AN IMPACT STUDY ON THE KEY SUCCESS FACTOR IN UNIVERSAL SERVICE PROVISION PROJECTS

AZAHARI BIN OSMAN

UNIVERSITI TEKNOLOGI MALAYSIA

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DEDICATION

This thesis is dedicated to all Malaysian that have been and will be benefited by the Universal Service Provision Projects.

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This research will not be completed without the continuous encouragement, enlightenment, and assistance of my beloved family as well as my dearest "*Falcon 5*" teammates.

Special thanks to my esteemed bosses and colleagues that made this research feasible, my supervisor that always made himself available and constantly offered inspiration and aspiration for the project.

Last but not least, for those that were, still and will involve directly or indirectly with the Universal Service Provision, I hope you will enjoy the journey and fall in love as I did with the Universal Service Provision.

ABSTRACT

The Malaysian Communications and Multimedia Commission (MCMC) is responsible for bridging the digital divide by catalysing the industry through deploying Universal Service Provision (USP) Projects and utilising the USP Fund. This research is intended to analyse the key success factor of the USP Projects from MCMC's perspective and formulate an appropriate intervention to enhance the effectiveness and efficiency of the appointed division in MCMC in managing USP Projects. The Six Sigma (DMAIC) Methodology is adopted as there is no necessity to revamp the current implementation process, and mixed-method is selected for data collection and analysis. Based on the analysis, the key success factor for MCMC is unique as USP Projects are the statutory obligation in the Act and legislation under it, and the challenge in implementing USP Projects is to process manually the voluminous data from on the ground reports, which is time consuming and prone to human error. This leads to delay in effective troubleshooting, strategic decision-making, and action taken is remedial and not pre-emptive. As the key success factor of USP Projects for MCMC is the availability and adequate communications service at the intended area, any failure will directly impact the national framework and Malaysia's communications future in its entirety.

ABSTRAK

Suruhanjaya Komunikasi dan Multimedia Malaysia (SKMM) bertanggungjawab untuk merapatkan jurang digital dengan memangkinkan industri melalui pelaksanaan Projek Pemberian Perkhidmatan Sejagat (USP) yang menggunakan Dana USP. Penyelidikan ini bertujuan untuk menganalisis faktor kejayaan utama Projek USP dari perspektif MCMC dan melaksanakan intervensi yang sesuai untuk meningkatkan keberkesanan dan kecekapan bahagian yang dilantik dalam MCMC dalam mengurus Projek USP. Metodologi Six Sigma (DMAIC) digunakan kerana tiada keperluan untuk merombak proses pelaksanaan semasa, dan kaedah campuran dipilih untuk pengumpulan dan menganalisis data. Berdasarkan analisis, faktor kejayaan utama MCMC adalah unik kerana Projek USP adalah kewajipan berkanun dalam Akta dan perundangan-perundangan di bawahnya, dan cabaran dalam melaksanakan Projek USP adalah untuk pemprosesan data laporan yang banyak secara manual, yang mana memakan masa dan terdedah kepada kesilapan manusia. Ini membawa kepada kelewatan dalam penyelesaian masalah yang berkesan, membuat keputusan strategik, dan tindakan yang diambil adalah pembaikan dan bukan pencegahan. Memandangkan faktor kejayaan utama Projek USP untuk MCMC ialah ketersediaan dan perkhidmatan komunikasi yang mencukupi di kawasan yang dikenalpasti, sebarang kegagalan akan memberi kesan secara langsung kepada rangka kerja negara dan masa depan komunikasi Malaysia secara keseluruhannya.

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LIST OF ABBREVATIONS

ARPU: Average Revenue Per User
CMA: Communications and Multimedia Act
CT: Context
DUSP: Designated Universal Service Provider
FTTH: Fibre to the Home
FTTT: Fibre to the Tower
GDP: Gross Domestic Product
IPR: Interview Protocol Refinement
MCMC: Malaysian Communications and Multimedia Commission
NGO: Non-Government Organisation
PEOU: Preceived Ease of Use
PIC: Personal Initiatives and Characteristic
PMTT: Project Management Tools and Techniques
PU: Precieved Usefulness
SPSS: Statistical Package for the Social Sciences
TAM: Technology Acceptance Model
TPB: Theory of Planned Behaviour
TU: Trust
USP: Universal Service Provision
UTM: Universiti Teknologi Malaysia

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CHAPTER 1

INTRODUCTION

1.1 Introduction

On 17 October 2002, the Malaysian Communications and Multimedia Commission ("**Commission**") gazetted the Communications and Multimedia (Universal Service Provision) Regulations 2002 ("**USP Regulations**") as a mechanism to bridge the digital divide between areas that are served adequately with communications services and areas that are underserved in this context.

These underserved areas can be in the populated areas in rural and remote areas in Malaysia or 'pocketed' areas in urban and suburban Malaysia. These 'pocketed' areas may be seen in some areas where there are blind spots in terms of communications services or where there is an underserved group of people. These areas are usually not commercially viable for the communications service providers.

Meanwhile, the underserved groups are a targeted segment group(s) by the communications service providers because of the low average revenue

per user (ARPU). This research focuses on providing communications services in the underserved areas, as the Commission aims to make communications services available in all populated areas. This would include all underserved groups. A simple illustration of underserved areas and underserved groups and the services to be provided is shown in **Figure 1.1.**

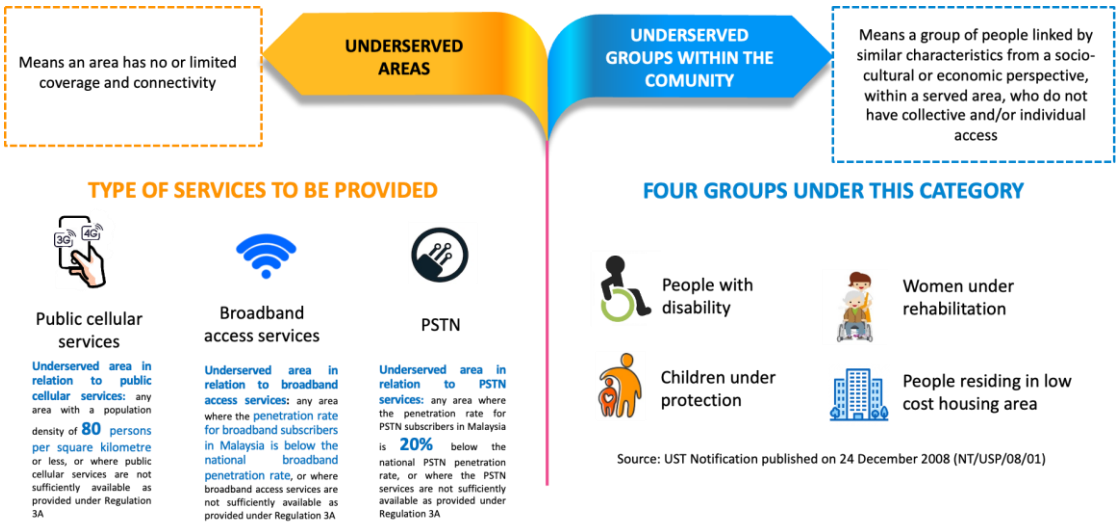

Figure 1.1: Brief Description of Underserved Areas and Underserved Groups

As a profit-oriented entity, it is understandable that the communications service providers focus and lean towards profitable and strategically competitive areas by their definition. If this situation is left unchecked, the gap between the served and underserved areas/groups will widen as the communications technology rapidly evolves. As a result, certain areas or groups will be left behind in all aspects of life. This is because in every walk of life of a country, there is a dominant role for communication to play. Communication has become an inevitability in modern-day organisations and institutions. It is applied in various areas of the economy as well, be it in

agriculture, the education industry, or the health sector of the country (Babu, 2018).

Under the USP Regulations, it is a statutory obligation for the communications service providers licensed under the CMA 1998 (except for Content Applications Service Providers) to contribute 6% of their weighted net revenue if their revenue for the previous calendar year meets a minimum threshold of RM2 million, to a trust fund pursuant to Regulation 27 of the USP Regulations. This trust fund is known as USP Fund. This fund is not a public fund provided by the Government or any fund that utilises the taxpayer money, and the Commission is the legal administrator of this USP Fund and has the remit to decide how the fund is deployed. The USP Fund framework can be summarised as in **Figure 1.2** below.

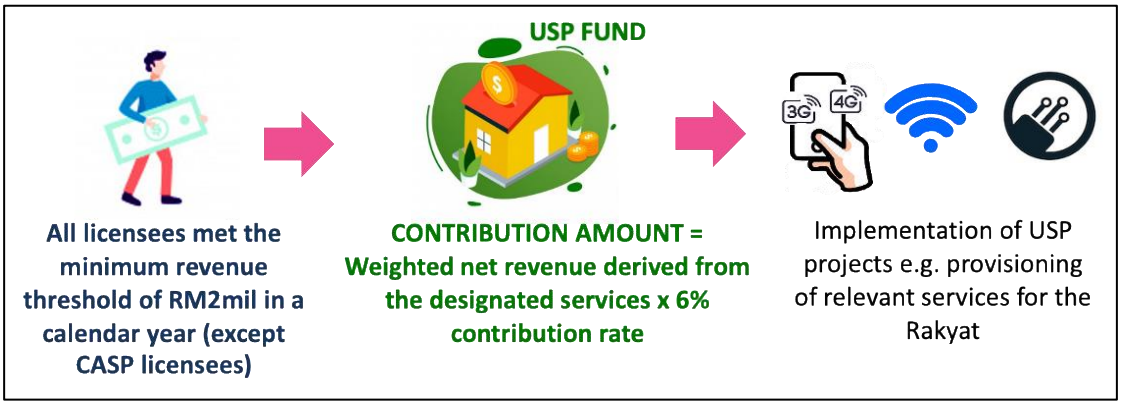

Figure 1.2: Brief Description on Contributions to the USP Fund

It is important to note that any licensee whose contribution to the USP Fund in the previous calendar year under Regulation 27 exceeds RM20 million

ringgit or any other amount[1] as may be determined by the Minister of Communications and Multimedia. These licensees are known as Major Contributors.

1.2 Case Company Introduction

The Commission is the regulatory body for Malaysia's communications and multimedia industry. The Commission was formed in 1998 when Malaysia enacted the Malaysian Communications and Multimedia Commission Act (1998).

According to the Commission (2020), the Commission's fundamental roles can be divided into two major categories. First, as the regulator of the communications and multimedia industry, the Commission has to strategically balance the overall interests of the consumer, industry, and investor. The second role of the Commission is as a catalyst to bridge the digital divide, in line with the second national policy objective, which is to promote a civil society where information-based services will provide the basis of continuing enhancements to the quality of work and life. To achieve this, the Commission utilises the USP Regulations enacted by the relevant Minister.

[1] Based on Ministerial Direction No. 12, 2018 (dated 13 Apr 2018) and Regulation 36A of the USP Regulations 2002, the threshold for Major Contributor has been revised to RM10million in a calendar year

1.2.1 External Environmental Analysis (PESTLE)

From the Universal Service Provision ("**USP**") perspective, political stability is crucial as the fund is mainly intended to develop, improve, and sustain the communications' basic infrastructure, which is well established as being very costly. Moreover, the Minister typically may exercise influence on the usage of the USP Fund and the direction of its spending. The Minister has significant powers in some aspects of the regulations. It must be emphasized that the Commission has the legal power to control and operate the fund.

Babu (2018) rightly pointed out that communications are the current way of life. Therefore, every aspect of it will contribute to the development of the socio-economic upliftment of an individual, which leads catalyse the socio-economic upliftment of the local community economic and eventually the macroeconomy of Malaysia in its entirety; hence will also directly impact and affect the total GDP of Malaysia.

Adequate and fair distribution of communications services is also important socially. Communications connectivity plays a significant role as world borders becomes more integrated with the proliferation and pervasive usage of Internet. The information is at our fingertips nowadays, including education, information on health services, and even propaganda through communications services. Should there be no USP Fund, some of the communities in Malaysia will be severely deprived of these opportunities.

Communications is a synonym in a sense, to technology usage and adoption in a community and nation. USP initiatives must be in tandem with evolving global standards and changes in technology. This includes the environmental issues and concerns by the public or any relevant agencies or non-government organisations (NGOs). The USP framework is based on the Act and every change or review of the Act and any legislation under the Act will affect the USP fund and the existence of the USP itself.

1.2.2 Internal Environmental Analysis

The projects deployed under the remit of the USP Fund must be economical and suitable for the intended areas. The Commission loosely defines the concept of 'economical' by taking into consideration mid to the long-term sustainability and cost effectiveness of service provisioning in underserved areas. This is to ensure that service provisioning continues in perpetuity. The plan is to fund the installation of the infrastructure that will provide a lower operational cost for the communications service providers.

A simple example is to provide fibre optic connectivity as the backhaul in one area. The hypothetical areas may be remote areas with low populations. From the backhaul transmission point of view, typically, the solution for such an area will be backhaul transmission via satellite (VSAT). The deployment of

VSAT is fast, almost immediate, and cheaper in the area. However, the operational cost that will incur monthly will be exponential.

This long-term high operational cost commitment is the main factor why the communications service providers are reluctant to invest in these areas. Although this issue can be solved by installing fibre optics (commonly, backhaul transmission cost through fibre optic is relatively cheaper and reliable compared to through VSAT), the high cost of fibre deployment is prohibitive. Due to a small number of potential subscribers in the said area, the return on investment is very long.

This is where the USP Fund through USP Projects come in as the solution. Through the USP Fund, the Commission will fund the fiberisation from end-to-end, which enables the communications service providers to benefit from lower operational costs. The main objective of the Commission here is to ensure that the people in the area are continuously served.

The Commission will designate a communications service provider to deploy the project. The designation is by way of issuing a Notification of Approval for the Designation of the Service Provider as Designated Universal Service Provider ("**Notification of Approval**"). The communications service provider issued with this regulatory instrument is known as a Designated Universal Service Provider ("**DUSP**"). It must be emphasized that the Notification of Approval is a regulatory instrument issued by law and has much

higher standing than a typical contract. A USP project is not a contract, and it is legally incorrect to equate it to or characterise it as a contract.

The significant difference from a contract is that the funder of the project in a typical contract will own the assets of the project. The party that is awarded the project is a mere developer or an executioner for the funder. By accepting the Notification of Approval, it must be understood that under the USP Framework in place, the 'ownership' of the towers or assets funded by the Commission vest with the DUSP from the inception of the project.

So, the Commission does not 'own' these assets and cannot be categorised as the project owner. The project ownership is vested with the DUSP, and it is this party bears the risk of cost and time overruns from a project perspective.

This party must ensure that once it accepts this designation, it is up to it to plan and mobilise resources in terms of manpower and funding to get the project off the ground and completed within a stipulated timeline, save for a situation of force majeure or an extension of time that has been granted to it by the Commission.

1.2.3 SWOT Analysis

a) <u>Strength</u>

The strength of the USP is the legislation enacted to collect the contribution and implemented a USP Project as per the USP objectives stipulated in Regulation 3 and 3A of the USP Regulations. In a nutshell, the USP's objectives are to bridge the digital divide in underserved and underserved groups by focusing more on collective services than individual services.

This contribution is an annual obligation, and the contribution amount is calculated based on the audited return of the net revenue from the designated service by all relevant licensees. To date, the contribution amount is at an estimated RM1.4 billion every year. The Commission formed the Universal Service Provision Division ("**USP Division**") as the enabler of the initiatives to bridge the digital divide by utilising the USP Fund, based on the National Digital Infrastructure Plan.

As the regulator of the industry, it is the Commission's right to take any legal and regulatory action towards the DUSPs. As a regulator, it cannot own any assets from the USP Fund. It means the Commission does not have any liability in the implemented and deployed projects.

b) <u>Weakness</u>

The Commission relies on the DUSPs for the project execution in its entirety. The DUSP is required to plan its projects and resources based on the stipulated requirement in the issued Notification of Approval.

With the passage of time, the volume of USP Projects is getting bigger, and the number of DUSPs are getting more numerous. Currently, there are more than 5,000 sites are being implemented, and upcoming projects will see another at least 2,500 sites requiring deployment. Overall estimated budget from the USP Fund RM10 to RM12 billion. This is managed by thirteen staff which consist of two departments, the Planning and Development Department (six staff) and the Implementation and Monitoring Department (seven staff) within the USP Division.

c) <u>Opportunity</u>

One of the opportunities is that the coverage in Malaysia is still not adequately addressed, especially mobile cellular coverage and fixed broadband coverage. The Commission frequently receives complaints from the public through various channels such as letters, social media, direct telephone call, complaint bureau, and any other relevant agencies. The USP Division actively undertake surveys of populated areas which are remote based on the above feedback and input provided by the Commission's State Offices.

This puts pressure on the Commission to plan and implement more USP Projects to address the complaints. The additional number of projects and sites will require the USP Division to focus more on implementation issues more proactively, efficiently and effectively.

d) Threat

As the nature of USP Projects is different from a typical contract and heavily governed by the regulations, it might be difficult for the general public to understand the difference of in the key success factor of the USP Projects which is the finding of this action research paper.

The Commission also relies on the reports presented by the by DUSPs during project progress summary report meetings. The USP Division's staff will extract relevant information from the presentation to construct internal reports for the consumption of the Head of Division and Management.

As the report constructed is reliant on the extraction of raw data from the DUSPs manually, the Commission is at risk of acting based on wrong information provided by the staff. The summary of the SWOT analysis is as tabulated in Table 1.1:

Table 1.1: SWOT analysis

STRENGTHS	WEAKNESSES
• USP Projects is governed by the USP Regulations • Massive funding and replenishment of the USP Fund is based on the licensee's weighted net revenue • As the regulator of the industry, the Commission has the right to take any legal and regulatory action towards the DUSP(s) • The Commission has no assets or liabilities in USP Projects.	• The Commission is relying on the DUSP to implement the project • Lack of manpower in the USP Division to oversee all the projects
OPPORTUNITIES	**THREATS**
• The Commission receives many complaints about better coverage and connectivity • A better turnaround time to monitor and resolve on the ground issues is very much needed – to be more effective and efficient	• The difficulties in advocating in terms of the regulations to the general public as the general public see this as a merely being a construction project • Decision made by the Commission is compromised due to lack of visibility or errors in data provided by the staff

1.3 Problem Statement

There are three major pillars or categories of initiatives implemented by the USP Division. These three pillars are public cellular service initiatives, fiberisation initiatives, and collective broadband access initiatives. Each of the pillars of the initiatives consists of multiple projects, and each of the projects will have multiple sites. These three pillars are as illustrated in **Figure 1.3**.

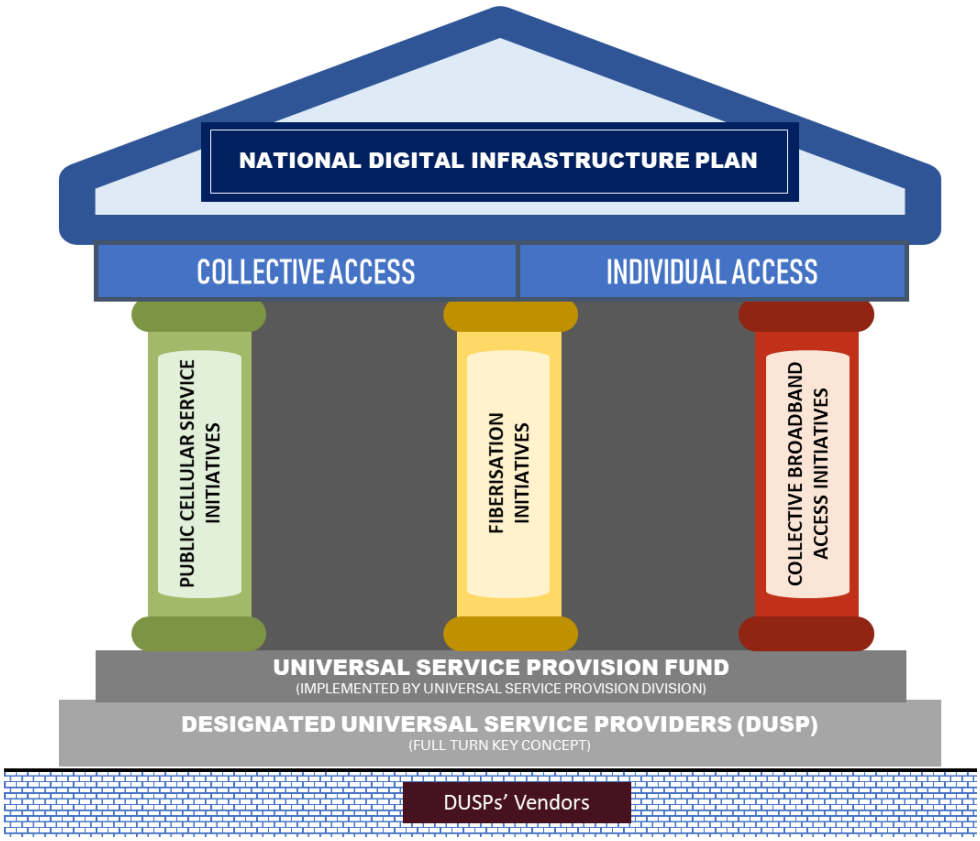

Figure 1.3: Initiatives of the Universal Service Provision

In brief, public cellular service initiatives will focus on expanding mobile cellular and mobile broadband coverage in the intended areas and enhancing the quality of service especially in underserved areas. Fiberisation initiatives

are focus on providing fixed broadband services to premises located in rural and underserved areas and the deployment of fibre optics to the existing communications towers to provide reliable and cost-effective backhaul transmission. Last but not least, the collective broadband access initiatives are focusing on community-based projects such as Pusat Internet Komuniti, whereby it provides collective internet services to the community.

Based on the observations and data gathered, there are three issues in implementing the USP Projects as the following:

1.3.1 Lack of understanding of key success factor(s) of USP Project

Although USP Projects are regulated under the USP Regulations and the Notification of Approval issued to respective DUSP is a regulatory instrument, the USP Division adopts a turnkey mechanism implementing the projects in which the DUSPs have complete control of the project. The USP Division will be updated by the DUSP periodically and the USP Division will act based on the report submitted by the said DUSP accordingly.

As the ownership of the project and assets are vested at the DUSP, the key success factor(s) of a USP Project may not be the same as the funder of a normal construction project. As no study on USP Projects has been done before, this finding of this action research will be interesting and will change the perception of the USP Projects.

Understanding key success factors for USP Projects is crucial to ensure the Commission and the respective DUSPs are focusing on the right issues of the project objectively.

1.3.2 Lack of automation in reporting the implementation of the project

From the first project implemented by USP in 2003 until 2020, 2526 new communications towers have been deployed. On average, the USP Division monitors 149 towers annually. Subsequent to the full turnkey mechanism, the USP Division is of the view that project tracking via Microsoft Excel is sufficient.

Upon the designation of the DUSP, the respective DUSPs' provide the information and on the ground project progress to the USP Division. The DUSP is only required to provide the information on the completion date of a milestone whenever the milestone is achieved and the issues that hinder the DUSP from achieving the milestone within the timeline stipulated.

Upon receiving the file through email, the officer in the USP Division will consolidate the updates from all DUSPs for the project and translate it manually from Microsoft Excel to Microsoft Powerpoint. The update via Microsoft Excel from each DUSPs are typically voluminous, represent an

information overload, and give no clear presentation of the salient issues or critical matters. The USP Division also faces the risk of human error in translating these reports.

Based on the observation, the reporting of the project is done manually to the management of the Commission by the USP Division. The project reports contain mainly the milestones that have been achieved and the payment eligibility stated in the Notification of Approval. The report overview contains issues on the ground and challenges faces, which are reported on an ad-hoc basis to the management when the latter asked for this.

1.3.3 Delay in taking pre-emptive actions and resolution through instead remedial actions such as revocation and redesignation of a new communications service provider for the project

Project reporting is one of the most crucial stages in project management. It is vital for the stakeholders to have a clear view of the progress of the project and any issues and challenges in a project. Failure to react to the problem adequately may affect the project and even may jeopardise the project in its entirety.

Due to the time-consuming process to migrate the Microsoft Excel reporting by the DUSP to another reporting template in PowerPoint documents, the USP Division and the management often have difficulty making

a strategic decision pre-emptively for issues faced on the ground. Towards the end, the action taken by the management of the Commission would usually be remedial in nature, which costs the Commission time and cost overruns.

1.3.4 Problem Diagnosis

According to Suarez-Barraza & Rodriquez-Gonzalez (2019), Ishikawa diagram or fishbone analysis is efficient to identify, sort, and categorise the root cause of a specific problem.

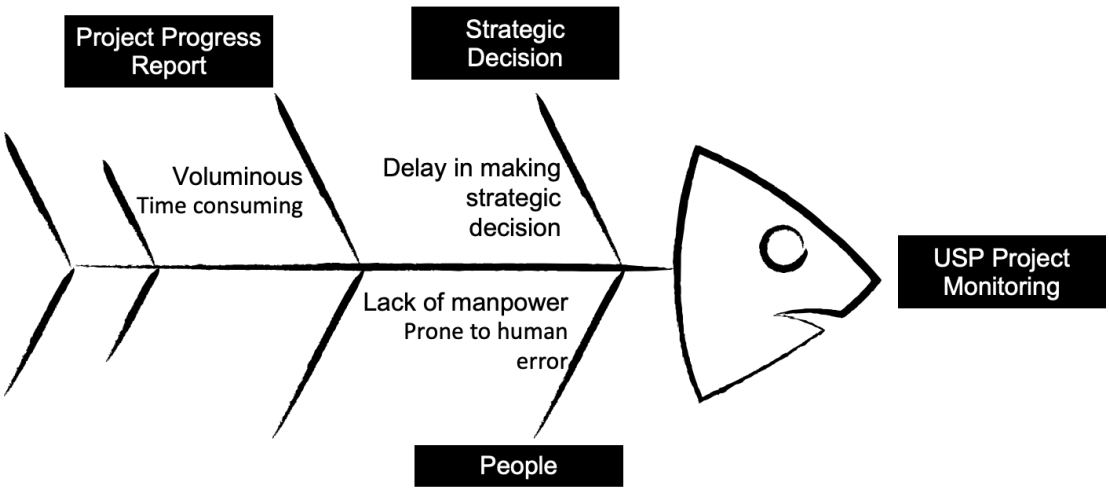

Figure 1.4: Ishikawa Diagram

The components in the Ishikawa diagram in Figure 1.2 is detailed in **Table 1.2**:

Table 1.2: Component of Ishikawa Diagram

No.	Component	Description
1.	Project Progress Summary Report	Upon submission of the report by the DUSP, the staff is required to translate all the data into a much more straightforward and visually easy report to understand. This translating work is menial work that consumes time because the raw data submitted by the respective DUSP is voluminous. The staff needs to extract the information carefully and incorporate this into slides using Microsoft Powerpoint. This can be prone to human error, such as the staff representing things inaccurately or important data being missed out and not being represented to the management.
2.	Strategic Decision	The focus of the USP Division in implementing a USP Project is to ensure the project is delivered and the community on the ground has the communications service. To achieve this, the Commission needs to make a timely decision and provide relevant views and input to the DUSP. This decision relies on the reporting by the staff during the Project Progress Summary Report. The manual development of the report quite often delayed and also runs the risk of the report not being clearly presented and being misinterpreted by the staff.
3.	People	The Implementation and Monitoring Department under the USP Division consists of one senior officer, four junior officers, and two support staff. As the number of projects grow, the current staff requires more time to do

No.	Component	Description
		compiling and developing the progress report to be presented to the Commission for any decision. Competency, volume of work, attention to detail and language proficiency can adversely impact the quality and integrity of the reports provided.

1.4 Research Questions

Based on the problem statements that was highlighted by the Head of USP Division, the relevant research questions in the study are as stated below:

i. What constitutes key success factors for USP projects to deliver the desired outcomes?

ii. What is the main challenge in implementing the USP Projects from the implementation and monitoring perspective?

iii. What is the impact of implementing USP Projects through project monitoring and reporting tools?

1.5 Research Objectives

The objective of this research will be based on the problem statements identified above, which can be concluded as follows:

Objective 1 – Determine the key success factor(s) of the Universal Service Provision Project

Objective 2 – To develop an automation reporting system that will utilise the existing submission by the DUSP as the input of the reporting system

Objective 3 – To assist the division in making a strategic decision, per site basis, as part of the outcome of the automation above.

1.6 Researcher's Role

The researcher's role in this action research is to assist the Commission in understanding and identifying the key success factor(s) of the USP Projects. This is crucial to advocate the public interest in USP Project. Another role of the researcher is to assist the USP Division in improving the reporting system to increase its operational efficiency by using the key success factor(s) identified earlier as the foundation of the reporting system.

The researcher is also responsible for providing an explanation of the research to the relevant management level executive in the Commission to increase its adoption of the system.

1.7 Research Ethics

The researcher has communicated the purpose of the research to the respondent and committed to maintaining the confidentiality of the respondent. The researcher has fully complied with the requirement set by the owner of the secondary data used in the research.

1.8 Significance of Research

This research aims to manage and minimise the risks that may contribute to the failure of the USP Projects by the definition of the Commission. The success of risk management can be achieved by identifying the key success factor of the USP Projects and analysing the elements or components that may potentially contribute to the failure of the project.

This research will introduce and propose to the USP Division project reporting tools to assist the USP Division to effectively monitor and respond to

the progress of the projects. The reporting tool will have the ability to assist the Commission to visualise the relevant data of the project implementation and give the ability to the Commission to make an informed strategic decision in relation to the USP Projects.

1.9 Definition of Terms

The definition of terms that will be used in this research are as follows:

a) "CMA 1998" Communications and Multimedia Act 1998 [Act 588], an Act gazetted by Parliament to provide for and to regulate the converging communications and multimedia industries and for incidental matters.

b) "Commission" means the Malaysian Communications and Multimedia Commission established under the Malaysian Communications and Multimedia Commission Act 1998 [(Act 589)].

c) "Communications Service Providers" means a person who either holds an individual licence or undertakes activities that are subject to a class licence granted under the Act that provides communications passive infrastructure and/or any communication services to the public.

d) "Designated Universal Service Provider or DUSP" means any Communications Service Provider designated by the Commission under Regulation 9 and Regulation 36A of the USP Regulations.

e) "Key Success Factor" means the key activities that will be the definition of success for the USP Projects.

f) "Major Contributor" means any licensee whose contribution to the USP Fund in the previous calendar year under Regulation 27 exceeds RM20 million ringgit or any other amount[2] as may be determined by the Minister of Communications and Multimedia.

g) "Notification of Approval" means a notification issued by the Commission to the DUSP pursuant to Regulation 9 and Regulation 36F of the USP Regulations.

h) "USP Division" means the team that is led by a Head of Division who is responsible for making a strategic decision in relation to matters that comes under the remit of the USP Division. This includes oversight on matters pertaining to project implementation and monitoring.

[2] Based on Ministerial Direction No. 12, 2018 (dated 13 Apr 2018) and Regulation 36A of the USP Regulations 2002, the threshold for Major Contributor has been revised to RM10million in a calendar year

i) "USP Regulations" means the Communications and Multimedia (Universal Service Provision) Regulations 2002.

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