available. 1st the cellular network option, where the existing GSM operators provide inter-branch connectivity to the banks on per Km basis. It means that the farthest the distance of the branch office, the costlier would be the service recurring charges (see appendix 1.1). That is why banking sector is unable to grow rapidly and efficiently due to high cost of inter-branch connectivity. The second available option is Internet, which has very high latency, and banking transactions usually times out in the middle.
2	**Identify strengths/problems**	What did you find to be the biggest strengths of the current state of service offering of the case company in light of the discussed CF?	As per the key elements identified in the framework, the biggest strength of the case company is its presence in the warzone, I mean its not possible for any company to stay far from its target market and still expect to earn profits. The team has to be right, which luckily we have on-ground. Like I mentioned earlier, we have good infrastructure and resources available in Afghanistan to be able to tap into the potential target market. Since we entered Afghanistan's market very early, we managed to setup a full fledge marketing and sales team locally, it gave us a competitive edge on the entrants while biding for new projects or marketing our services because we are active participants of international technological fares e.g. CABSAT, GITEX, SATCOM etc. We have skilled on ground presence for local marketing needs e.g. print media etc, while our competitors struggled

			to get hold of the right resources. Another strength that I would like to mention here is the cultural closeness between middle eastern, South Asian and Afghan staff, besides language issues at times, there has never been a major cultural clash between the colleagues, due to similar cultural background, therefore it has surely benefited service delivery to the customers. Additionally our CX process is also one of our key strength areas, which puts us ahead of our competitors in terms of service quality.
		What did you find to be the biggest weakness of the state of current service offering in light of the discussed CF?	There can be multiple weaknesses if we talk specifically from the banking sector perspective and from the CF perspective. Firstly, Internet is unable to offer low latency services under 500ms, our teleport partner is located in Hong Kong, therefore every communication between bank and its branches have to go through the internet. We don't control the service right now, we are just re-selling internet service to the banking sector. Plus the cost of purchasing and setting up our own teleport in Afghanistan would range from 2 to 5 million dollars depending upon the grade and features, plus the additional cost of licensing and operating cost (see appendix 1.2). The failure to provide the right connectivity channel to the banking sector is resulting in customer getting frustrated, currently the customer has low switchover options but eventually with time they will have the right solution and it will be too late for us to retain the customer, therefore we need to re-architect our service offering in a way that we can retain the banking sector for a long period and can do profitable business with them. If the banks will grow, we will also grow with them, provided we offer the right service. So even though we provide good customer support, the service is not serving client's purpose and therefore not creating any value proposition for the customer.

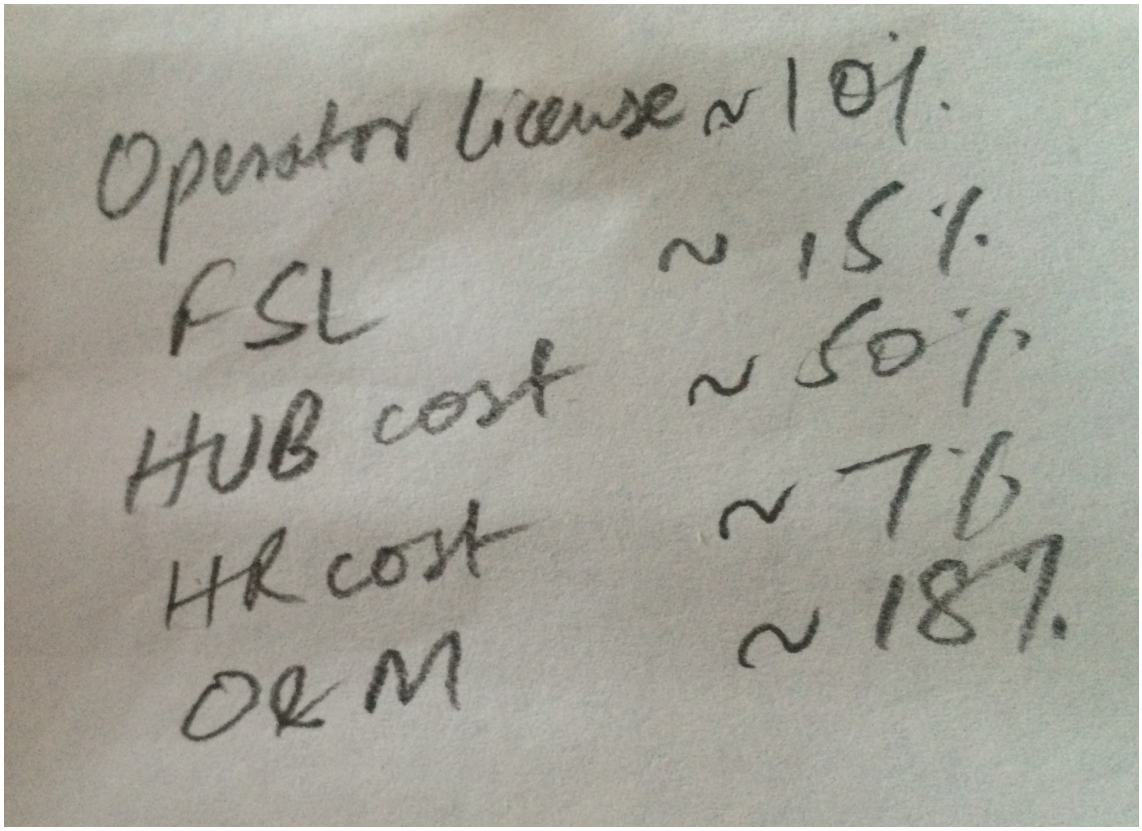
Appendix 1.1

Cellular Connectivity Network



Appendix 1.2

Teleport Setup Cost



Appendix 2

Master's Thesis Interview (DATA 1)

TOPIC: Current State Analysis

Information about the informant (Interview 2)

Table 1

Details	Interview and Discussion
Interviewers	Adeel Mukhtar Khan
Name (code) of the informant	Informant 2
Position in the case company	Network Manager (case company)
Date of the interview	08.03.2016
Duration of the interview	30 min
Document	Field notes

Field notes (Interview 2)

Table 2

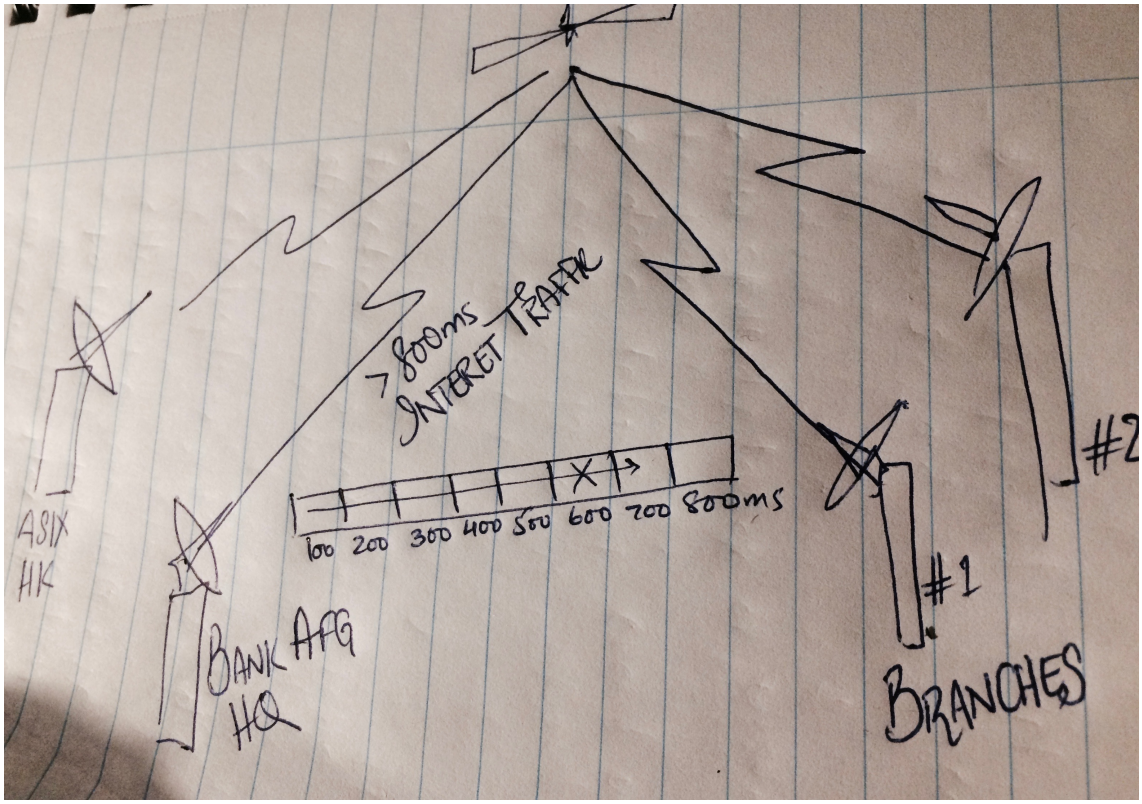
	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	**Starting point: the interview-ee describes his/her expe-rience in view of the top-ic/problem**	What are your actual role and responsibilities in the case com-pany?	I am the IT/Network Manager working under the CTO, my job is to manager all the IT/Network related operations of the case company. Also related to my work is the su-pervision of IT maintenance contracts with various international clients. I also supervise technical helpdesk and CX for Afghanistan and Pakistan region.
		Why the core offering of the case company unable to provide differentiated service offering?	The case company provides the same double hop Internet service, as any other competitor would offer, however, there can be different teleports and different satellites. There is no difference in latency however, the strength of the satellite signal and the quality of the tele-port infrastructure might make a difference. In case of Afghanistan, Internet is the only cost effective solution both for customers and for

			ISPs, that's why no specialized service was introduced lately as there was no special requirement. Now the banking sector requires low latency channel therefore there is a need for a cost effective service that can provide such connectivity.
		What kind of banking applications are being used and why transactions time-out on internet?	Core Banking Applications are usually Java based software, which are relatively heavier to function over Internet due to high latency of above 800 to 900ms, therefore they require certain specific minimum latency factor to operate without timing out. Different software has different latency threshold value but it should generally be lower than 400 to 500ms.
		Is the Cellular Network able to run banking applications without timing out?	Due to the fact that the cellular network supports voice calling that's why they works on very low latency channels e.g. 200ms or less for flawless voice transmission, therefore banking applications can run easily through them without timing out, however the problem is the cost of connectivity since they charge the customers based on the distance from their nearest MSC location, which in most cases is located very far from the remote cities.
2	**Identify strengths/problems**	What did you find to be the biggest strengths of the current state of service offering of the case company in light of the discussed CF?	Since the technical helpdesk and customer support section comes under my domain, I can confidently claim that its one of the biggest strengths of the case company. We have a layered 24x7 pre-emptive technical support system, which intimates the helpdesk immediately when a client faces a problem. There have been many instances when a client learnt about the problem from our support team. Our SLA also incorporates the CX process detail (see appendix 2.1). The benefit of having a strong customer support is that regardless of the type of service offering on the front end, the back end process can always support it.

		What did you find to be the biggest weakness of the state of current service offering in light of the discussed CF?	The biggest weakness with the current service offering is its inability to secure future business prospect with the banking sector customer, we receive complains on daily basis from banks about connectivity issues with regional branches, and we know that it is not the service issue, it is specifically related to internet limitation. But the client doesn't understand this and gets frustrated. Eventually will come a time when the client will have a viable and cost effective alternative and will move away from our business.

Appendix 2.1

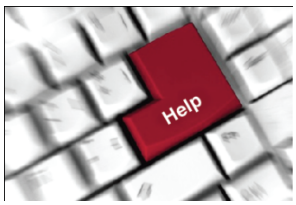
Internet Based Double Hop Connectivity



Appendix 2.2

Case Company CX Process Description in SLA

24 x 7 SUPPORTS HELPDESK



Level One-NOC

ASIX Global Network Center (NOC) Provides round the clock pro-active monitoring, fault reporting and technical assistance to its customer. Our dedicated and multilingual technical team is always on standby to provide immediate support and assistance.

support1@asix-afg.com

Level Two- On Site Support

In case the issue cannot be settled remotely, a Reference Ticket is generated on ASIX centralized Trouble Ticketing System and field engineers are assigned from the relevant local support centre to reach the client's location. They stand ready to help troubleshoot or resolve any problems you may be experiencing.

ESCALATION MATRIX

For any technical issues please contact as per followings

Level	Contact	Purpose
1	Tier 1, Helpdesk Available 24/7 Telephone: 0799840440 / 078840440 Email: support1@asix-afg.com	For all technical issues
2	Tier 2 Telephone: 0777742358 Email: support2@asix-afg.com	Incase issue is not resloved in 1 hours please contact this number
3	Tier 3 Telephone: 0777740722 Email: support3@asix-afg.com	Incase issue is not resloved in 2 Hours please contact this number

All issues will be solved in following manner

Level	Issues
1	Minor issues, to be resloved within 10 minutes to 1 hour of reporting
2	Medium Level issues, will be resloved in less than 2 hours of reporting
3	High level issues, will be resloved within a day if in Kabul and major cities and 2 days in provinces and remote areas

Appendix 3

Master's Thesis Interview (DATA 1)

TOPIC: Current State Analysis

Information about the informant (Interview 3)

Table 1

Details	Data Triangulation
Interviewers	Adeel Mukhtar Khan
Name (code) of the informant	Informant 3
Position in the case company	Teleport Manager (partner teleport company)
Date of the interview	12.03.2016
Duration of the interview	55 min
Document	Field notes

Field notes (Interview 3)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	**Starting point: the interview-ee describes his/her expe-rience in view of the top-ic/problem**	What are your actual role and responsibilities in the partner company?	My role involves managing the entire teleport operations. This includes supervising teleport related installation, satellite earth station man-agement and frequency allocation and link budgeting.
		How is the case company relat-ed to your company?	The case company is a reseller for our teleport like many other satellite based ISPs. How they work is that they purchase wholesale internet bandwidth from the teleport on per megabit basis and then sell into their respective country of businesses. The case company has been working with out teleport since 2003 and we have very strong and reputed working relation-ship with it. We always give preference to their request or query because of their premium business relationship with our teleport.

		Why the banking applications tends to timeout on satellite based internet?	Banking applications are usually heavy to run because their data packaging is not just normal data traffic, it involves lots of security parameters due to sensitivity of the data, so the overall data packet gets more heavier than a normal voice or video data packet. Therefore when this heavy packet goes over satellite based internet with latency over 900ms, it is highly likely to timeout, because the satellites are orbited 35000km from the earth. Therefore back and forth round trip cannot be reduced over a double hop network.
		What is double hop phenomenon?	Double hop phenomenon is one in which both the client and the teleport connected via Internet. Regardless of the geographical location of Teleport, once the application goes over Internet service, it is certain to experience double hop phenomenon thus resulting in delay above 800ms delaying banking transactions When the client requests for a data over internet, the traffic takes a complete round via satellite and reaches the teleport, the teleport when replying also sends the data through the same satellite route making it a double hop connectivity.
2	**Identify strengths/problems**	What are the advantages of having geographically distant teleport in terms of providing Data services	If we talk about providing data services from only general and not banking perspective, then its always feasible to hire external teleport services due to the cost involved in setting up a complete teleport infrastructure, which costs tens of millions of dollar. Data services such as voice, video, other data content can easily be transferred over internet without any timeout or delay, therefore to avoid incurring excruciating costs while running common standardized services e.g. internet service, it is advised to act as the current case company scenario.
		What are the disadvantages of having geographically distant teleport in terms of providing Data services	If we are specifically looking from the banking application perspective, then it is not possible to achieve single hop data connectivity while having external teleport. The bank HQ and the

			teleport should be located within the same geography to be able to connect via physical medium (fiber optic) and not via satellite, when the bank will request for data from the teleport, the request will reach the teleport through usual satellite hop, however, the return path will not be a satellite hop, rather, it will be the physical fiber connectivity, thus reducing the latency to half and making it feasible for banking data to work over satellite based connecitivty.

Appendix 4

Master's Thesis Interview (DATA 2)

TOPIC: Proposal Building

Information about the informant (Interview 1)

Table 1

Details	Interview
Interviewers	Adeel Mukhtar Khan
Name (code) of the informant	Informant 1
Position in the case company	Chief Technology Officer (case company)
Date of the interview	24.03.2016
Duration of the interview	40 min
Document	Field notes

Field notes (Interview 1)

Table 2

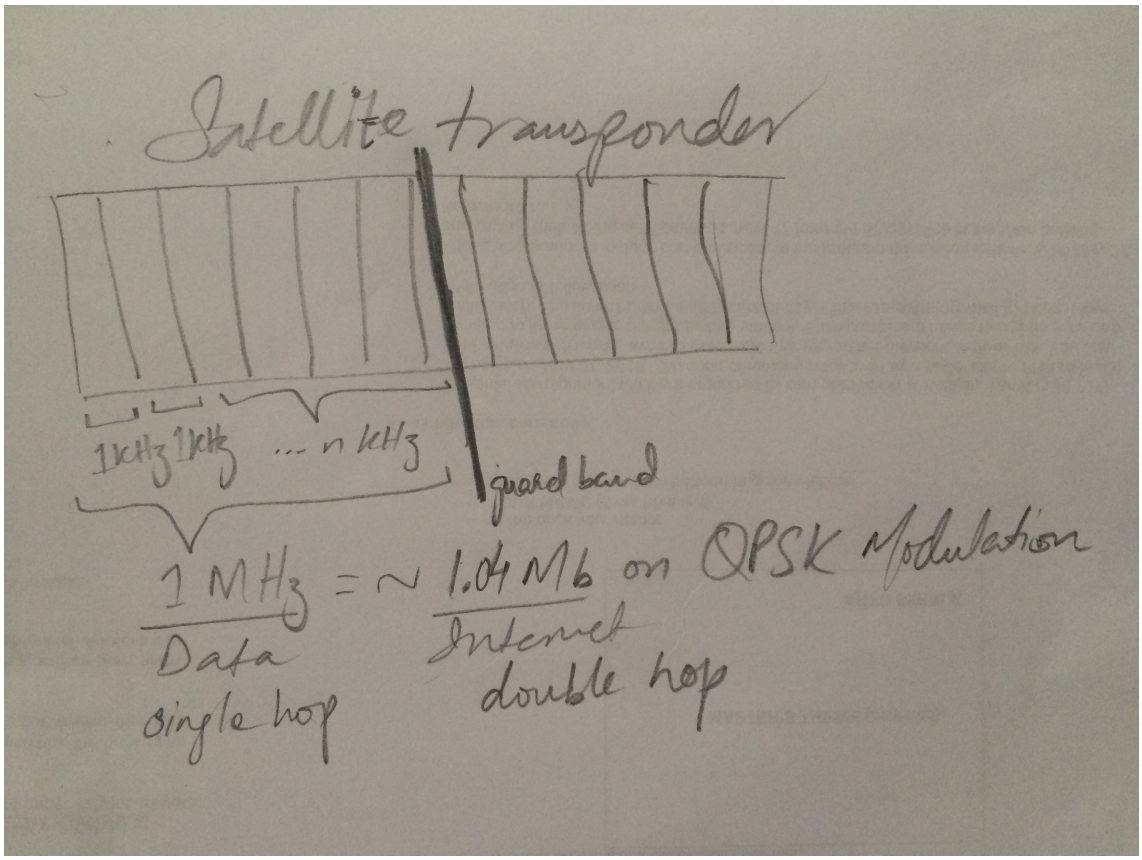
	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	**Starting point: the interview-ee describes his/her expe-rience in view of the top-ic/problem**	What are the major components of a Satellite Teleport	A commercial satellite teleport is also called an earth-station, it is used to control the satellite functions and operations from ground. it involves a lot of sophisticated equipment such as high gain satellite antennas (dish antenna), receivers, transmitters, frequency modulators and de-modulators. The heart of a teleport is a HUB, which receives the electrical signals from the satellite and converts them into data traffic and vice versa. It is also the most costly equipment in a teleport. All sorts of data can be transmitted using a satellite channel but depending upon their latency threshold e.g. banking data has low threshold whereas normal internet browsing has very high threshold values.

		How can you shift the teleport from Hong Kong to Afghanistan, kindly elaborate, how does it effect the partner company?	Well it's a challenge, but its doable with a bit of innovative and strategic thinking. As I earlier mentioned about the core of the teleport, which is a HUB. The Hub is a modular equipment that has multiple parallel receivers and transmitters capable of handling multiple satellites and multiple geographical regions at the same time. For example, all data traffic from Afghanistan or Iraq region can be received and transmitted using their own dedicated modules. So if we can shift those dedicated modules to their respective countries without shifting the whole HUB, we can still manage to have a limited capability teleport in our disposal in Afghanistan. This teleport will be able to provide single hop data connectivity to the banks. As far as teleport partner is concerned, I believe we have to explain to them that internet is not the solution for this potentially profitable customer, therefore we need to convince them to lend us only Afghanistan related equipment including antennas, transmitters, receivers and HUB modules (line cards). The same equipment is currently providing internet to the banks, which is not serving any purpose for the customer, so why not think out of the box and change the architecture. This is an era of collaboration, No business organization can jump into a warzone environment fully prepared to face all business challenges, until and unless it has strong channel partners for supply and logistics, It is not possible even for the strongest of organizations to carry all of the needed resources singlehandedly in such an environment. There is no such thing as a solo flight.
		What are the technical and financial calculations to support your shifting idea?	The calculations are very simple, technically, currently the teleport sells Megabits to the case company on wholesale rates which further sells it to the banking customer. Those Megabits acquire X MHz space on the satellite transponder. In the case of teleport shifting to Afghanistan and with

			provision of single hop data connectivity, the Data connectivity will also require the same X MHz space on the transponder (see appendix 4.1) without the need to convert them into Megabits. As far as financial calculations are concerned, as I mentioned earlier that the teleport has already invested in the equipment, the only problem is that while being installed in Hongkong, it doesn't serve the single hop connectivity purpose, therefore I believe that if we make the right proposal, the teleport should have no problem lending us the equipment. We will only have to bear the equipment logistics till Kabul and setup cost. Which will still be significant but peanuts compared to purchasing a personalized teleport equipment.

Appendix 4.1

Satellite Transponder Spacing



Appendix 5

Master's Thesis Interview (DATA 2)

TOPIC: Proposal Building

Information about the informant (Interview 2)

Table 1

Details	Interview
Interviewers	Adeel Mukhtar Khan
Name (code) of the informant	Informant 4
Position in the case company	Product & Service Manager (case company)
Date of the interview	25.03.2016
Duration of the interview	43 min
Document	Field notes

Field notes (Interview 2)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	**Starting point: the interviewee describes his/her experience in view of the topic/problem**	What are your roles and responsibilities in the case company?	My role as a product and service manager deals with managing and maintaining the different product and service portfolio of the case company, this includes internet service, GSM Backhauling and ICT equipment supply.
		What kind of pre-conditions and pre-requisites are needed to provide Internet service in Afghanistan	For a company to work as in Internet Service Provider, there are a number of pre-requisites which are needed to be fulfilled. The first is the legal obligation, which requires registering of the case company as a legal ISP in Afghanistan. The second condition is to have VSAT operator license issued by the ministry of telecommunications since it is a satellite based Internet. The third pre-requisite is to present either the product/service or its proof of concept to the IT regulatory board and get it approved for ethical and lawful working before it can be commercially distributed in the market.

		What kind of pre-conditions and pre-requisites are needed to provide Data service in Afghanistan	The preconditions for providing Data service via on ground teleport is little different and complex compared to normal internet service pre-conditions. However it is comparatively easy if a company is already an ISP in Afghanistan. In order to setup a teleport in Afghanistan, the infrastructure should be present to install large antennas approx. 7m to 11m along with other specialized equipment. Special permission and licensing is needed for setting up a teleport in Afghanistan which is a one time cost needed to be paid by the case company. Besides, fiber optic connectivity is needed to be established between Banks and case company teleport for direct connectivity on the return channel.
2	**Identify strengths/problems**	What are the benefits of setting up a teleport in Afghanistan? From case company and teleport perspective.	The benefits are mutual, the teleport partner is not a registered service provider in Afghanistan, they cannot do direct business with the customers in Afghanistan. On the other hand, the case company is a licensed and legitimate ISP in Afghanistan. Therefore the case company can benefit from the huge potential of banking sector by providing it single hop data service , whereas the teleport can benefit by earning more with the potential expansion of the banking sector. It's a win-win situation for both the players.
		What are the risks of setting up a teleport in Afghanistan?	Well a warzone is full of all sorts of risks. How can I elaborate it in detail? But if you are asking specifically from the perspective of bringing in the teleport equipment to Afghanistan and setting up a commercial teleport then yes, it has its risks involved. First you immediately gets into limelight that this company is doing something new and big here in Afghanistan, besides competitors, various other non-state actors might get into motion to sabotage such an activity, but without going into much detail of this, I can just say that yes risks are involved even when we try to fully cover all the loose aspects.

Appendix 6

Master's Thesis Interview (DATA 2)

TOPIC: Proposal Building

Information about the informant (Interview 3)

Table 1

Details	Data Triangulation
Interviewers	Adeel Mukhtar Khan
Name (code) of the informant	Informant 3
Position in the case company	Teleport Manager (partner teleport company)
Date of the interview	23.03.2016
Duration of the interview	30 min
Document	Field notes

Field notes (Interview 3)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	**Starting point: the interviewee describes his/her experience in view of the topic/problem**	In case of a transition, what teleport equipment needs to be delivered to the case company?	In the event of setting up a low capability teleport in Kabul in partnership with the case company, we will have to move only those components that serve the Afghanistan's banking sector in particular for their internet traffic. All electronics related to this particular segment will be shipped including 7.5m antenna, iDirect evolution Hub module, mods, de-mods and other related equipment.
		What are the cost implications of the transferred teleport equipment to the case company?	Well this is not exactly my area of expertise, but I can surely give an idea that the cost of shipment and teleport setup will be very little for the case company, compared to buying this equipment from scratch since its worth several millions of dollars. Now even with the cost of shipment, the case company can come up with more efficient or cost effective ways of shipping i.e. sea or air route, whichever suits their requirement best.

		What are the cost implications of the transferred equipment to the teleport itself?	Like I said that calculating financial cost implications are beyond my domain, however considering the target market segment of the case company, I can comment on the service implications, which are either directly or indirectly related to financial implications in the long run. The banking sector is using our internet service out of misery due to unavailability of better alternative options in the market, if today we will not act smartly and coordinate with our partner companies then tomorrow some other company will eventually come up with a similar or better solution resulting in our partner company loosing a potentially profitable customer. And if they loose business, definitely we loose business also because they are our resellers.
2	**Identify strengths/problems**	How this shift can benefit the teleport company?	Its very obvious when you are working with resellers in a market without any personal physical presence, you grow through your resellers and you have to support them. From a technical and service perspective I personally believe that a local teleport setup in Afghanistan will help both the case company and us to benefit. However, like I mentioned earlier, the financial feasibility study is not my domain and our financial experts should study it and decide whether such a significant risk be worth taken or not since it's a matter of investing millions of dollars worth of equipment in a warzone.
		What are the risks of transferring teleport equipment to case company in Afghanistan?	Like I mentioned earlier, if such a deal happened, it will be after a very thorough analysis of opportunity vs risk. No company wants to deliberately burn its investments and that will be the same case here also, Afghanistan is a warzone and it will have all the dangers we so often read on the news, therefore even though the technical feasibility is there and is very much risk free, the financial feasibility needs to be addressed first.

Appendix 7

Master's Thesis Interview (DATA 3)

TOPIC: Validating the Proposal and Feedback

Information about the informant (Interview 1)

Table 1

Details	Interview and Discussion
Interviewers	Adeel Mukhtar Khan
Name (code) of the informant	Informant 5
Position in the case company	IT Manager (Banking sector customer XYZ Bank)
Date of the interview	18.04.2016
Duration of the interview	79 min
Document	Field notes

Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	**Starting point: the interviewee describes his/her experience in view of the topic/problem**	What is your role and responsibility in the Banking operations?	I am currently working as the IT Manager for XYZ bank, our bank is one of the major banks of Afghanistan with over 35 branches nationwide. My role in the bank is to implement and manage all IT related operations, including banking network architecture, data center setup, DR site setup and supervising network security department for banking applications.
		Based on the discussion about CSA and initial recommendations, what are your concerns regarding the initial proposal	Well based on what you have explained and discussed with me about the current state of Internet service and its limitations, I can understand the need for a data only service for the banking applications but you also have to understand that the new service should be able to answer not just latency concerns, it should also answer security concerns as well. Since your company will be providing Data

			service not only to our bank, but to other regional banks also, what measures are being taken to prevent data overlapping and content security? Previously with Internet service, our data could also get compromised but now that your proposal bypasses Internet, how do you plan to answer this concern of data security.
		Based on the discussion about CSA and initial recommendations, what are the improvements that you suggest to be incorporated in the final service design?	The idea of setting up a teleport in Kabul in close proximity to our bank HQ is promising. It will be a fresh breath of air if we can switch to the new data service without having to incur any switching cost with our existing VSAT hardware, however data security still stays as our major concern. What we can recommend from our bank is to offer a network security specialist to work with your network team to design and implement the right protocols and routing plan of all banking traffic between our bank's HQ and the branches. The individual will work under your company's network team and can be based in your teleport facility for time being. Once the service is matured enough and tested fully for reliability, then we can pull out our resource.
		How do you plan to address the fear of data manipulation by other Banking customers using same data service?	I didn't mean that only a security specialist from our bank should be part of the network team. Instead this offer should be proposed by the case company to all banks while marketing the new service and every bank, which would deploy this data service could contribute in this network team. This will bring together sharp expert minds together to work on a better security solution for mutual benefit of all banks and can make your service mature in a quicker time.

Appendix 8

Master's Thesis Interview (DATA 3)

TOPIC: Validating the Proposal and Feedback

Information about the informant (Interview 2)

Table 1

Details	Interview and Discussion
Interviewers	Adeel Mukhtar Khan
Name (code) of the informant	Informant 1
Position in the case company	Chief Technology Officer (case company)
Date of the interview	20.04.2016
Duration of the interview	39 min
Document	Field notes

Field notes (Interview 2)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	**Starting point: the interviewee describes his/her experience in view of the topic/problem**	Based on the discussion regarding feedback/suggestions from banking customer, how do valid is the customer's concern?	The concern is very valid indeed, banking data is highly critical and if fallen in the wrong hands, could cause a lot of financial damage, therefore it needs to be addressed comprehensively. I would like to say here that the bank's initiative to provide network security resource shows their seriousness towards the new service offering. The banks do require a cost effective viable data service and they are willing to participate in creating that service with us. However as the customer anticipated, we will not have just one bank on our network, and more banks will be taken on board this new service, which gives rise to another concern of data manipulation or sabotage within the competitors using the suggested access to the tele-

			port.
		How can the case company deal with that concern to ensure banking data security?	I believe that even though a team of network security experts from each bank should be formed and deployed at the teleport facility till service maturity, they need to be supervised under case company's network manager. Their overall access to teleport and operational activity should be monitored and logged to ensure that no competitor tries to exceed its own domain of security parameters to damage other's interest. Besides the physical checks and clearly defined SOPs, legal contractual obligations must be introduced and agreed upon, such as NDA to avoid confidentiality breach.