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**ST.MARY'S UNIVERSITY**  
**SCHOOL OF GRADUATE STUDIES**  
**Department of Project Management**

**PRACTICE AND CHALLENGES OF PROJECT PORTFOLIO  
MANAGEMENT: THE CASE OF ETHIO-TELECOM INFRASTRUCTURE  
EXPANSION PROJECT**

**BY**

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**May, 2022**

**ADDIS ABABA, ETHIOPIA**

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GRADUATE STUDIES IN PARTIAL FULFILMENT OF THE  
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**ADDISABABA, ETHIOPIA**

**ST MARY UNIVERSITY, SCHOOL OF GRADUATE STUDIES,  
FACULTY OF BUSINESS**

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## **DECLARATION**

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of **MULUADAM A. (PhD)**. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree. It is offered for the partial fulfillment of the degree of MA in Project Management (MA).

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**May, 2022**

## **ENDORSEMENT**

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

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Advisor

St Mary's University, Addis Ababa

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Signature

May, 2022

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**Selome Tilahun**

**June, 2022**

## **LIST OF ABBREVIATIONS AND ACRONYMS**

**ETA-** Ethiopian Telecommunication Agency

**ETC** – Ethiopian telecommunication

**FDRE-** Federal Democratic Republic of Ethiopia

**IBTE** - Imperial Board of Telecommunications

**NGN-** Next generation network

**PMI** - Project management institute Office/ process management office

**PMO-** Project management

**PPM** - project portfolio management

**TEP-** Telecom expansion project

**UNC** - Unclassified projects

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## **Abstract**

*A project's success depends on its management. The unlimited market need should be compromised with the limited resource through an application of proper project portfolio management technique. Throughout all the phases of PPM (formation to execution, updating and closing) the management team takes care of the time, cost and quality constraints of a project. This study was conducted to assess the practices and challenges of project portfolio management on ethio telecom's infrastructure project. A descriptive research design was employed for the study. 45 employees working in the various sub-departments of PMO of Ethio telecom were taken considered for the research. Mixes of both qualitative and quantitative approaches were implemented to collect the primary data from respondents. The study examined how PPM is practiced including the challenges faced at Ethio telecom. According to the findings of the study, the case organization has a major problem of information exchange, resource sharing, strategy linkage and balancing of different project characteristics in the formation stage and the execution process of portfolio management i.e. communication of the strategic direction, continues monitoring and comparison of projects in the program as well as the performance visa vis the schedule, resource sharing of projects was also found to be conducted poorly. Finally, looking at the findings as well as various literatures, recommendations such as establishment of well organized PMO to handle different issue of PPM, fixed communication platform along with practical implementation were suggested by the student researcher.*

**Key words:** *Project management, project portfolio management, Portfolio Balancing*

# CHAPTER ONE: INTRODUCTION

*This chapter introduces and discusses about project portfolio management which is the main area of the study. Moreover, the problem area that the research seeks to address along with its objective and associated research questions are included. The scope and limitations as well as the disposition of the overall report are also presented.*

## **1.1. Background of the study**

The business world is going through unprecedented changes. Therefore, organizations face a more complex work environment characterized by the trends of complexity, collaboration, accountability leading to increased customer expectations, complex buying situations and more diversity in the customer bases (cf. Ingram 2004, p. 18).

Companies acting in markets characterized by intense competitiveness have to continuously develop existing products as well as new products for the market. To ensure long-term survival, the companies must develop attractive products for the market in regard to both product cost and performance (Hayes et al., 2005). Most high-performing companies do not face any problems in suggesting new ideas for this development; the majority has excess of both product and process opportunities for development. As a consequence of limited resources for development activities, companies need to choose and compromise among the opportunities for their development (Dye and Pennypacker, 1999).

Project management is a methodological approach to implementing and achieving agreed upon results of business initiatives and projects within a specified time frame with defined resources. For more than a decade researchers as well as practitioners have realized that in order to succeed in meeting overall strategic objectives of organizations, it is essential to carry out the right development initiatives and projects (Cooper, 2005; Gareis, 2005; Lan-ying& Yong-dong, 2007). Applying Project Portfolio Management (PPM) is the right choice for businesses as it provides a set of tools, techniques and processes to facilitate “the centralized management of one or more portfolios, which includes identifying, prioritizing, authorizing, managing, and controlling projects, programs, and other related works, to achieve specific strategic business objectives” (Project Management Institute, 2006, p. 5).

Archer and Ghasemzadeh (Archer et al., 1999) and Dye and Pennypacker (Dye et al., 1999) define a project portfolio as a group of projects that compete for scarce resources and are conducted under the sponsorship or management of a particular organization. The three well-known objectives of portfolio management are: maximizing the value of the portfolio, linking the

portfolio to the strategy and balancing the portfolio (Cooper et al., 1998). According to Platje (Platje et al., 1994) a portfolio is a set of projects which are managed in a coordinated way to deliver increased benefits.

During the past decade, the research on project portfolio management has expanded into a more complete managerial approach. Recent studies also show that many companies have implemented tools, techniques and methods for managing their project portfolios (Cooper et al., 1999; EIRMA, 2002; Center for Business Practices, 2003; Szwajkowski et al., 2004). The project portfolio management approach also gains growing industrial interest (Center for Business Practices, 2003). However, these studies have also established that there is still much room for improvement, especially of how project portfolio management is practiced in companies (Center for Business Practices, 2003).

The great relevance of project portfolio management for overall development and efficiency makes it an interesting area for further research. Hence, this research has assessed the Practices and Challenges of Project Portfolio Management through specifically taking the case of Ethio-telecom Infrastructure Expansion Project.

## **1.2. Overview of Ethio Telecom**

Founded over a century ago, Ethiopian Telecommunications service provider is Africa's oldest public telecommunication operator (BerhanOumer A., 2021). Until 1952, the operator was under the Telephone, Telegraph, and Postal services department. With proclamation No. 131/52 the Imperial Board of Telecommunications (IBTE) was established, in 1952, to expand and provide telecommunications services. Later in 1981, IBTE restructured itself as both a telecom regulator and operator. Then, regulation 10/1996 organized the Ethiopian Telecommunications Corporation (ETC) to operate telecommunication services (Federal Democratic Republic of Ethiopia, 1996a), and in the same year, proclamation 49/1996 established a separate regulatory body, the Ethiopian Telecommunication Agency (ETA) (Federal Democratic Republic of Ethiopia, 1996b). Following the 2009 Next Generation Network (NGN) project, the company has signed a 1.6 billion USD telecom expansion project (TEP) to achieve telecom sector objectives in growth and transformation program defined by FDRE government. Finally, the Ethiopian government rebranded ETC, the operator, as Ethio Telecom by November 2010.

Since 2013, the company has started to deploy 3G for 1.7 million subscribers (Wei, 2017). Moreover, it deployed 3.5G and completed 4G in the capital city, Addis Ababa (Wall Street Journal, 2014; Wei, 2017) through a project called telecom expansion (TEP) TEP. Although Ethio

Telecom's revenue improved significantly in 2018 and 2019, the achievement is being reported to come from very low base. The revenue has remained very low relative to the number of subscribers.

Currently, the company has begun the process of replacing its business support system, which manages customer and billing information. This system is expected to replace the seven-year-old existing system that has the capacity to accommodate 68 million subscribers. It enables the company to gain customer insight, compile real-time subscriptions and introduce new revenue-generating streams. Along with replacing the business support system; the company is working on network and infrastructure expansion/Unclassified projects (UNC). It is expanding the wireless, fixed-line, power and transport network infrastructures. The expansion is expected to enable the company to host an additional 5.2 million new customers.

### **1.3. Statement of the problem**

Despite its age, Ethiopian telecommunication remains one of the least developed in the world. Different studies widely acknowledge that no modern economy can be developed short of telecommunication services (BerhanOumer A., 2021).

For more than a century, the public requirements of telecommunication are being met by the former Ethiopian telecommunication, the current Ethio telecom. The company provides services such as hybrid SIM account, VSAT, mobile broadband, VPN service, business mobile and internet, M2M business, fax, fixed wireless CDMA, fixed line service, domain name service, Mobile Internet, EVDO, ADSL, Roaming, and mobile services. With the advancement of technology and global market competition as well as achieving its company vision, the company has continued to improve its product and services through launching various new as well as expansion projects through vendor financing agreements.

With regard to this, vendors are given contracts to implement the projects in different sites and regions of Ethio telecom. However, Vendor-driven telecom infrastructure deployments require careful and proper management as they might lead to a power imbalance. This scenario has practically been faced by Ethio telecom during the NGN project which was part of ZTE contract. The evaluation of the project has found the project deliverables not being met and poor project management practices (Melssie, 2013).

Even though enormous literatures are supporting the significant positive impact of ICT on a country's economy, there is almost no published research work seeking out why the Ethiopian telecommunication industry is underperforming. As a result, even though a number of

issues could be mentioned from different angles, one method that could be used to tackle and properly manage projects is project portfolio management.

PPM is about doing the right projects at the right time by selecting and managing projects as a portfolio of investments. Good portfolio management increases business value by aligning projects with an organization's strategic direction, making the best use of limited resources, and building synergies between projects. Unfortunately, organizations often do portfolio management poorly. As a result, they fail to deliver strategic results because they attempt the wrong projects or can't say "no" to too many projects (Oltmann, J. 2008).

There are basic and common project management activities in every project phase starting from initiation to closing (Brandon, 2006), yet, project portfolio management is fundamentally different from project and program management. While project management is more concerned with specific project tasks and deadlines, program management is focused on strategic planning, continuous improvement, and value realization. Program management ensures sets of projects are better aligned to corporate strategies and resources are optimized across the organization with minimal conflicts that can cause delays or budget issues. According to project management institute's (PMI) definition, Project portfolio management is a way to bridge the gap between strategy and implementation." Instead of focusing on a particular project, portfolio management considers every project or potential project and it's potential to achieve business goals. The objective of portfolio management is to effectively balance the implementation of change initiatives with the potential return on investment. It highlights questions such as:

- Does the company have the necessary resources and budgets to initiate a new project?
- Are there other projects that can be modeled?
- Are there any current projects that may interfere with the new project?
- Is there a need to adjust stakeholder expectations?
- Does the new project align with the company's objectives?

Thus, this study has aimed to assess the implementation of Ethio-telecom's infrastructure expansion project and the challenges encountered to provide relevant recommendation.

## **1.4. Research Questions**

This particular research seeks to address the following questions to capture and meet the purpose of the study.

- ❖ How are projects of Ethio-telecom infrastructure expansion project being practiced?
- ❖ What practices of project updates are practiced to keep track of and manage the project?
- ❖ What are the main challenges faced by Ethio telecom in implementing project portfolio management?

## **1.5. Objectives of the study**

### **1.5.1. General objective**

The overall objective of the research is to assess the practices and challenges of project portfolio management on Ethio Telecom's infrastructure expansion project and to provide relevant recommendation.

### **1.5.2. Specific objectives**

2. To assess the management of project portfolio practices in infrastructure expansion project
3. To study the practices of project updates
4. To identify the challenges experienced in implementing project portfolio management at Ethio Telecom infrastructure project

## **1.6. Significance of the study**

Being the number one service provider in the country, Ethio telecom is known to continuously develop its existing products as well as work on improving its services regardless of its actual performance. The new liberalization process that has led the entrance of Safaricom Ethiopia since 2021 to the market is now believed to have an impact that would result in a high competition in the market.

To become competitive in the market Ethio telecom has and still does work on various expansion projects through vendor financing agreements. It has so far worked on projects such as Next Generation Network (NGN) project, telecom expansion (TEP) and the current infrastructure expansion project. Deploying of these projects requires following various procedures starting from service procurement procedures to delivery. Vendor-driven telecom infrastructure deployments unless properly managed, could lead to a power imbalance. It has been reported that the deployment of 2006, 10,000 km of national fiber and 2G coverage expansion project by ZTE has put Ethio telecom on a disadvantaged position because of the lack of know-how to make the most out of the deal.



The motive of this research is to understand the practices and challenges of project portfolio management on Ethio telecom's infrastructure project. It is believed that it could contribute for both the reader and the owner of the project itself through providing important information about the strong sides and the challenges of the project portfolio management practices particularly in the infrastructure project of Ethio telecom. Moreover, through critically understanding the challenges, it will forward an input that will help in taking action and can be used as reference materials for other readers, scholars or researchers for conducting related studies.

### **1.7. Scope of the study**

Ethio telecom has eleven regional offices and five zonal offices (North, South, Central, Western and Eastern zones) in Addis Ababa. The company has more than twelve divisions in its organizational structure and all these divisions launch various projects at different sites for different purposes at different times. Nonetheless, all projects are managed from the central zone i.e. the head office. This particular study will focus on studying the practices of project portfolio management in the head office by specifically focusing on the infrastructure expansion project which is currently undergoing. Hence, the study is bound to focus on the practices and challenges of project portfolio management of Ethio telecom infrastructure expansion project.

### **1.8. Limitation of the study**

The potential limitations foreseen to be suffered in conducting this study are sufficient access of information from all project management and project individuals as the project covers larger population (project sites/offices), limited access to some project document manuals because of confidentiality issues, availability and willingness of informants (i.e. managers/supervisors, project team members) to give the desired information and the time available to conduct the study.

### **1.9. Definition of terms**

#### **❖ Project Portfolio management**

- The management of one or more portfolios of projects. This includes identifying projects, prioritizing & authorizing projects, managing and controlling projects to achieve specific goals.

#### **❖ Portfolio**

- A collection of programs, projects and other works which are aligned with strategic goals and objectives.

❖ **Project management**

- The tasks, techniques, tools applied from project execution to delivery.

❖ **Portfolio management lifecycle**

- The process of collecting, identifying, categorizing, evaluating, selecting, prioritizing, balancing, authorizing and reviewing components within the portfolio to measure how they are performing compared to the key indicators and the strategic plan.

❖ **Portfolio Balancing**

- Arranging prioritized components into a component mix that will support strategic goals.

❖ **Prioritization**

- Giving hierarchy to selected components based on their scores and other considerations by senior management.

## **1.10. Organization of the Thesis**

This study is compiled into five chapters. Chapter one deals with the introductory parts of the paper. It will discuss the background of the study, statement of the problem, basic research questions, objectives of the study, definition of terms, significance of the study and the scope. Chapter two reviews literatures related to the study from relevant journals pertaining to project portfolio management. It encompasses an introduction, theoretical review, empirical review and the conceptual framework of the study. Chapter three focuses on methods of data collection and data analysis, chapter four summarizes the results and findings of the study and interpret and/or discuss the findings. The final chapter, chapter five contains three sections that will include a summary of findings, conclusions and recommendations.

## CHAPTER TWO: LITERATURE REVIEW

*This chapter provides an overview of the literature regarding the subject matter. Initially an introduction to the theoretical framework is provided, followed by thorough explanations in regards to ppm literature.*

### **2.1. Introduction**

Reviewing literature related to the issue of managing project portfolio helps the researcher to identify the extent to which the topic is studied, identify the gap and contribute systematic knowledge. Accordingly, relevant literatures related to project portfolio management are going to be reviewed in this chapter. The first part presents the general truth of the subject matter through theoretical review of related literature while the second part presents the empirical result of previous research related to project portfolio management.

### **2.2. Theories and concepts of Project Portfolio Management**

In today's world, PPM is something more than just tools and processes. It is about the organizational transition from being solely project oriented to being aware of higher level Objectives (Levine, 2005).

Many organizations have attempted to utilize PPM to facilitate the process of managing projects in order to reach firm specific goals (PMI, 2008).

It has been established that formal project management processes are a prerequisite for successful PPM implementations (Brown & Eisenhardt, 1995; Dietrich, 2006; Martinsuo & Lehtonen, 2007; Telleretal., 2012). According to Cooperet.al.(2001), the most important objectives to accomplish are maximizing the portfolio's financial value, strategically aligning the portfolio and balancing the portfolio.

It is possible to assess which challenges lie a head and how organizations can utilize their PPM to become more responsive to external dynamics so as they could achieve a level of resource flexibility which enables strategic alignment and the coordination of collaboration efforts in away that allows the organization to reach its objectives.

Common topics for discussion in PPM include alignment of the projects to the organization's goals, resource allocation and total amount of projects in the portfolio, methods for project selection and prioritization (and power struggles), control and monitoring, information flow, organizational learning, challenges in the implementation and resistance to change, among others (Hristova & Muller, 2003).

### **2.3. Importance of PPM**

PPM is a key component of strategic project management. As with project management, many tools (both software and other) can assist in PPM. Installation of a software tool does not constitute PPM (Challahan & Brooks, 2004).

Needs in 2014 cited about the advantage of PPM; some of the advantages out of the list are related with the fact that PPM minimizes risk. There are several categories of risks, including financial, governance, resource utilization, and misdirected efforts. On the financial side, good PPM policies will help you to calculate the benefits vs. cost of cancelling a poor performing project, as well as identify projects that are not contributing to corporate objectives. The sooner one identifies these wayward projects, the sooner to reduce risks. As for reducing governance risk, the goal is to build an accountability framework that ensures that the right level of compliance is followed through every project lifecycle.

The other great benefit of a PPM is its ability to maximize resources. The greater degree of visibility we mentioned earlier, both on the macro and micro level, makes it possible for you to gain the type of control over your projects that is not possible in a non-PPM office environment. A centralized approach also allows you to reduce your project costs, primarily through the reduction or elimination of duplicate effort (Needs, 2014).

The other ways of project portfolio management support is for the fundamentals of project management. It avoids project management disasters by pointing out good projects versus bad projects, offers a clear path to prioritization that allows project managers to create flexible timetables, lists what team members and project managers are available and it helps assign monetary value to a project (Waysoky, 2014).

Generally, as cited by Challahan and Brooks (2004), this importance is summarized in three groups. The first one is to link all projects to the company's strategy, which is helpful to avoid non value adding projects and achieve overall objectives of the organization. The second one is to balance the portfolio of projects the company is undertaking. This is a question of what and what project to be undertaken. PPM exercised this task by looking at on the company and its mission and objectives. The third importance of PPM is to maximize the value of the Portfolio. Maximizing the value of a project portfolio is done on linking that portfolio to the company's strategy effectively and putting into place a decision or phase-gate process that will compare projects in the portfolio against strategy and balance. PPM approves only those projects that are aligned with strategy, fit within the correct balance, and represent the maximum return.

## 2.4. Project portfolio management goals and phases

The most common goals for organizations utilizing PPM are: value maximization, portfolio balance and strategic alignment (Cooper et al. 1997, 2000). (Cooper et al. 2001) builds on these three themes but also emphasizes the importance of having a systematic approach of making go/kill decisions, as well as focusing on appropriate high value projects available. Having the right number of active projects is also important (Cooper et al. 2001.).

Scholars commonly construct their own measures of project portfolio success, but most are based on the goals for PPM provided by Cooper et al. (2001). According to Turner (Turner, 1999), program management includes, among others, management of interfaces between projects, prioritization of resources and balancing responsibilities against corporate objectives.

Project portfolio management is a continuous process: the projects and programs included start and end, but the portfolio exists until the organization decides to close it (Birginsson, 2012).

Levine (2005) recognizes 5 phases of the process of project portfolio management

1. Portfolio Inventory
2. Portfolio Analysis
3. Portfolio Planning
4. Portfolio Tracking
5. Review and Re-planning

Portfolio Inventory contains information and data about all the proposed, on-going and delayed projects. The information and data are organized for the second phase - Portfolio Analysis, in which projects are analyzed using the PPM tools and methods. When the most suitable projects have been selected and initiated, they enter the project planning phase. In the Planning phase, resource, time and cost plans are constructed and integrated with the portfolio planning process where the resource allocation and schedule decisions are made, taking the whole portfolio of projects into account (Birginsson, 2012).

In the Portfolio Tracking, metrics can be captured through earned value analysis or gates and they are used to evaluate each project. If these metrics do not fulfill specific criteria, a decision regarding the future of the project has to be taken. The Review of the portfolio involves a re-verification of business, technology or market condition, which can lead to realignment of the project portfolio and re-planning in resource allocation and scheduling (Levine, 2005 In: Brinson, 2012).

The management of a project portfolio is a complex activity requiring the assessment, selection, and synchronized execution of projects oriented to the implementation of the overall strategy of the organization (Alexandrova et al., 2016). In practice, project portfolio managers presumably perform three major tasks, involving the attempts to maximize the joint (synergic) results of the projects in the portfolio, ensure a balance of the portfolio along with minimization of portfolio risks, and bring the projects' aims in line with organizational strategy. In real life, however, each organization chooses its own strategic alternative for action that leads to a specific (and often unique) pattern for PPM implementation such that induces a substantial variation of the practices of PPM. At the same time, the world community of PPM experts has headed toward the unification and standardization of PPM processes. Specifically, for the area of PPM, such an established international standard is "PMI Standard for Portfolio Management" developed by the Project Management Institute. This standard, which was revised in 2013, is based on a set of identified processes which require relevant knowledge, skills, tools and techniques necessary for the achievement of goals along with high efficiency of PPM (PMI, 2013). The main processes defined in the standard being in the focus of the current study are grouped into three basic phases:

- Constitution/formation of the project portfolio (identification of projects for inclusion; categorization of projects; selection of projects);
- Execution of project portfolio (assessment of separate projects, definition of priorities (prioritization, evaluation of the portfolio as a whole, portfolio balancing) ;
- Update of project portfolio (monitoring and control of the portfolio, undertaking of corrective actions; review and reporting of results; implementation of strategic changes).

## **2.5. Project portfolio management implementation**

Usually, organizations start with current projects evaluation, some projects delaying, some projects cancelling and other projects tuning with organizational resources and strategies (Levine, 2005). Return on investment (ROI) basing on the cash flows during the investment period is commonly used criteria (Madic, 2005). ROI is the pending criteria but it cannot be used without consideration of all other project aspects such as (Levine, 2005):

- i) Is the project aligned with the organization strategy?
- ii) How the project affects a balance of maintaining and investment project?
- iii) How the project impact effective allocation of costs and resources?
- (iv) Risk and probability of the project realization within the scope, terms and budget.
- (v) Non-financial benefits of the project.

### **2.5.1. Project portfolio formation**

The major area of portfolio management is the development and selection of the project portfolio. The questions to ask are: Which projects should be selected? How does the project relate to the entire portfolio, and how can the project mix be optimized? Selection process of PPM is basically about identifying opportunities; assessing the organizational fit; analyzing the costs, benefits, and risks; and developing and selecting a portfolio. It is concerned with fit, utility, and balance. If done effectively, portfolio management will ensure optimum use of people and resources (Pennypacker & Sepate, 2002).

The primary deliverable of the selection phase is the optimal portfolio. This does not mean that the projects with the highest relative strategic benefit are selected in turn until funding is exhausted. Rather, the portfolio selected contains the combination of projects that provide maximum total relative benefit subject to the specified budget and organizational constraints.

Many organizations use ranking and scoring models. But rankings are ordinal numbers and thus indicate only order. If 20 projects are ranked from 1st to 20th, how much more important is the first than the second project, or the second project compared with the last project? Performing arithmetic operations on ordinal numbers yields mathematically meaningless results. Weighting and scoring are often used when there are multiple criteria, for example, least cost and highest net present value.

Strategic Alignment metrics, as the name suggests, are designed to determine the strategic fit of the projects and portfolio. These metrics require some degree of scoring, which is quite often a subjective process. If a company outlines strategic categories, then the projects that make up the proposed portfolio can be assigned a score on these items, indicating how well it serves the strategic goal (Rosenstock, 2002).

The Value/Cost Performance metrics is one of the many models which are certainly one of the key indicators that are used in project selection. This collection of analytics is designed to point out what the company is spending money on, how that investment will return, how the spending compares with company history or competitors and how the value/cost relationship will stand across a portfolio of projects (Popper, 2000).

Different models can be used at two levels. They can be designed to measure the value of a project, or they can be used to measure the value of a portfolio. There is a purpose for both levels. Project-level analysis helps to see the value of a project, which can be used to determine if it should be considered a better investment than other projects. This type of exercise can help generate the prioritization of projects that is ultimately needed to make difficult Go/Kill

decisions. However, the portfolio level view helps to decide the right mix of projects, one that achieves the proper balance of strategic and financial value. Generally, the entire process of selecting the right projects centers around knowing what projects, and what combinations of projects, will yield the best results for the organization.

### **2.5.2. Project Implementation Requirements**

To implement a project means to carry out activities proposed in the application form with the aim to achieve project objectives and deliver results and outputs. Its success depends on many internal and external factors. Some of the most important ones are a very well organized project team and effective monitoring of project progress and related expenditures

Basic requirements for the PPM implementation performance are in fact the components of a mature and competent PPM model including the following:

### **Strategic planning**

- **Strategic planning:** Clearly defined organization's mission, strategies and tactics including: PPM as the key process, projects as a key tools and PM as a framing discipline (Yelin, 2005; Petrovic, 2003).
- **Human resources management:** Activities and practices in selecting and training staff for PM/PPM performance (Petrovic, 2003).
- **Project management:** Develop procedures for achieving micro and macro project success (Chanet al., 2009). Develop procedures for achieving PPM efficiency (Martinsuo et al., 2007) through integration with PM procedures (Levine, 2005) and models of PM with portfolio potential (Wideman, 2004).
- **Organizational structure:** Project or matrix organizations (Petrovic, 2003) with PMO/PPM Council (Levine, 2005) are needed.
- **PM/PPM information system:** Software's and techniques for adequate information quantity/quality and their processing in function of PM and PPM management (Levine, 2005).

#### **2.5.2.1. Work plan Implementation**

Project implementation consists of carrying out the activities with the aim of delivering the outputs and monitoring progress compared to the work plan. Monitoring can be defined as control of the project implementation in order to keep the project on track and achieve the end results of the project. The project manager is responsible for the regular monitoring of the project, but the partner organizations should also contribute actively to the effective monitoring of the project.

The whole partnership will benefit from monitoring of project progress because it:



- Provides support for project implementation and acts as an indicator of whether targets are being met;
- Through feedback activities, it stimulates improvement in project results based upon observations of the value and the quality of the various elements of the project;
- Provides reliability and credibility of results;
- Foresees potential problems in good time and simplifies decision-making, especially if corrective actions are necessary

### **PM/PPM Culture:**

Special attitudes including projects consideration as the key strategic tools and project management tasks spreading over the management structures (Petrovic, 2003) Mentioned PPM model components representing basic requirements for the quality PPM implementation performance have to be on certain maturity and competence level. PPM model maturity and competence level measurement imply a certain scale or group of different scales. These scales are not easy to make and use. The PPM model maturity and competence level measurement is important for adequate directing of an organization efforts aiming the existing PPM model improvement.

#### **2.5.2.2. Managing Risks**

Risks are internal or external events that may occur during project implementation and could threaten the achievement of project objectives and the project as a whole. Basic risk management is important for every project, but the level of detail needed varies depending on the size of the project and the number of risks and possible impacts on the achievement of the objectives. Identifying risks and outlining contingency measures for when they happen should be a task for every partnership, regardless of whether this is required by the program or not. This process involves three steps:-

**Identifying risks:** one way to identify risks is to look at possible sources of risk or at the threats/problems that can become risks. Sources include the team members, stakeholders, sub-contractors, target groups, etc.

**Assessing risks:** Once potential risks have been identified, they need to be qualified according to their impact on the project and their probability of occurring. As with most other aspects of planning, the assessment of probability can often only be based on assumptions and educated guesses. The impact, however, can often be estimated in relation to the budget and time lost or

indicators not achieved. This assessment allows projects to prioritize risks – the ‘high risk’ decisions and actions have to be taken first.

**Dealing with risks:** When a problem occurs it is often too late to take any preventive or alternative actions. The project manager and partners concerned have therefore to decide in advance how to handle each risk while there is sufficient time. Possible approaches are:

- **Ignore the risk:** This is sensible for risks with a low impact, or where the resources to develop alternatives would be greater than the impact of the problem, or if the probability is low but implications would be so substantial that the project cannot compensate for them anyway.
- **Identify alternative ways to remove the risk:** This is usually the approach to take for risks with high impact and high probability.
- **Develop contingency plan to reduce the impact of problems that do happen:** This does not remove the risk but is a temporary solution.

It is advisable to review and monitor risks throughout the project to keep on top of them, as they might transform or new ones might come up.

## **2.6. Project progress updating**

In order to be successful, any work should be properly planned and controlled, and progress updating needs to be shown to everyone who contributes in it. There is no sense to get into work unless there is a clear picture of what and how it should be done, and there is no means to control working process and record progress update. Hence, when there is a plan, it needs to be kept under control and shared among collaborators. Earlier, progress updating was quite problematic and laborious arrangement and usually people have neglected regular project progress update sharing in small projects, but today, owing to computer-based tools it is very easy to share and update progress in teamwork of any scale, so even smallest teams can benefit from regular progress updating. To update progress of a joint work there has to be a reliable instrument that is accessible for everyone in the team.

## **2.7. Challenges of implementation of project portfolio management**

The four main challenges or problem areas in portfolio management (Cooper et al, 2000) are;

1. **Resource balancing:** Resource demands usually exceed supply, as management has difficulty balancing the resource needs of projects with resource availability.
2. **Prioritizing projects against each other:** Many projects look good, especially in their early days; and thus too many projects “pass the hurdles” and are added to the active list. Management

seems to have difficulty discriminating between the Go, Kill and Hold projects.

3. **Making Go/Kill decisions in the absence of solid information:** The up-front homework is often sub-standard in projects, the result being that management is required to make significant investment decisions, often using very unreliable data. No wonder so many of their decisions are questionable.
4. **Too many minor projects in the portfolio:** There is an absence of major revenue generators and the kinds of projects that will yield significant technical, market and financial breakthroughs.

Lack of awareness is the other challenge of PPM. Everyone should understand what's happening and what is expected of each individual. Stakeholders should be trained every now about PPM to value it. Making this a regular task will help an organization to be achieving what is intended to be achieving by practicing PPM (Choudhuri, 2015).

Another scholar also stated that one of the most common challenge faced by organizations, especially new or rapidly-growing businesses, is a shortage of people who are both qualified to manage a project portfolio and have the availability to do it. A company's top projects managers are usually busy with the day-to-day needs of critical projects and don't have time to devote to strategic, long-term considerations (Bunner, 2016).

Generally, Boneva (2014), stated that the management of project portfolios is considered as a novel and complex area in organizational practices. Hence a variety of challenges emerged, which need to be tackled by managers, along with many opportunities for increasing the organizational effectiveness.

## **2.8. Empirical Review**

Though not adequate, a number of empirical studies on project portfolio management and related issues have been done. With the aim of relating the real world experience of the topic with the theoretical agreements, the researcher reviewed the findings of previous literature about project portfolio management. Hence, the following section presents the empirical review of some of the studies.

Calderini (2005), presented five main goals of PPM that dominate the literature are namely defining goals and objectives, i.e. clearly articulating what the portfolio is expected to achieve, understanding, accepting, and making trade-offs, identifying, eliminating, minimizing and diversifying risk, monitoring portfolio performance, i.e. understanding the progress that portfolio

is making towards the achievement of the goals and objectives and establishing confidence in achieving a desired objective.

Choudhuri in 2015 reported his research on challenges of PPM and stated that these impediments are the reasons why most PPM practices fail. It is therefore, understanding the common challenges of implementing PPM and ensuring to have a solution to them or ways around them will help increase the success factor of PPM practices.

A study conducted by Elonen & Artto, (2003), distinguished some of challenges of implementation of PPM. These are inadequate project level activities, lacking resources, competencies and methods, lacking commitment, unclear roles and responsibilities, inadequate portfolio level activities, inadequate information management and inadequate management of project-oriented business.

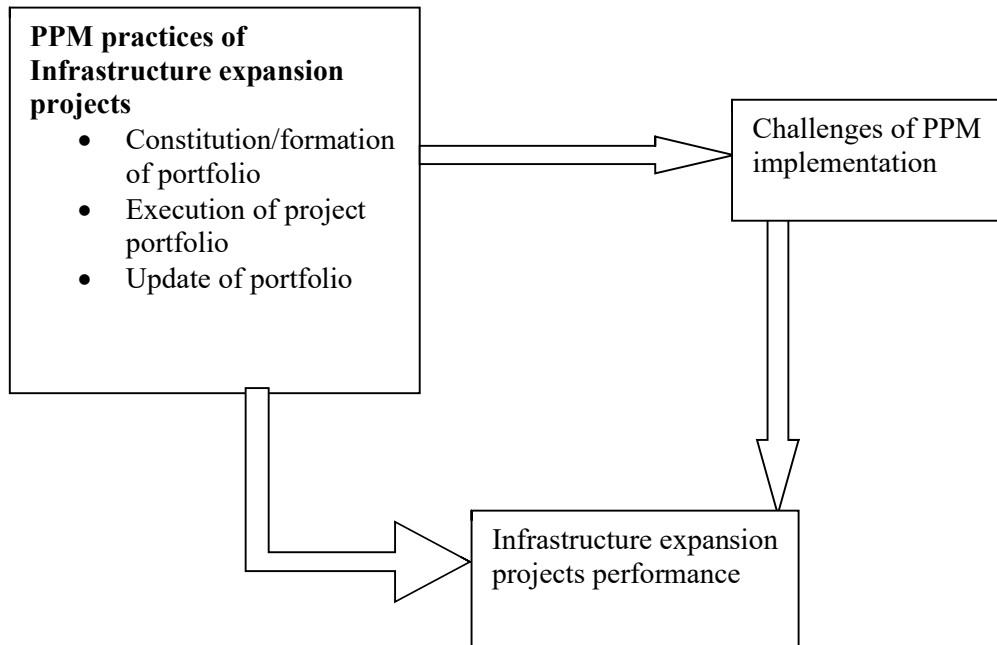
In order to help the implementation of PPM, Alexandrova, Stankova & Gelemenov, (2015), recommended that in organizational context, the management of the project portfolio could be performed in different ways, among which the most innovative and highly effective one is the establishment of the Project Management Office /PMO/. Among the new insights in project management the concept of Project Management Office emerges as an effective solution for many problems in contemporary project portfolio management.

Generally from the studies above, it can be understood that the implementation of PPM for many organization had been a challenge and many organizations maturity in its implementation have been found minimal. Furthermore, Hristova & Muller, 2003 in their research report on the implementation of PPM, they stated that studies of the challenges in organizations implementing project portfolio management are rather few. Therefore, conducting a research on the implementation of PPM and identifying its challenges is essential to come up with a good recommendation in this area.

## 2.9. Conceptual frame work

The variables discussed in the study are related conceptually as in the following chart.

the portfolios' critical success factors. There might be a shift in the resource availability, validity of the business case, the corporate strategy or in the



*Source : ( Own survey, 2022 adopted from project portfolio management by Harvey A. Levine)*

The two fundamental variables planned to be studied here are project portfolio management practice and the challenges of implementing PPM. The study is framed to focus on the assessment of project portfolio management practice at Ethio telecom and the associated challenges encountered in implementing PPM. The processes followed in implementing PPM are analysed through a measurement of variables. By measuring the sub variables through previously developed instruments, the study will assess the practice of project portfolio management and identify the challenges to implement the right project portfolio management process.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1. Introduction**

This part aims at elaborating the methodological process that is planned to be used, it will outline how the research has been conducted based on the objective of the study. It is organized in the manner of research design, target population, sample and sampling techniques, method of data collection and data analysis used in the study.

### **3.2. Description of the study area**

The study area has particularly focused on assessing project portfolio management practice of Ethio telecom head office located in Addis Ababa, Ethiopia. The reason for the selection of this particular company is because the researcher is familiar with the company and has certain knowledge about the projects. Furthermore, the researcher believes that the activities and experiences that are being implemented are pertinent to the subject matter planned to be studied.

### **3.3. Research Design and Approach**

Research design is a framework for action that bridges research questions and the execution or implementation of research questions (“Research Design,” 2006). It is important because it allows the many research techniques to go smoothly, resulting in research that is as professional as possible, giving the most information with the least amount of work, time, and money (Akhtar, 2016).

According to Chandran (2004) and Kothari (2004), there are five types of research designs. These are observation, descriptive, exploratory, experimental and diagnostic design. The selection of the specific research design depends on the purpose of the research, theoretical paradigm informing the research, the context or situation within which the research is carried out, and the research techniques employed to collect and analyze data (“Research Design,” 2006, p.37).

In order to bring the most out of the result of this study, a descriptive design has been implemented to answer research questions and attain the objectives. Descriptive research studies, according to Kothari (2004), are those that are concerned with describing the features of a

specific individual or group. The study has tried to give answers to the stated research questions through integrating the theoretical aspect that has been dealt with while attending the courses in the particular field of study. In addition, an extensive literature survey from various sources such as academic official and public sources have been used together with the help of the advisor's feedback and recommendation.

The study has used mixed method research i.e. the use of both quantitative and qualitative research to collect relevant data. Case study design has been used to explore and generate quantitative data and examine the project portfolio management practice in the particular company through a structurally developed questionnaire. In addition, literature related to the topic area has been used as a supplement for the data validation and reach in to a final conclusion. Semi-structured interviews with head of strategic and program management support office as well as project managers of Ethio telecom has also been conducted to gather qualitative data about the procedures applied for project portfolio management practices and challenges.

### **3.4. Population and Sampling**

A population is a comprehensive group of individuals, institutions, objects and so forth with shared characteristics on which a researcher is interested in (Rafeedalie, n.d.). A sample is a subset of the larger population from which a data will be collected.

The best strategy in any research study is to look into the problem throughout the entire population (Acharya et al., 2013). Considering this, the student researcher has used the Census method i.e. considering the whole project management team of Ethio-telecom's head office. Hence, the team involved in infrastructure expansion project of Program management office, process management office, network project role out department, engineering department, sourcing contract management and head of strategic and program management support office that have direct involvement regarding the projects of the case company were selected. Hence a total of 45 respondents that does involve in the infrastructure expansion projects of Ethio telecom were selected as a primary data source. The sample demographic mix has been categorized by gender, age group, experience level and work area.

### 3.5. Data sources and types

Two sources of data have been used in this research.

1. **Primary Source:** The survey questionnaire that has been collected from program and project team members as well as departments and the interview from head of strategic and program management support office and project managers has been used as a primary source of data.
2. **Secondary Source:** A review of archived project documents, different publications which were available and recent, related to the subject matter by government organizations and NGOs, researches made earlier, journals by different organizations and associations and the internet were of a great value for this research.

### 3.6. Data collection techniques

Questionnaires were developed using Microsoft Google form. The questions were made to have three major parts that help to determine the demographic mix of respondents, the practice of PPM in the particular organization and the challenges encountered during implementation of PPM in the infrastructure expansion projects. Moreover, the questions regarding practice of PPM in the particular project and the challenges encountered in PPM were formed using Likert5 scale ordinal measurement technique to measure respondents' attitudes towards the particular questions or statement. The developed questionnaire were distributed to the target respondents via mail through first communicating the purpose and getting their willingness to fill the questions. In addition, Guiding questions that has helped to conduct the interview pertinent to the required data and topics were framed and conducted after getting appointment with the respondent.



### **3.7. Data Analysis**

The analysis of quantitative and qualitative data has followed the collection of data from the primary sources. Quantitative data has been analyzed using IBM SPSS Statistics version 26 (Statistical Package for Social Sciences). Measures such as frequency and percentage have been used to present the data. Tables have also been used to ensure an ease of understanding. The results of the statistical analysis has finally been summarized, discussed, triangulated and interpreted accordingly.

### **3.8. Validity**

Establishing the validity of the scores in a survey helps to identify whether an instrument might be a good one to use in survey research (Creswell, 2009). In order to confirm the extent to which the results of the survey really measure what they are supposed to measure, the student researcher adopted previously developed questionnaires with some modifications to comply with the subject matter and the study area. Additionally, a review of literature shows that the questionnaire instruments are representative to measure the intended constructs. Hence content validity is ensured.

### **3.9. Ethical Consideration**

David & Resnik (2015), Stated that research often involves a great deal of cooperation and coordination among many different people in different disciplines and institutions. Ethical standards promote the values that are essential to collaborative work such as trust, accountability, mutual respect and fairness.

Concerning the ethical issues, the research has intensively maintained authorship issues and discussed intellectual properties frankly. The purpose of the study has clearly been described for the case organization and the sample population. It has followed informed-consent rules by taking voluntary participants and respect the confidentiality as well as privacy of the respondents and the company at large.

### 3.10. Reliability

Reliability is the degree to which the measure of a construct is consistent or dependable it implies consistency, but not accuracy Bhattacharjee (2012). Reliability is one important aspect in any study. When items are used in a measurement scale, they should be correlated with each other so that internal consistency is maintained (Bland & Altman, 1997). One measure of this internal consistency is Cronbach's alpha coefficient. A larger value of alpha implies redundancy while lower values show weak correlation between instruments (Tavakol & Dennick, 2011). As recommended by many researchers, the acceptable values of alpha are above 0.70. The table below presents the Cronbach alpha value of the items used to measure project scope management. All the values are within the acceptable range, hence ensuring the reliability of the test. The overall Cronbach's Alpha for the variable project scope management process is 0.94 with 19 measurement items. The Cronbach's Alpha for each sub variable is listed below.

**Table 3.10:** Reliability statistics of overall factor of likert five scale questions

<b>Variables</b>	<b>Cronbach's Alpha</b>	<b>N of items</b>
Constitution/formation of portfolio	0.82	6
Execution of project portfolio	0.77	6
Update of portfolio	0.81	3
Challenges of Project Portfolio Management	0.89	4

## CHAPTER FOUR: RESULTS AND DISCUSSION

In this chapter, the data collected from the respondents in Ethio telecom through the developed questionnaire to find out the practices and challenges of PPM will be presented. The data will illustrate the results of the data collection which is based upon the research methodology discussed in Chapter 3. In addition, analysis is made and discussed on the basis of the result.

### 4.1. Overview

Questionnaires for 45 respondents were distributed and collected for this particular study. The collected data was reviewed and fed to IBM SPSS statistics version 26 for further analysis. Accordingly, results obtained from the analysis of the collected data are presented in this section. The data is categorized into 3 sub-sections. In the first part the demographic mix of the respondents for the questionnaire is presented. Respondents are characterized in terms of age group, gender, academic level, experience level and profession. The distribution of these characteristics is tabulated with frequency and percent. In the second part the data about practices of PPM of Ethio telecom obtained from the respondents is discussed. The inputs, tools and techniques in the process of project portfolio management are translated into a questionnaire form to serve as a measurement tools to study the practice of project portfolio management at Ethio telecom infrastructure projects. Hence, the questionnaire is organized into 4 sub sections. The first 6 questions are associated with “**Constitution/formation of portfolio**”, the next 6 questions are associated with “**Execution of project portfolio**”, the third 3 questions are associated with “**Update of portfolio**”, and the fourth 4 questions are associated with “**Challenges of Project Portfolio Management**”. The results of each sub-section are averaged so as to compare the six processes of project scope management.

### 4.2. Demographic mix of the respondents

This section summarizes the response rate along with demographic mix i.e. age, gender, educational background, experience level and the department that the respondents belong.

#### 4.2.1. Response rate

**Table 4. 2.1**Response rate

<b>Items</b>	<b>Response rate</b>	
	<b>Number</b>	<b>Percent</b>
Sample size	<b>45</b>	<b>100</b>

Respondents were characterized by age group, sex, academic level, experience level and profession. The frequency and percentage statistics of those characteristics of respondents is shown in the following table;

**Table 4. 2.2**Demographic characteristic of Respondents

<b>Description</b>		<b>Frequency</b>	<b>Percent</b>
<b>Age</b>	Below 25	3	6.67
	25-34	32	71.11
	35-44	5	11.11
	45-54	1	4.44
	Above 54	3	6.67
	<b>Total</b>	<b>45</b>	<b>100</b>

**Source:** survey result, 2022

As shown on the table above, out of 45 respondents, the majority (71.11 %) fall in the range of 25-34 years old, while 11.11% of the respondents were between 35 and 44 years old. 6.67 % of

the respondents were below 25 as well as similar number of respondents fall above 54 years. The rest 4.44% respondent falls under the age range of 45 – 54.

**Table 4. 2.3** Gender distribution of Respondents

Description		Frequency	Percent
<b>Gender</b>	Male	32	71.11
	Female	13	28.89
	<b>Total</b>	<b>45</b>	<b>100</b>

**Source:** survey result, 2022

The analytical result of the descriptive frequency for the gender mix of respondents is shown in the above table. Accordingly, 71.11 % of the respondents were males while 28.89% of them were found to be females.

**Table 4. 2.4** Educational background of Respondents

Description		Frequency	Percent
<b>Academic level</b>	Bachelor's Degree	32	71.11
	Masters Degree	10	22.22
	Diploma/TVET	3	6.67
	<b>Total</b>	<b>45</b>	<b>100</b>

**Source:** survey result, 2022

Regarding the academic level of respondents, the majority, which is 71.11% of the respondents, had a bachelor's degree, while 22.22% was a master's degree and the rest 6.67% was diploma/TVET.

**Table 4. 2.5** Experience level of Respondents

Description		Frequency	Percent
Experience	Intermediate(3-5 years)	9	20
	Senior(6-8 years)	26	57.78
	Managerial(9-11)	1	2.22
	Executive (>11 years)	9	20
	<b>Total</b>	<b>45</b>	<b>100</b>

Source: survey result, 2022

The work experience level of the respondents was also recorded and analyzed. The result of the analysis is presented on the above table. Accordingly, one of the respondents is in the managerial level, while the majorities (57.78%) of the respondents are in the senior level. Equal amounts of 20% of the respondents are in the intermediate and executive position.

**Table 4. 2.6** Department of Respondents

Description		Frequency	Percent
Department	Engineering	13	28.89
	Network project roll out	24	53.33
	Process management office	3	6.67
	Program management office	2	4.44
	Sourcing contract	3	6.67
	<b>Total</b>	<b>45</b>	<b>100</b>

Source: survey result, 2022

The frequency analysis of the responses shows that, out of the 45 respondents,53.33% are from network project roll out department, while,28.89% were from engineering. The rest 6.67% were

from process management office and 6.67% from sourcing contract. The rest 4.44% were found to work in the program management office.

### 4.3. Constitution/formation of Project portfolio

The success of achieving the strategic goals of an enterprise depends on the approach taken to manage the portfolio of projects. When implementing project portfolio management, each organization is faced with the problem of choosing an existing approach from known approaches or forming its own approach, with consideration to its specificities and environment.

Portfolios should be formed in an organization considering three major goals: 1) Maximize the share value, 2) create balance in terms of duration, risk, market, technology, product, and project type, and 3) meet the strategic objectives of the organization (Cooper et al., 1997a, 1997b).

Archer and Ghasemzadeh (2004, 1999, and 1998) suggested a framework for portfolio selection, which considers resource restrictions. The stepwise framework as suggested can be modified according to the needs of organizations. It means that some of the steps can be eliminated if they are not practicable in an organization.

Hence, the formation of project portfolio in Ethio telecom is measured through the questionnaire developed. The result of the SPSS analysis is depicted in the following table;

**Table 4.3.** Constitution/formation of Project portfolio

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Sufficient info.	45	1.00	5.00	3.2444	1.31694
Clear info.	45	1.00	5.00	3.5111	1.10005
Strong link	45	1.00	5.00	3.3111	1.14460
Clear structure	45	1.00	5.00	3.1778	1.26651
balance	45	1.00	5.00	3.4222	1.13796
Project portfolio	45	1.00	5.00	3.3111	1.01852
Valid N (listwise)	45				

Questions	Agreement level										Mean
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		
	N	%	N	%	N	%	N	%	N	%	
There is sufficient information and data about all the proposed, on-going and delayed projects	11	24.44	10	22.22	2	4.44	15	33.33	7	15.56	3.15
There is a clear information regarding how the resources of the company should be spread across projects	6	13.33	8	17.78	7	15.56	15	33.33	9	20.00	3.28
There is a strong link between the organisation strategy and portfolio strategy	12	26.67	8	11.11	7	15.56	14	31.11	4	8.89	2.77
There is clear structure for selecting project proposals for the portfolios	7	15.56	6	13.33	10	22.22	15	33.33	7	15.56	3.2
Balance between different project characteristics (risk, short and long term, radical and incremental innovation) considered when selecting projects?	7	15.56	6	11.11	13	28.89	12	26.67	7	15.56	3.13
Project portfolios are categorized as per their components (portfolio returns, attribution, stock or sector etc.)	5	11.11	8	17.78	15	33.33	10	22.22	7	15.56	3.13
<b>Grand Mean</b>											3.11

N: Frequency, %: Percent **Source:** survey result, 2022



Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Sufficient info.	45	1.00	5.00	3.2444	1.31694	-.600	.354	-1.035	.695
Clear info.	45	1.00	5.00	3.5111	1.10005	-.834	.354	.019	.695
Strong link	45	1.00	5.00	3.3111	1.14460	-1.033	.354	-.102	.695
Clear structure	45	1.00	5.00	3.1778	1.26651	-.490	.354	-.620	.695
balance	45	1.00	5.00	3.4222	1.13796	-.622	.354	-.113	.695
Project portfolio	45	1.00	5.00	3.3111	1.01852	-.809	.354	.459	.695
Valid N (listwise)	45								

According to the results of the questionnaire the majority 33.33% of the respondents agree with sufficiency of information and data about all proposed, on-going and delayed projects right in the stage of formation of portfolio. Similar number of 33.33% respondents has also agreed that there exists clear information regarding resource allocation across projects. Regarding the link between the organization's strategy and portfolio strategy, 31.11% of respondent agreed that the linkage is strong. The projects were also being confirmed to have a clear structure of selection at the proposal stage. Though the majority i.e. 28.89% of respondents was found to be neutral regarding consideration of balance between different project characteristics, yet, 26.67% of respondents have also replied that the balance between different project characteristics is considered when selecting projects and finally project 22.22% respondents have agreed that portfolios are categorized as per their components. The grand mean value which was calculated out of all responses resulted 3.11. This result is an indicator for an average distribution of information, link between the organisation strategy and portfolio strategy, structure for selecting project proposals for the portfolios and categorization of Project portfolio components during the formation of project portfolio.

#### 4.4. Execution of project portfolio

Project portfolio management is a philosophy with no single, universal methodology; however, all implementation approaches require buy-in from the entire organization, adherence to the chosen framework, and careful consideration of the company's goals and values.

Project portfolio management requires six steps to implement. First, defining the approach and securing executive support. Subsequently, bringing and communicating the plan to the team. Moreover, gathering portfolio data and prioritizing it to finally, monitor and manage the portfolio.

The Execution of project portfolio in Ethio telecom is measured through the questionnaire developed. The result of the SPSS analysis is depicted in the following table;

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Strategic direction	45	1.00	5.00	2.6222	1.33636
Performance of project	45	1.00	5.00	3.1556	1.50689
Project measurement	45	1.00	5.00	3.2444	1.26411
Resource sharing	45	1.00	5.00	3.1111	1.36885
Lesson learned	45	1.00	5.00	3.5333	1.01354
Project completion	45	1.00	5.00	3.2444	1.31694
Valid N (listwise)	45				

**Table 4.4** Execution of project portfolio

Questions	Agreement level										Mean
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		
	N	%	N	%	N	%	N	%	N	%	
Strategic direction of the program is clearly communicated among all project managers individuals and teams engaging in the project	19	42.22	1	2.22	7	15.56	14	31.11	4	8.89	3.31
Performance of each project is continuously monitored and compared with other projects in the program	2	4.44	3	6.67	4	8.89	25	55.56	11	24.44	2.11
Measurement of how close projects are performing with planned work schedule is always made	3	6.67	5	11.11	2	4.44	29	64.44	6	13.33	2.33
Resource sharing across projects is effectively practiced	3	6.67	3	6.67	6	13.33	23	51.11	10	22.22	2.24
Lessons learned in the implementation phase are recorded and implemented for next projects	3	6.67	3	6.67	6	13.33	25	55.56	8	17.78	2.28
Projects are considered as being completed when scope	4	8.89	3	6.67	5	11.11	27	60	6	13.33	2.37

items and requirements are met											
<b>Grand Mean</b>											2.44

**Source:** survey result, 2022

According to the results of the questionnaire majority of respondents i.e. 31.11% have agreed that strategic direction of the program is clearly communicated among all project managers, individuals and teams engaging in the project. The performance of each project is also being confirmed for continuous monitoring and comparison with other projects in the program. Moreover, 51.11% of respondents replied that resource sharing across projects is effectively practiced in the organization and lessons learned in the implementation phase are recorded for upcoming projects.

The grand mean of these measurements gives the mean of project portfolio execution status. As can be seen from the table the grand mean was calculated to be 2.44, showing that the agreement level of respondents concerning the issue was less than average. This implies that the execution process of portfolio management i.e. communication of the strategic direction, continues monitoring and comparison of projects in the program as well as the performance visa vis the schedule, resource sharing of projects is practiced in a poor way. Hence there is some gap in the execution of the process.

<b>Descriptive Statistics</b>									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Strategic direction	45	1.00	5.00	2.6222	1.33636	.085	.354	-1.308	.695
Performance of project	45	1.00	5.00	3.1556	1.50689	-.443	.354	-1.366	.695

Project measurement	45	1.00	5.00	3.2444	1.26411	-.485	.354	-1.095	.695
Resource sharing	45	1.00	5.00	3.1111	1.36885	-.432	.354	-1.067	.695
Lesson learned	45	1.00	5.00	3.5333	1.01354	-.849	.354	.844	.695
Project completion	45	1.00	5.00	3.2444	1.31694	-.662	.354	-.880	.695
Valid N (listwise)	45								

#### 4.5. Update of portfolio

Progress reports are crucial for ensuring goals are met. Progress reports help in monitoring and evaluating progress without taking up too much time.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Corrective measure	45	1.00	5.00	3.4889	1.35885
Update for lagging project	45	1.00	5.00	3.1111	1.33523
Project alignment	45	1.00	5.00	3.4222	1.13796
Valid N (listwise)	45				

Questions	Agreement level										Mean
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		
	N	%	N	%	N	%	N	%	N	%	
Corrective measures to restore projects performance alongside the original plan is made	4	8.89	3	6.67	4	8.89	24	53.33	10	22.22	3.73
Update for projects lagging from their time schedule is made	8	17.78	12	26.67	5	11.11	15	33.33	5	11.11	2.93
Alignment of projects with portfolio/program strategy is carefully evaluated and updated	8	17.78	8	17.78	6	13.33	13	28.89	10	22.22	3.2
<b>Grand Mean</b>											3.28

Based on the above finding, it has been confirmed that corrective measures to restore projects performance alongside the original plan is made. update for projects lagging from their time schedule is made. 28.89% of respondents also replied that alignment of projects with portfolio/program strategy is carefully evaluated and updated. The grand mean has fall on 3.28 neutral measures which is an indicator for an average response for progress reports and updates regarding managing the portfolios in the program.

**Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Difficulty in balancing	45	1.00	5.00	3.5778	1.13796	-.637	.354	-.109	.695
Difficulty in discriminating	45	1.00	5.00	3.1111	1.28315	-.149	.354	-1.011	.695
Absence of major revenue	45	1.00	5.00	3.2667	1.21356	-.542	.354	-.483	.695
training	45	1.00	5.00	3.2000	1.42382	-.320	.354	-1.285	.695
Valid N (listwise)	45								

**4.6. Challenges of Project Portfolio Management**

<b>Descriptive Statistics</b>						
	N	Minimum	Maximum	Mean	Std. Deviation	
Difficulty in balancing	45	1.00	5.00	3.5778	1.13796	
Difficulty in discriminating	45	1.00	5.00	3.1111	1.28315	
Absence of major revenue	45	1.00	5.00	3.2667	1.21356	
Training	45	1.00	5.00	3.2000	1.42382	
Valid N (listwise)	45					

<b>Questions</b>	<b>Agreement level</b>										<b>Mean</b>
	<b>Strongly Disagree</b>		<b>Disagree</b>		<b>Neutral</b>		<b>Agree</b>		<b>Strongly Agree</b>		
	N	%	N	%	N	%	N	%	N	%	
There is difficulty in balancing the resource needs of projects with resource availability	10	22.22	10	22.22	7	15.56	8	17.78	10	22.22	2.95

There happens difficulty discriminating between the go, kill and hold projects	7		10	22.2	6	13.3	10		12		3.22
		15.56		2		3		22.22		26.67	
There is an absence of major revenue generators and the kinds of projects that will yield significant technical market and financial breakthroughs	15		4		3		14		9		2.9
		33.33		8.89		6.67		31.11		20.00	
Training is provided regarding the currently implemented projects status	9		13	28.8	1		15		7		2.95
		20		9		2.22		33.33		15.56	
<b>Grand Mean</b>											<b>3.00</b>

The questions developed to understand the challenges that exist in the organisation showed that there exists a difficulty in balancing the resource needs of projects with resource availability, 26.67% difficulty in discriminating between the go, kill and hold projects, absence of major revenue generators and the kinds of projects that will yield significant technical market and financial breakthroughs exist in the organisation even if training is provided regarding currently implemented projects status.

As can be seen in the table above, the grand mean has resulted 3.00 which is a neutral response regarding the challenges that the organisation face with respect to project portfolio management.

#### **4.7. Project changes**

Using the questionnaire, respondents were also asked if they have experienced any change in the projects they have worked with. Hence, 40 (88.89%) replied that they have experienced changes in undergoing projects.



#### **4.8. PPM tools and methods used to analyse projects**

In the act of understanding the PPM tools and methods used to analyse projects in the organisation, majority (57.78%) replied that weighted ranking is being used while, 17.78% replied that scoring technique is being used.

#### **4.9. Summary of findings from interview**

In order to further understand the practices and challenges of portfolio management at Ethio telecom (interview guiding questions attached as annexure), an interview with the head of strategic support office has been made. Accordingly, regarding the questions asked to understand the resource allocation within the organization, it has been found out that budgets are allocated to different projects based on the balance and output gained after implementation reward and resource availability. The budgets are redirected in case of need change looking at the organization's workflow and stockholders' approval. Regarding allocating workforce across projects it has been explained that tentative schedules are made and redirected as per project manager's direction.

The explanation given regarding the questions for project selection indicates that projects are selected as per the market and industry trend as well as considering customers need. It has been further explained that risk, duration of the project, customer need and business area are amongst the criteria used at different decision points in selecting projects.

To further understand the dimensions used in prioritizing between projects, it has been explained that resource is the main criteria however, the consistency might vary. Moreover, it has been found out that re-prioritization of projects occur in the organization when risks occur.

In addition, it has been explained that there is no limit of running projects at a time. Yet the evaluation of projects is made every two or three months. In case of a change, a discussion among the project managers will be made and direction to the implementing team will be given. Communication is also made via phone, email or letter. To further understand the formalization of projects, a question enquiring if the organization does have project portfolio management office has been asked and it has been found out that there does not exist a particular office.

Regarding the obstacles, the main challenge in the projects management has been found out to be a centralized decision.

## **CHAPTER FIVE: FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

This chapter contains the findings of the study, conclusions drawn and recommendations. It also provides future research suggestions to be studied in relation to project portfolio management.

### **5.1. Summary of findings**

The major findings of the study are summarized as follows.

- Demographic characteristics of the respondents
- Most of the respondents working in the infrastructure expansion projects of Ethio telecom were in the age range of 25-34 while few of them are in the range of 35-44
- Regarding the gender mix 71.11% of the respondents were Male while the rest 28.89% were Female
- The academic qualification of the majority (71.11%) of the respondents were Bachelor's degree while there were also MA holders of 22.22% and Diploma/TVET graduates of 6.67 respondents
- Majority (57.78%) of the respondents were found to be seniors having experience of 6 – 8 years while there were also intermediate level workers having 3 – 5 years of experience and executives who have worked for more than 11 years
- Regarding the department where the respondents work in, the majorities i.e. 53.33% were from network project role out department and 28.89 were from engineering department. Equal amounts of 6.67% are from process management and sourcing contract management. The rest 4.44% fall under program management office.
- In the formation stage of portfolios the information exchange, resource sharing, strategy linkage and balancing of different project characteristics and categorization was found to be poor.
- The execution process of portfolio management i.e. communication of the strategic direction, continues monitoring and comparison of projects in the program as well as the performance visa vis the schedule, resource sharing of projects is practiced in a poor way.

- Though Measuring, evaluating and updating of projects is being made in the organization the decisions and actions made were found to be less responsive.
- Balancing the resource needs of projects with resource availability, as well as difficulty discriminating between the go, kill and hold projects are amongst the challenges in implementation of project portfolios.
- It was also found out that there exists a 88.89% change in undergoing projects that the respondents have worked with.
- weighted ranking is the PPM tool and method used to analyse projects in the organisation

## **5.2. Conclusion**

The statistical methods were of great help in getting findings of the study. The main purpose of the research was to assess the implementation of project portfolio management at Ethio telecom in the infrastructure expansion projects and provide an informative input for the improvement of project portfolio management through the identification of knowledge gaps by taking evidences from the employees. The project portfolio management elements that were included in this research were project formation stage, execution/implementation stage, the updating and the challenges. Hence, looking at the demographic characteristics, Most of the respondents working in the infrastructure expansion projects of Ethio telecom were in the age range of 25-34 while the department is dominated by male having Bachelor's degree and MA. It was also observed that Majority (57.78%) of the respondents were found to be seniors having experience of 6 – 8 years.

The results implied the gaps that occur from the formation stage does impact the implementation and ultimately create a challenge in the management of the projects.

The primary deliverable of the selection phase is the optimal portfolio. This does not mean that the projects with the highest relative strategic benefit are selected in turn until funding is exhausted. Rather, the portfolio selected contains the combination of projects that provide maximum total relative benefit subject to the specified budget and organizational constraints.

Many organizations use ranking and scoring models. But rankings are ordinal numbers and thus indicate only order. The Value/Cost Performance metrics is one of the many models which are certainly one of the key indicators that are used in project selection. However, it has been found out that the PPM tools and methods used to analyse projects in Ethio telecom, is weighted ranking.

The execution process of portfolio management i.e. communication of the strategic direction, continues monitoring and comparison of projects in the program as well as the performance vis a vis the schedule, resource sharing of projects was also found to be practiced in a poor way. The finding and discussion result showed that project team not has enough information about the progress and performance of the project. The information gathered via key informants Interview also supports this result due to lack of access to information, management support and external factors implementation performance not exceeded the target line.

With regard to measuring Project progress updates, neutral result which is an indicator for an average response for managing the portfolios in the program has been found out. However, when there is a plan, or change in plan, it needs to be kept under control and shared among collaborators.

Based on the information gathered from respondents (questionnaire and interview results) lack of well-developed and organized team, communication gaps, difficulty in balancing resource needs, discriminating between go, kill and hold projects were amongst the challenges that were found in the organization's infrastructure expansion program.

As a final point, this study is not conclusive, regarding the whole practice and challenges of Ethio telecom's infrastructure expansion program, further related research work that covers a wider scope appears to be significant.

### 5.3. Recommendation

This research has studied the project portfolio management practice of Ethio telecom in developing and implementing infrastructure expansion projects. It also showed the various challenges encountered in managing the projects. In light of the findings and conclusions made above, the following possible conclusions are suggested as being valuable to Ethio telecom.

- ✓ During the interview, it was found out that the organization does not have a dedicated PPM office that does have specific responsible person. Hence, establishment of well-organized PMO enables to handle different issue of PPM.
- ✓ Even though the lessons learned in the implementation phase were reported to be applied in the next projects, projects were repeatedly found out to have a challenge of resource balancing. Hence, the communication needs to be fixed along with practical implementation.
- ✓ During the discussion it has been found out that re-prioritization of projects occur in the organization when risks occur. However, the organization needs to foresee the risks along with forming the projects rather that re-prioritizing when the risks occur.
- ✓ It has been explained that there is no limit of running projects at a time. Yet the evaluation of projects is made every two or three months. Yet, the interval should consider the type of project implemented.
- ✓ In addition, the fact that decisions are made centrally, does have an impact in being responsive and implementing changes in the projects to achieve the goals of the projects.
- ✓ In order to practice PPM in a better way, an organization with a shortage of people who are qualified to manage project portfolios should fill this gap. As cited by Choudhuri (2015) every stakeholder of PPM should understand what's happening and what is expected of each individual. Stakeholders should be trained every now about PPM to value it. Making this a regular task will help an organization to be achieving what is intended to be achieving by practicing PPM. Therefore, an organization should take a responsibility for the capability of its human resource in order to integrate the knowledge

and value of PPM throughout the organization so that it can drive to its strategies effectively and efficiently.

#### **5.4. Future research**

With this fundamental information, future researchers can continue assessing the causes of the problems and the various effects of those problems. Moreover, this thesis has focused on the Formation, implementation, progress updates and challenges of PPM in general. Alternatively, future research might consider focusing more on aspects such as structure, culture and values. It is also possible to extend the research to other project management knowledge areas.

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- process management office
- network project role out department
- engineering department
- sourcing contract management

**Part II: Read the following statements thoroughly and show the extent to which you agree with it by marking a right (✓) sign.**

Scale your agreement level through the following 5 scale measurement from strongly disagree to Strongly agree

NB: -

1. SD = Strongly disagree
2. D = disagree
3. N = Neutral
4. A = Agree
5. SA = Strongly Agree

**2.1- Constitution/formation of portfolio**

S.No	Measurement parameters	Scale				
		1	2	3	4	5
1	There is sufficient information and data about all the proposed, on-going and delayed projects					
2	There is a clear information regarding how the resources of the company should be spread across projects					
3	There is a strong link between the organisation strategy and portfolio strategy					
4	There is clear structure for selecting project proposals for the portfolios					
5	balance between different project characteristics (risk, short and long term, radical and incremental innovation) considered when					

	selecting projects?					
6	Project portfolios are categorized as per their components (portfolio returns, attribution, stock or sector etc.)					

## 2.2 Execution of project portfolio

S.No.	Measurement parameters	Scale				
		1	2	3	4	5
1	Strategic direction of the program is clearly communicated among all project managers individuals and teams engaging in the project					
2	Performance of each project is continuously monitored and compared with other projects in the program					
3	Measurement of how close projects are performing with planned work schedule is always made					
4	Resource sharing across projects is effectively practiced					
5	Lessons learned in the implementation phase are recorded and implemented for next projects					
6	Projects are considered as being completed when scope items and requirements are met					

## 2.3 Update of portfolio

S.No.	Measurement parameters	Scale				
		1	2	3	4	5
1	Corrective measures to restore projects performance alongside the original plan is made					
2	Update for projects lagging from their time schedule is made					
3	Alignment of projects with portfolio/program strategy is carefully evaluated and updated					

## 2.4 Challenges of Project Portfolio Management

S.No.	Measurement parameters	Scale				
		1	2	3	4	5
1	There is difficulty balancing the resource needs of projects with resource availability					
2	There happens difficulty discriminating between the Go, Kill and Hold projects					
3	There is an absence of major revenue generators and the kinds of projects that will yield significant technical, market and financial breakthroughs.					
4	Training is provided regarding the currently implemented projects status					

3- Have you ever experienced any change on your project? (yes, no)

4- Which PPM tools and methods are used to analyze projects?

Weighted ranking

Expert judgment

Scoring technique

Other -----

# **Appendix II St. Mary's University**

## **Business Faculty**

### **Post Graduate Studies**

#### **Department of Project Management**

##### **Interview guide**

1. Resource allocation
  - a. How are budgets allocated to different projects?
  - b. How are the budgets redirected in case of needed change?
  - c. How is the workforce allocated across projects?
  - d. How is the workforce redirected in case of needed change?
2. Selection
  - a. What criteria are used for project selection?
  - b. What are the selection criteria at the different decision points?
  - c. Is balance between different project characteristics (risk, short and long term, radical and incremental innovation) considered when selecting projects?
3. Prioritization
  - a. What dimensions are used to prioritize between projects? Why?
  - b. Are these dimensions consistent across the strategic buckets?
  - c. Is balance between different project characteristics (risk, short and long term, radical and incremental innovation) considered when prioritizing projects?
  - d. Do re-prioritizations occur? When, why and how?
4. Strategic alignment
  - a. How is strategic alignment ensured?
  - b. How does strategic directions affect the project portfolio?
5. Number of projects
  - a. Is there a limit to how many projects you run at any given time? Is irregularly evaluated?
  - b. What happens if it were to change?
  - c. What tools are used to visualize portfolio content?
  - d. Are capacity analyses performed? Is it known how many resources that is available?
  - e. What channels are used for communicating PPM information?

6. Organizational learning
  - a. Are there any initiatives in place to improve the PPM?
7. Formalization
  - a. Is formalization something that is considered in the PPM?
  - b. Does Ethio Telecom have a PPMO (Project Portfolio Management Office)? Is there a need for one?
8. What are the main obstacles in the PPM to respond to changes in the environment?