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PROJECT TIME AND COST MANAGEMENT PRACTICES AND ITS CHALLENGES IN ETHIO-TELECOM EXPANSION PROJECT

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A RESEARCH PROJECT SUBMITTED TO ADDIS ABABA UNIVERISITY, SCHOOL OF COMMERCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF ARTS DEGREE IN PROJECT MANAGEMENT

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Declaration

I hereby declare that a project work named - “PROJECT TIME AND COST MANAGEMENT PRACTICES AND ITS CHALLENGES IN ETHIO-TELECOM EXPANSION PROJECT” is original work of my own. It had not been presented for a partial fulfillment for any educational qualification at this university or any other and in any projects by any means, and all the resources materials used for this thesis had been accordingly acknowledged.

_____ _____

Shimelis Dessalegn **Date**

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This is to certify that the project work prepared by Shimelis Dessalegn, entitled Project Time and Cost Management Practices and Its Challenges in Ethio-Telecom Expansion Project submitted in partial fulfillment of the requirements for the degree of Degree of Master of Arts complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Chair of Department or Graduate Program Coordinator

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ABBREVIATIONS

4G - Fourth Generation

ETC - Ethiopian Telecommunication Corporation

FDRE - Federal democratic republic of Ethiopia

GTP - Growth Transformation Plan

ICT - Information Communication Technology

IPED - Infrastructure Power and Environment Department

NGN - Next Generation Network

PMBOK - Project management body of knowledge

PMI - Project Management Institute

SPSS - Statistical package for the social sciences

TEP - Telecom expansion project

Abstract

The delivery of projects in Ethiopia is plagued by time and cost overruns, which turns what should have been successful projects into those incurring additional costs, or money-losing ventures; as well as leading to various other unexpected negative effects. The objective of the study was to assess the project time and cost management practice in Ethio-Telecom expansion. This descriptive research study involves 153 employee of the organization at Ethio-Telecom head office in Network and IPED department. Structured questionnaire were prepared by the researchers using related literature and adopted instrument as data collection instrument. Both descriptive and inferential statistics were used as data analysis method. Regarding the practice of project time and cost management, majority of participants reported high rate of project time management and low rate of project cost management. According to the result, the highly challenging factors were Economic and Finance related factors, and Political related factors. And Managerial related factors and Human related factors were less challenging factors for the practice of practice of project time and cost management. The practice of project time management in Ethio-Telecom expansion projects were managed well to the timely completion of the project. However, project cost management processes was practiced at low level of rate.

Keyword: Project Time Management, Project cost Management, Ethio-Telecom

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Ethio-Telecom, is an integrated telecommunications services provider in Ethiopia, providing internet and telephone services. According to the National Bank of Ethiopia's annual report (2015/16), there were 46 million mobile phone users, 1.1 million fixed lines, and 8.4 million General Packet Radio Service (GPRS) subscribers in a country of over 95 million people. High-quality telecommunications may have a more significant impact on growth than other infrastructure inputs such as education, energy, and highways (Haftom, 2019).

Project management processes are very helpful to the telecom companies like Ethio-Telecom, this is because it helps the company to focus on resource and time while moving its business forward strategically. Both success and failure have something to teach. Project organization can take lesson from its success to repeat the same, and from failures to avoid it. When we fail to learn from our own mistakes or those of others, we tend to repeat the mistakes. Following the conceptualization and planning phases of project management life cycle, the implementation (execution) phase is carried out to put the project plan into action and deliver the outputs in which most of the project's time, cost and resources are spent (Atkinson, 1999).

Attributes of a successful construction project include completion on time, within budget, as per specifications and as per the satisfaction of its stakeholders. However, delays and cost overruns are commonly reported problems in the execution of public sector projects. Delays in public sector projects result in late completion of projects, additional costs, claims and disputes, disruption to public availability. In addition, public sector projects are often considered a measure of political performance and suffer immense political influence regarding their completion within challenging budget and time constraints. Therefore, any delays and cost overruns in public sector projects not only result in poor project performance but also summon criticism of related public office bearers for misusing taxpayer money (Idrees and Shafiq, 2021).

The project management practices in Africa and in Ethiopia in particular are poor. The management practice in Ethiopia is even the second (after Mozambique) from the last in management practices scores across studied countries in Africa (Bloom, et al., 2014; Ayalew, et al., 2016). This indicates there are poor project implementation practices in all sectors especially in project time management and cost management practice since the mainly reported challenges related with project success are delay and cost overrun (Negalign, 2020; Medhin, 2019; Tegenu, 2018). Through each project undertaking there are lessons to capture, verify, store and discriminate, if it aims to improve in its operations and avoid its past mistake. This study focuses on the assessment of project time and cost management in Ethio-Telecom Expansion project to identify the gap and improve on the implementation of upcoming similar projects.

1.2 Statement of the Problem

Ethio-telecom is involved in diverse projects, where most practical knowledges are generated in process of project planning, execution and evaluation and closure. Preoccupation in the project process and failing to capture proper management of time, quality and cost from each key millstone is a mistake observed in Ethio-telecom. This puts the project undertaken by the company into vicious circle of inventing new wills and making same project management mistake. In developing countries like Ethiopia, the failure of projects such as road construction, dams, plants, pipes, industries, theatres, e-government services, telecommunication, ICT and many others, is very high because of some setbacks such as abandonment, cost deviation, schedule deviation, scope deviation and stakeholders dissatisfaction are among others. Like elsewhere in the world, African projects are often late and over budget; but, their project failure rate seems to be in excess of 50% (Ika & Saint-Macary, 2014).

The Ethio-Telecom expansion project faced up with schedule and cost variances that affected the overall performance of the project. This indicates there are some problems in time and cost management during the project implementation that influences the time and cost management performance of the project. As telecom technologies are changing at breakneck speed, it is necessary to assess time and cost management practices on the actual implementation of the project and the overall quality of the project output. In addition, the other project management knowledge areas such as scope, quality, integration, resource, stakeholder, communication and

risk management has to be assessed. It is also important to assess other practices including top management support, people readiness, process readiness and system readiness in the project implementation. The poor project performance in Ethio-Telecom affects the goals and objectives of the project as well as the company in delivering quality of service, satisfying customer demands and achieving the government plan in the industry (Medhin, 2019). The time, cost and quality variances resulted not only from poor performances of time, cost and quality practices; but also, because of poor performance in other related practices such as the 10 management knowledge area, management support and readiness related practices in general (Tegenu, 2018).

The purpose of the assessment is to explore and gain a clear understanding of the current project management practices specifically in terms of time and cost of the project, since a delay in completion of project time, additional cost incurred above allocated budget, poor project implementation performance, low quality in deployment and installation of infrastructure, product and technology are observed for network, civil and power equipment works, and how to improve the problems observed, so as to increase upcoming similar project performance and organizations project capability.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study will be to assess the project time and cost management practice and its challenges in Ethio-Telecom expansion.

1.3.2. Specific Objectives

The specific objectives of the study include the following:

- To identify project time management practice in Ethio-Telecom expansion project.
- To examine project cost management practice in Ethio-Telecom expansion project.
- To investigate the major challenges that influence project time and cost management practice level in Ethio-Telecom expansion project.

1.4 Research Questions

The aim of these basic research questions is to critically see Ethio-Telecom expansion project implementation in regard to time and cost management. These questions are:

- What is the practice of project time management in Ethio-Telecom expansion project?
- What is the practice of project cost management in Ethio-Telecom expansion project?
- What are the major challenges that influence project time and cost management practice level in Ethio-Telecom expansion project?

1.5 Significance of the Study

Every project effort has many valuable lessons to be learned if knowledge is properly acquired, validated, recorded and disseminated for implementation. These lessons can be used to make process changes, run projects more efficiently, and work better as a project team. Companies can save money by not reinventing the wheel every time a new project is started (Newell, 2004). Regardless of whether the lessons learned from the positive or negative experience of a past project, the project manager can learn from the past project and carry out the past success while avoiding the past failure, thereby the cost of the project can be reduced (Parnell et al., 2005).

The results of this study will benefit a variety of stakeholders, including Ethiopian state telecommunications, governments, local offices, project-oriented organizations in general, and other researchers. Therefore, the results of the survey will benefit Ethiopia's state-owned telecommunications to improve project implementation in terms of time and cost. Relevant government agencies know how the performance of the project is in line with the sector's intended mission and government objectives. In the future, researchers will be able to learn more about the company's project management based on the results of this research. This allows Ethiotelecom to improve its approach to similar upcoming projects and meet the time, cost, and quality requirements of the project.

1.6 Scope of the Study

The research is geographically limited to the head office of Ethio-telecom Addis Ababa city and the study will be done on one of the projects under Wireless UMTS & LTE New Build which is one of the 10 programs under Ethio-telecom planned under the three-year strategic planning. The study may be delimited to assessing only time management and cost management on project performance in Ethio-telecom's expansion project. But, projects in Ethio-telecom are affected by different project knowledge areas such as scope, integration, resource, stakeholder, communication, and risk management has to be assessed.

1.7 Limitation of Study

The lack of previous study in Ethio-telecom project management practices may hinder the comparison of the results with those studies. Access to some project documents especially cost-related data may be difficult to get due to confidentiality and audit investigation purposes. As the sample is considering only respondents from head office in Addis Ababa, the results might not be generalizable beyond the specific population from which the sample is drawn. Moreover, the use of questionnaires can also cause bias or incorrect results. So, the researcher provides a brief message for the respondents about the purpose of the study and includes this also in the questionnaire.

1.8 Definition of Key Terms

Project implementation: is the Process whereby project inputs are converted to project outputs.

Project management: is an application of knowledge, skills, tools and techniques to project activities to meet project requirements (PMI, 2013).

Project Cost management: is concerned with the process of planning and controlling the budget of a project or business (PMI, 2013).

Project Time Management: is concerned with the processes required to manage the timely completion of the project (PMI, 2013).

1.9 Organization of the Study

The study focuses on the assessment of project time and cost management in the Ethio-telecom Expansion Project. The paper was organized into five chapters. The first chapter constitutes with introduction part of the study providing details related to the background of the study, statement of the problem, research questions, objectives of the study, significance of the study, the scope of the study, limitation of the study, definitions of terms and organization of the study. Chapter two deals with a review of related literature with regard to the study's selected topics and the third chapter contain the methodology and description of the study area. Chapter four presents data analysis, findings, and discussions of the data that were gathered. Chapter five deals with the conclusions and recommendations part of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter aims to provide a review of related literature. In line with the objectives of this study, this chapter covers concepts related to project time and cost management. In addition to these the findings of previous research from different authors as well as the theoretical framework of this study is also included. The chapter begins by presenting literatures about theoretical review. The researcher has also tried to review various empirical studies that are related to this research topic. Finally, the research model; i.e. the conceptual framework was plotted in order to put a clear picture about the variables in the research area.

2.1 Theoretical Review

2.1.1 Concepts of Projects

According to Krzner (2002) projects are a complex of economic activities in which scarce resources are committed with expectation of benefits that exceed the cost of committed resources. They are expected to drive benefits and desirable if their benefits are greater than the cost incurred on them. They are well organized forms of activities carried out to achieve defined goals, non- repetitive, and time bound. Different institutions and organizations apply different approaches of project lifecycle.

Project management can be defined as: the application and integration of modern management and project management knowledge, skills, tools and techniques to the overall planning, directing , coordinating ,monitoring and control of all dimensions of a project from its inception to completion ,and the motivation of all those involved to produce the product ,service or result of the project on time, within authorized cost, and to the required quality and requirement, and to the satisfaction of participants. As Krezner (2002:5) noted project management is an exciting managerial activity which involves an art of creating the illusion that any outcome is the result of a series of predetermined, deliberate act when, in fact it was dumb luck, in which all works all works has interdependence and inter-relationship with others.

Krezner (2002) & Keeling (2000) state that the aim and objective of the project management are to achieve timely completion of the project within the allocated resources, time, specified quality and targeted outcomes for the benefit of the society. As Waldt (2008), the establishment of project management as a profession has been a major step in its global recognition and acceptance. In 1984, the Project Management Institute (PMI) administered the first Project Management Professional (PMP) certification examination, and in 1996, the Project Management Body of Knowledge (known as the PMBOK guide) was published.

2.1.2 Understanding Project Life Cycle

To have repeatable project success and achieve the desired objective of a project a basic understanding of the project life cycle is very crucial. When you take the time to establish a clear and consistent vision, imagining who is involved in bringing the project to life and securing the resources needed becomes a mandate, and then gives the project a robust start that sets the stage for everything that comes next.

A project is a process of working to achieve a certain goal, it passes through several distinct phases or stages which is called the project life cycle. It is also known as stages in project development. PLC demonstrates the logical framework for managing a project. It provides a guide to developing our plans, deciding when to allocate resources, and evaluating the progress of the project. Since specific deliverables and activities of a project can vary throughout the project it is important to map the life cycle and cost during the time span of the project (Atkinson, 1999).

The project life cycle includes the steps required to successfully manage a project. There are 5 phases to the project life cycle (also called the 5 process groups)—initiating, planning, executing, monitoring/controlling, and closing. Each of these project phases represents a group of interrelated processes that must be undertaken and are separate divisions to manage the deliverables as well as enable the project manager to classify the workload into more manageable components. The boundaries may or may not be integrated and require different skills and control and monitoring mechanisms to supervise the overall project stages (PMI, 2008).

Initiating phase: This project life cycle consists of two separate processes the project charter consists of the key component that includes business case, project scope, deliverables, objectives, resources needed, milestone plan and timelines, Cost estimate, risks and issues, and dependencies. And stakeholder registers that secure approvals from an authorizing stakeholder. At this phase, those processes are performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase (PMI, 2013).

Planning phase: This process group is where the project infrastructure that will enable you to achieve your goal within your predetermined time and budget constraints is constructed, initial with a project management plan, project scope, work breakdown structure, and risk analyses and risk responses (PMI, 2013). Definition of the work requirements, the definition of the quality and quantity of work, definition of the resources needed, scheduling of the activities, and evaluation of the various risks are activities included in this group according to Kerzner (2009).

Executing phase: This is where most of the budget is allocated and most of the project deliverables are produced. That is when the project plan is put into action that might take weeks, months, or even years. This phase includes team development, stakeholder engagement, and quality assurance activities. This process group involves organizing people and resources, handling stakeholder expectations, as well as assimilating and performing the activities of the project in accordance with the project management plan (PMI, 2013).

Monitoring and controlling phase: This phase involves comparing the actual progress of the project against the plan and taking corrective action wherever necessary. This process group consists of processes required to track, analyze, and orchestrate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes (PMI, 2013).

Closing phase: This stage is the final phase of the project life cycle that includes one solitary process that enables to simply check the project is done. It is important to formally close the project, secure the sign-off, and get approval from the customer, stakeholders, and project sponsors. This phase might include project delivery, hosting a review meeting, compiling project records, celebrating or acknowledging the achievement, and formally termination of the project team.

2.1.3 Project Management Knowledge areas

According to the PMI (2013), PMBOK Guide, the knowledge areas of project management were identified by project management defined by knowledge requirements and described in terms of component processes, practices, inputs, outputs, tools, and techniques. According to PMI, there are 10 general project management knowledge areas: project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communications management, project risk management, and project procurement management, and project stakeholder management. Based on the study`s objective, the review only focuses on project time and cost management.

I. Project Time Management

According to the PMBOK Guide, to define the success of a project, you often need to complete the project on time. The importance of ensuring the work within an individual task progresses efficiently is a critical message in project time management. The final measure is the success of the project based on effective control of time management processes, tools, and practices. Creating and maintaining a realistic project schedule and project plan is the project manager's primary responsibility for completing the project on time. Therefore, PMI (2013) Project time Management contains the processes needed to manage the timely completion of a project..

1. ***Plan schedule management:*** The process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule.
2. ***Define activities:*** The process of identifying and documenting the specific actions to be performed to produce the project deliverables.
3. ***Sequence activities:*** The process of identifying and documenting relationships among the project activities.
4. ***Estimate activity resources:*** The process of estimating the type and quantities of material, human resources, equipment, or supplies required to perform each activity.
5. ***Estimate activity durations:*** The process of estimating the number of work periods needed to complete individual activities with estimated resources.

6. ***Develop schedule:*** The process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model.
7. ***Control schedule:*** The process of monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan.

II. Project Cost Management

The project management body of knowledge guide (PMBOK) defines cost estimates as a developed approximation of the monetary resources needed to complete project activities. The accuracy of cost estimates from the project planning stage to bid calculation can affect the success or failure of an ICT project. The project budgeting process aggregates the estimated costs of individual activities or work packages to establish an approved cost base (PMI, 2008). According to PMI (2013), cost management deals with the process of planning and managing a project or company budget.

1. ***Plan cost management:*** The process that establishes the policies, procedures, and documentation for planning, managing, expending, and controlling project costs.
2. ***Estimate costs:*** The process of developing an approximation of the monetary resources needed to complete project activities.
3. **Determine budget:** The process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.
4. ***Control costs:*** The process of monitoring the status of the project to update the project costs and managing changes to the cost baseline.

2.1.3 Concepts of Project Success

According to Pinto and Slevin (1987), as a project comprise a defined time frame to completion, a limited budget, and a specified set of performance characteristics, a project is generally considered to be successfully implemented if it Comes in on-schedule (time criterion); Comes in on-budget (monetary criterion); achieves basically all the goals originally set for it (effectiveness criterion) and is accepted and used by the clients for whom the project is intended (client satisfaction criterion).

Successfully accomplishing a project requires the effective management of various constrains and therefore measuring project success is a complex task as success can intangible and consensus hardly exists. The success of a project and the influencing factors depend on the nature, the type of activities and the project environment. Therefore, factors affecting success change from project to project (Muller and Turner 2007).

Pinto and Slevin (1987), identified 10 project success factors which are defined below.

1. Project mission-Initial clearly defined goals and general directions.
2. Top management Support-Willingness of top management to provide the necessary resources and authority power for project success.
3. Project Schedule/Plan-A detailed specification of the individual actions steps for project implementation.
4. Client Consultation-Communication, consultation, and active listening to all impacted parties.
5. Personnel-Recruitment, selection, and training of the necessary personnel for the project team.
6. Technical Tasks-Availability of the required technology and expertise to accomplish the specific technical action steps.
7. Client Acceptance-The act of "selling" the final project to its ultimate intended users.
8. Monitoring and Feedback-Timely provision of comprehensive control information at each stage in the implementation process.
9. Communication-The provision of an appropriate network and necessary data to all key actors in the project implementation.
10. Troubleshooting-Ability to handle unexpected crises and deviations from plan.

2.1.5 Challenges with project Implementation

Both internal organization factors affecting strategy implementation of project and, also the external organization factors affecting strategy implementation of project have determine the

success of project management. The internal factors are: organizational structure; administrative systems and leadership style while the external factors are related the government factors (legality, pricing of materials and others). External forces refer to the changes of environmental uncertainties outside of the organization. Specifications of environmental context variables are political, economic, technological, governmental environmental and natural disasters. For the external factors forcing change, projects have little or no control over the cause it is beyond the control of the organization (Mellert et al., 2015).

I. External factors that influence project implementation

Regulation and policy: UNICEF report state that the main challenge in project implementation practice in developing countries is national policy and priority framework of objective make the project impact low to the beneficiary and demotivate the donor of the project (UNICEF, 1984). *Governmental influence:* Difficulty getting support and full cooperation from government agencies in building awareness and community partnerships project implementation delay by not getting local administration approval this reduce the project significance in timely manner.

II. Internal factors that influence project implementation

Organizational structure: the project implementation highly influenced by organizational structure and less corporation within the higher manager influence the project implementation practice.

Human resource management: Recruitment and Retention of Competent Staff, Inadequate Human Resource Policies or Procedures, Lack of capacity to manage a diversity of work Force, Mismatching of employee qualifications with Jobs or Positions, Inadequate HR Management Skills among Supervisors, Organization program strategies affect staffing are the major factors that affect project implementation.

Project manager and team competency: that Employee capacity and competency is one of the challenge in projects implementation. Even though the level of knowledge and experience of a team influence project implementation there is deficiency of employee with level of experience.

Fund and financial situation: The financial situations of the local NGOs are also a big challenge because of the fund provider (donor) is unstable, the management of the fund collected from the donor and allocation of the fund.

2.2 Empirical Review

2.2.1 Project Time and Cost Management Practice

The Ibbs and Kwak study employed the Berkeley PM Process Maturity Model that is an adaptation of the Integrated Project Systems assessment tool. The assessment sample comprised 38 companies, each of which finalized the survey assessment tool. This study targeted four industries: engineering and construction, telecommunications, information systems, and hi-tech manufacturing. And the scholars revel the overall project management maturity of the 38 companies under the study was 3.26 (of a possible 5), indicating there is a considerable opportunity to improve project management practices in each of the four industries studied. The researchers reported that engineering and construction (3.36), hi-tech manufacturing (3.34), and telecommunications (3.30) demonstrated relatively high project management maturity compared with information systems (3.06). Also, the researchers completed cross-industry evaluations at one level of decomposition below aggregate project maturity.

Research was conducted by Tegenu (2018) on assessment of the practice of project management knowledge areas and challenges in implementing ICT projects in Ethio-Telecom. The finding revealed that project scope management, project time management, project quality management, project risk management, project communication and project stakeholders knowledge area are highly practiced during the implementation of the ICT projects whereas project integration management, project cost management and project procurement management knowledge areas are practiced at low level lack of relevant training and procurement delay were the main challenges during the implementation of the ICT projects. The researcher recommended that the organization should give special attention to the least practiced knowledge area i.e. project integration management, project cost management, project human resource management and project procurement management knowledge areas.

According to a research conducted by Hadgu (2018) on the level of project management maturity in Ethio-Telecom the case of Telecom Expansion Projects through assessing the ten PMBOK's project management knowledge areas found out the least and highly matured knowledge areas. The most mature knowledge areas are project procurement management, project risk management and Human resource knowledge areas approximately leveled at maturity level 3 and the least matured knowledge areas are the project time management and project cost management approximately leveled at maturity level 2. The findings suggests that basic project processes exist in the company but are not considered an organizational standard and management supports the implementation of projects management but understanding and involvement is not consistent / applied to all projects.

Abadir (2011) set out to research on the maturity of project management in the construction industry in developing countries with a bias towards Ethiopia, whose aim was to identify problem areas to be prioritized and propose a framework for improvement efforts. He used primary data collection method to assess the maturity model that could be utilized for the assessment purpose. Further, he also studied to see if there is a difference in PM maturity, between different categories of contractors except for Material and Equipment Management knowledge areas. The research confirmed that knowledge areas of material, procurement; cost, time, financial and human resource management had shown comparatively higher maturity, compared with other PM knowledge areas. The research also showed on average the contractor's PM process maturity is at an informal level and, their PM practice maturity is at a basic level. This result meant on average the contractors performed the knowledge areas informally without following structured approach or guidelines, relying solely on the skills and experience of the project manager or project team; and on average, the contractors were performing only the basic practices in each knowledge area.

2.2.2 Challenges of Project Time and Cost Management Practice

The success of the project depends on various internal and external factors in the organization. A study that investigates delay and cost overrun factors within the context of public sector projects in Pakistan showed that Project delays and cost overrun are common features in public sector construction projects. The study identifies 48 potential factors from existing literature and semi-

structured interviews were used to refine the identified factors into ten categories. A questionnaire survey was used to establish a hierarchy of factors using descriptive statistics. The results showed that the major causes of time overruns in public projects were (1) legal issues, such as court stay orders, land acquisition, relocation of public facilities; (2) technical errors leading to low-quality drawings, rework, and errors at bidding stage; and (3) Poor project management. The results of this research show that the most critical reasons for delays in public sector projects are related to issues and problems beyond the control of a contractor and are more related to government institutions involved in planning and managing public sector projects. Nine out of top ten factors in the lists are directly under the control of government organizations, which are contractually the project owner's responsibility (Idrees and Shafiq, 2021).

Zadjali, and colleagues presented an empirical study investigating the factors causing project cost overrun in telecommunications projects in Oman. Using a survey form, data were collected from 44 project engineers and managers at client and contracting companies. The survey results showed that there are 14 major factors causing project cost overrun. The most important factors causing project cost overrun as perceived by contractors only were:

- Improper cost estimation at the beginning of the project;
- Unavailability of the right resources (expertise) to do project cost estimation;
- Changes in the scope of the project by the stakeholders and end users;
- Customer requirements and project scope not being clear;
- Poor user input and requirements gathering;
- The use of the low bid procurement method;
- Lengthy tendering process; and
- Unavailability of change control process.

None of these factors is unique to telecommunications projects. i.e., they could affect any types of projects. However, lengthy tendering process has not be identified as a major cause of project cost overrun in any of the previous studies. Moreover, this study investigates the association between company size in terms of number of employees and causes of project cost overrun. The results show that there is no strong evidence to suggest that the causes of cost overrun differ significantly according to company size (Zadjali, Bashir, & Maqrashi, 2016).

Negalign (2020) conduct a study on determinants of cost overrun on public construction project: A case study in Gamo Zone Arba Minch Town. The results of the study were indicated that socio political, economic, and managerial, timeliness of payment and financial factor and construction techniques and design changes were identified as causes of cost overrun in public construction project. Negalign (2020) recommended that the concerned body should be provide a good planning and scheduling are continuing process during construction and match with the resources and time to develop the work to avoid cost overrun. The concerned body should revise the bid document such as technical specification during bill of quantities and the design of the project in a good way.

A research conducted by Medhin (2019) in the project management practices of telecom expansion project and their effect on project performance in Ethio-telecom identified various factor that influence the project performance. Lack identifying possible risks and detail scope statement preparation at planning phase, lack of timely escalation of problems impeding project team's performance to execute the project and regularly updating project schedules at execution phase, lack of proper identification and documenting of lessons learned at closing phase were found the major challenges. With regard to implementation challenges, Lack of proper coordination with stakeholders, Lack of proper fund management in the project, Government Policy challenges, Project communication and integration management problems were identified as highly challenging factors.

2.3 Conceptual Framework

The framework for this study was developed based on approaches and concepts identified in the literature review. The frame work shows that major factors that influence project time and cost management practice level.

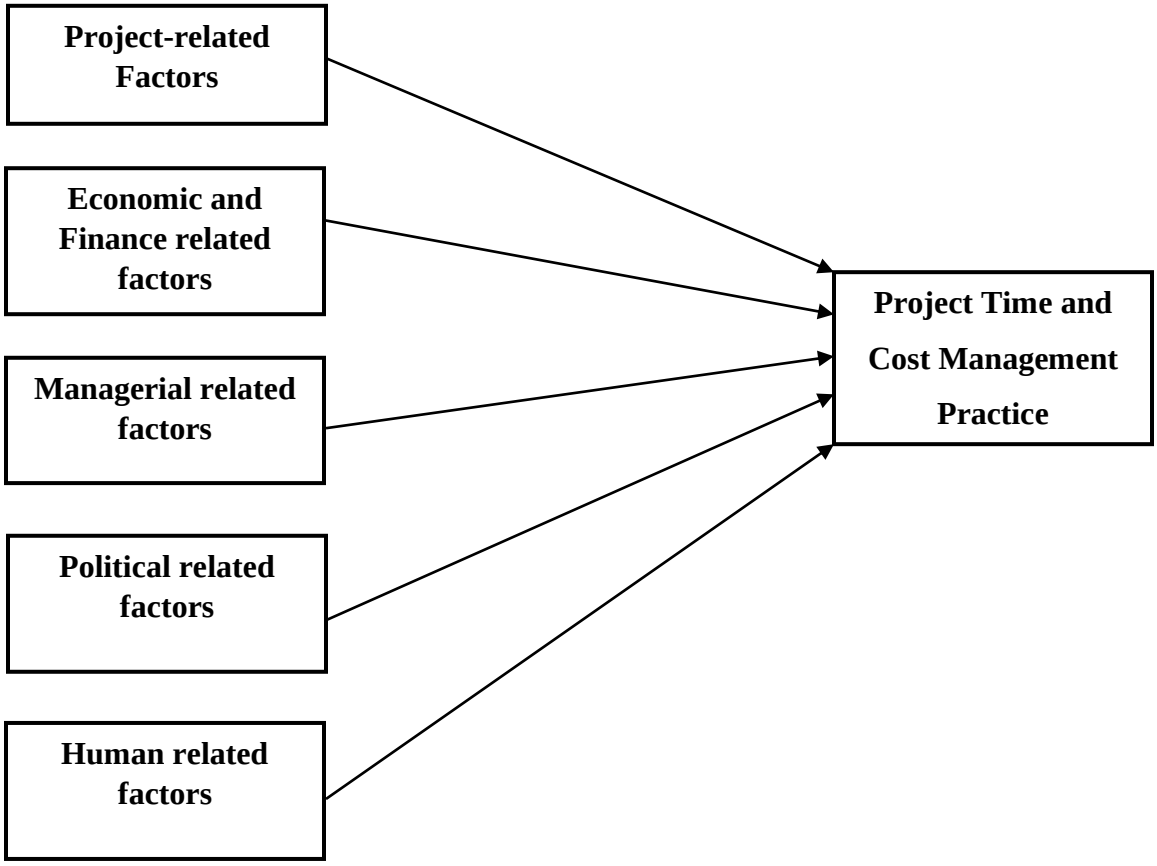

Figure 2.1: Conceptual framework of the study

Source: Adopted from (Zadjali, Bashir, & Maqrashi, 2016; Idrees, and Shafiq, 2021; Negalign, 2020).

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter focuses on the research design, research approach, and methodology. It describes the research methods, source of data, data collection method, data analysis technique, sampling design, and validity test employed to carry out the research.

3.1 Research Approach and Design

3.1.1 Research Approach

The quantitative approach was used to assess the level of project time and cost management practice in Telecom expansion projects. This approach helps to collect more reliable and numerical data. The researcher collected numeric data that can be analyzed and interpreted using descriptive analysis to show the relationship between the variables.

3.1.2 Research Design

The design of this research is a type of descriptive survey research which tries to assess project time and cost management in Telecom expansion projects. This design refers to a set of methods and procedures that describe variables. It involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data. Descriptive studies portray the variables by answering who, what, and how questions (Babbie, 2002). The method is chosen since it is more precise and accurate and it involves the description of events in a carefully planned way.

3.2 Study Area

Ethio-telecom, previously known as the Ethiopian Telecommunications Corporation (ETC), is an Ethiopian telecommunication company serving as the major internet and telephone service provider. Ethio-telecom is owned by the Ethiopian government and maintains a monopoly over all telecommunication services in Ethiopia. Based in Addis Ababa, it is one of the "Big-5" group of state owned corporations in Ethiopia, along with Ethiopian Airlines, the Commercial Bank of Ethiopia, Ethiopian Insurance Corporation, and the Ethiopian Shipping Lines.

As a key player in the development of Ethiopia, Ethio-telecom born on 29th November 2010, with the ambition of making a paradigm shift in the development of telecom sector to support the steady growth of our country, within the Growth and Transformation Plan (GTP), with ambition objectives for the year 2015. The Ethiopian government has decided to transform the telecommunication infrastructure and services to world class standard (Ethio-telecom broacher).

As a company, whose vision is "To be world-class telecom service provider", there is always business strategy changes, goal shifts and compelling search to go along with worldwide technological advancement and competition with the new privatization law of telecom services. In order to achieve strategic objectives of the company and support development of the country, Ethio-telecom has continually implemented different types of programs and projects.

Currently there are around 10 programs and 38 projects

- Wireless UMTS & LTE New Build
- Wireless UMTS New Build
- Wireless LTE Layering and UMTS CE & Board Expansion
- Fixed Access Network
- International and national network PAV Improvement
- PAV Improvement for BTS and Fixed Access Network
- Power and tower Upgrading
- Modernization
- Pilot(Trial)
- IS-BSS and OSS

According to the current structure of the company there are twelve divisions which are responsible for different major tasks of the company. Project Management Office is among those twelve divisions and is responsible for handling the projects undertaken in the company. The aim of the division is to achieve all of the projects goals and targets while considering the preconceived project constraints (cost, time and quality standard) and also to optimize the allocation and integration of inputs necessary to meet pre-defined objective.

3.3 Research Population and Sampling

3.3.1 Target Population

All employees in project department of Ethio-Telecom who are currently working in Ethio-Telecom head office were the source population. Sampling units were the target population elements available for selection during the sampling process. The Sampling units for this study were all employee in project department who are currently working in Ethio-Telecom head office during the sampling time. All employees in project department who are currently working in Ethio-Telecom head office were active during data collection period and selected by stratified random sampling design from source population was the sample of the study.

3.4.2 Sampling Size

The sample size was calculated by using the formula for single population proportion for cross sectional survey with the following assumptions: The estimated proportion is 50% (since there is no previous study done in the same population), the margin of error 5%, confidence interval 95% and non-response rate 10%. Data collected from human resource office of Ethio-Telecom the current number of employees is 336. The required sample size (n) was calculated by using the Topman's formula;

$$n' = \frac{NZ^2P(1 - P)}{d^2(N - 1) + Z^2(P)(1 - P)}$$

Where

n' = sample size with finite population correction,

N =population size,

Z = statistic for a level of confidence (Z = 1.96),

P = expected proportion (in proportion of one), (P = 0.5), and

d = precision (in proportion of one), (d = 0.05).

$$n' = \frac{336(1.96)^2\ (0.5)(0.5)}{(0.05)^2(336 - 1) + (1.96)^2(0.5)(0.5)}$$

Accordingly, the calculated sample size was 179. By considering 10% non-response rate (18), the total sample size was 197 employees in Ethio-Telecom head office Network and IPED department.

3.4.3 Sampling Technique

The sampling frame for this study incorporates a complete list of all employees in project department of Ethio-Telecom located in Addis Ababa head office. Currently, the total number of employees is 336. To manage easily and collect needed information and managed data the researcher will use stratified random sampling design. According to this, the target population will be divided into subgroups (strata) and randomly a sample will be taken from each strata of the population that include Chief Technical Officer, Network and IPED Directors, Network/IPED and PMO Managers, Network and IPED/Specialists/Supervisors, Network and IPED Professionals/Technicians. So, specifically the study was used proportional stratified random sampling design. Proportional stratified random sampling is stratified sample in which the number of sampling units drawn from each stratum is in proportion to the population size of that stratum (Zikmund, et al., 2009).

Table 3.1 Target Population Distribution by Position Strata

SN	Working Level	Head Count (No.)
1	Chief Technical Officer	1
2	Network and IPED Directors	4
3	Network/IPED and PMO Managers	15
4	Network and IPED/Specialists/Supervisors	30
5	Network and IPED Professionals/Technicians	286
	Total (N)	**336**

Source: Ethio-Telecom Charter (2019)

The proportional stratified random sampling will be used and hence 1 Chief Technical Officer, 1 Network and IPED Directors, 2 Network/IPED and PMO Managers, 3 Network and IPED/Specialists/Supervisors, and 28 Network and IPED Professionals/Technicians were included as sample as shown on Table 3-3 below

Table 3.2: Stratified Random Sampling Proportion

SN	Working Level	Head Count (Ni)	Strata Size Calculation [(n/N)*Ni=ni]	Strata Sample Size (ni)
1	Chief Technical Officer	1	(197/336)*1	1
2	Network and IPED Directors	4	(197/336)*4	2
3	Network/IPED and PMO Managers	15	(197/336)*15	9
4	Network and IPED/Specialists/Supervisors	30	(197/336)*30	18
5	Network and IPED Professionals/Technicians	286	(197/336)*286	167

Source: Ethio-Telecom Human Resource Office (2022)

3.4 Data Source and Method of Data Collection

3.4.1 Data Source

The researcher used both primary and secondary data as a source of data to conduct this research. Primary data was the data collected from key informants (project managers and core project team's staffs) for distribution and collection of questionnaires to targeted respondents, researcher will distribute on hand and email. Secondary data was collected from company project management contract documents, reports and all related document so other than confidential documents that does not legitimize the company policy and procedure. It was also include previous studies, research papers, publications, reports, journals, and internet information.

3.4.2 Data Collection Method

To collect data the researcher used mainly a 1 to 5-point Likert Scale questionnaire format, with a 1 being the lowest level practice and a 5 being the highest level were distributed to randomly selected telecom expansion projects staffs. the questionnaire has three parts to collect data on the socio-demographic, the level of project time and cost management practice, and the possible challenges of project time and cost management.

The second section of questionnaires which measures the level of project time and cost management practice were adopted from Sukhoo, Barnard, Eloff and Poll (2005) developed using PM Solutions' project management maturity assessment. These types of questionnaire format are a common tool to collect data for assessing project management maturity of a company and researchers such as Sukhoo, Barnard, Eloff and Van der, (2005), Ibbs and Kwak (2002), Beset (2007) and Girma (2015) used this tool in conducting study on the maturity assessment. The possible challenges of project time and cost management part of the questionnaire were developed by the researcher by integrating the finding of various literatures.

3.5 Data Analysis Techniques

All results from the collected questionnaire responses were analyzed, summarized, and interpreted by the researcher for the result. Data entry was done by an experienced data clerk at the data collection site. The researcher done the data cleaning, processing, preliminary analysis and final write-up of the study. The data was entered in MS excel-10 spread sheet, analyzed and interpreted using descriptive statistical measures like frequency and percentages as appropriate. SPSS version 23 (SPSS Inc, Chicago, IL, USA) software program was used to assess the project time management and cost management to describe the mean, weighted average, standard deviation and one sample t–test of the actual performance status of project time and cost management in the Ethio-Telecom expansion project, and the challenges faced by this company while practicing project time and cost management.

3.6 Validity and Reliability

3.6.1 Validity

Validity is the degree to which a test measures what it purports to measure (Creswell, 2009). The validity of the questionnaire data depends on a crucial way the ability and willingness of the respondents to provide the information requested. One way to ensure the validity was by having simple, straight forward and objective questions in the questionnaire. A pilot study was conducted to refine the methodology and test instrument such as a questionnaire before administering the final phase. Ten questionnaires were tested on potential respondents to make the data collecting instruments objective, relevant, suitable to the problem. Issues raise by respondents was corrected and questionnaires were refined. Besides, proper detection by an advisor is also taken to ensure the validity of the instruments.

3.6.2 Reliability of Instruments

Reliability of instruments refers to a measure of the degree to which research instruments yield consistent results (Mugenda & Mugenda, 2003). The internal consistency or reliability of the measurement items under each variable or construct is an important test of sound measurement. For this study Cronbach's alpha was used to assess the internal consistency of variables in the research instrument. Before distributing the questionnaire to all respondents, 10 questionnaires were distributed for pilot test to make sure the questions are clear and reliable. Its reliability test of alpha cronbach has been found 0.752 which is above the minimum requirement according to Nunnally (1978) Cronbach's alpha should be 0.700 or above.

3.7 Ethical Consideration

The researcher assures the adherence to ethical standards by doing their research ethically. This includes collecting information with informed consent, voluntary participation, confidentiality, and keeping the anonymity of respondents. During data collection, each respondent was informed about the purpose, scope, and expected outcome of the research. Anyone who might not be willing to participate was excluded from the study. In order to establish anonymous linkage, codes were used. The participant's name and office section were not revealed.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the collected data from the Ethio-Telecom employees are summarized and analyzed in order to realize the ultimate objective of the study. The analysis of participant socio demographic characteristics is presented first in this chapter and followed by an analysis of the employee evaluation of project time and cost management practice. Then result of factors that challenges the project time and cost management practice will be presented. Finally, the major findings of the study will be discussed with the available literatures and presented.

4.2 Response Rate and Demographic Data

Table 4.1: Frequency of Demographic Characteristics of respondents (N=153)

Variables	Categories	Frequency	Percent
Gender	Program manager	3	1.96
	Project specialist	5	3.27
	Project manager	16	10.46
	Project professional	129	84.31
Educational Level	High school	8	5.23
	Diploma	22	14.38
	Degree	81	52.94
	Master	41	26.80
	Doctor of Engineering	1	0.65
Years of working experience in total	Below 1 Year	3	1.96
	From 1 – 5 Years	32	20.92

	From 6 – 10 Years	96	62.75
	From 11 – 15 Years	13	8.50
	Above 15 Years	9	5.88
Years of working experience in the company	Below 1 Year	8	5.23
	From 1 – 5 Years	56	36.60
	From 6 – 10 Years	74	48.37
	From 11 – 15 Years	11	7.19
	Above 15 Years	4	2.61

A total of 153 employees in in Ethio-Telecom head office Network and IPED office participated in the study with a response rate of 77.66%. A total of 197 sets of questionnaires were distributed to the potential respondents and a total of 153 usable questionnaires were collected. SPSS version 23 was used for the analysis. The analysis had the objective of measuring practice level of project time and cost management.

The depicted table above shows the socio-demographic and general characteristics of the study participants which includes their Position/role at the project, educational level, and years of working experience. As shown in the table majority of participants 129 (84.31%) were project professional. In addition, the table shows that participants of this study have different academic levels. Majority 81 (52.94%) of respondents were first degree holder. The rest were 41 (26.8%) of them has Master's degree, 22 (14.38%) of them have a diploma certificate, 8 (5.23%) of them were secondary level complete, and the remaining 1 (0.65%) employee have Doctor of Engineering.

Regarding their total working experience as project manager /project expert/project specialist/ professional majority of participants were well experienced, 118 (77.13%) of them have an experience above 5 years. With respect to working experience in Ethio-Telecom, 74 (48.37%) of respondents have experience between 6 to 10 years followed by those with experience between 1 to 5 years 56 (36.6%). Few respondents have experience above 15 years 4 (2.61%) and below 1 year 8 (5.23%).

4.3 Project Time and Cost Management

A questionnaire was used as a data collection method. The scores from this scale represent the respondents reported their evaluation of project time and cost management practice. The items on the questionnaire include employee's responses to the questions concerning project time and cost management practice. For a response format, the 5-point Likert scale was utilized, with anchors of frequency (1=Very low, 2=Low, 3=Moderate, 4=High and 5= Very high) for project time and cost management practice.

In order to identify project time and cost management practice level in Ethio-Telecom expansion project, descriptive statistics mean and standard deviation have been used. The mean indicates to what extent the sample group averagely agrees or disagrees with the different statements. Mean value shows the average of all employees' responses on each dimension of project time and cost management practice, the higher the mean the more the respondents agree with the statement while the lower the mean the more the respondents disagree with the statement. The descriptive statistics computed in for both project time and cost management practice by analyzing the employees' responses is summarized in the following table 4.2.

Table 4.2: Descriptive Statistics for project time and cost management (N=153)

No.	Categories	Mean	SD
1.	Establishing the policies, procedures, and documentation …	3.74	.6231
2.	Identifying the specific activities that must be performed…	3.49	.5622
3.	Identifying and documenting relationships ….	3.65	.5824
4.	Estimating the type and quantities of material, human resources, equipment, or supplies …	3.68	.6491
5.	Estimating the number of work periods …	3.51	.5314
6.	Analyzing activity sequences, durations …	3.62	.4811
7.	Monitoring the status of project activities …	3.6	.5972
	Project Time Management	**3.61**	**.5752**

1.	Establishes the policies, procedures, and documentation for … project costs.	2.68	0.4871
2.	Developing an approximation of the monetary resources …	2.13	0.4117
3.	Aggregating the estimated costs of individual activities ...	1.78	0.4016
4.	Monitoring the status of the project to update the project costs and managing changes to the cost baseline	2.25	0.4228
	Project Cost Management	**2.21**	**.431**

The total scores represent participants' evaluation of project time and cost management practice and the major factors that influence these practices. As it is observed in table 4.2, the calculated mean score of project time management practice were 3.61 which indicate time and schedule is monitored and managed to keep the project on the track in implementing projects are practiced at high level rate. Though, table 4.2 indicate that the calculated mean scores for project cost management is 2.21 which implies that project cost management in implementing projects was practiced at low level of rate.

One-sample t-tests were run with the test value of 3 (*Ho*: $\mu 2\text{-}\mu 1 = 3$) to test the significance of the total score. Results of the one-sample t-test indicated that there is a significant difference between the respondents total scores mean of project time management and the expected average of mean (M = 3), $t(152) = 3.8$, $p < .001$. This shows that participants reported the high level rate practice in project time management in Ethio-Telecom expansion projects.

One-sample t-tests were also run with the test value of 3 (*Ho*: $\mu 2\text{-}\mu 1 = 3$) for project cost management practice. Results of the one-sample t-test indicated that there is a significant small difference between the respondents total scores mean of project cost management and the expected average of mean (M = 3), $t(152) = 6.2$, $p < .001$. The lowest mean score of respondent showing respondents reported a strong agreement with Ethio-Telecom Projects is not performing cost management as expected.

4.4 Challenges of Project Time and Cost Management

Under this subsection factors that are presumed as obstacles for successful implementation of project time and cost management are listed in table 4.3 below and respondents were asked to rate the level of impact or challenge on implementation practices and analyzed using weighted average. The challenges were rated as in five levels starting from least (the lowest in challenge) to extreme (the highest in challenge) in the following way: 1= Least, 2= Lower, 3= Moderate, 4= Higher, 5= Extremely.

Table 4.2: Descriptive Statistics for project time and cost management (N=153)

No.	**Statement**	**Weighted average**	**SD**
A.	**Political related factors**	**3.55**	**1.024**
1.	Lack of Policy and regulations	3.45	1.143
2.	Political unrest in the country	4.42	1.154
3.	Undue influence by political personnel	2.62	1.105
4.	Transition/change of government	3.69	1.024
B.	**Economic and Finance related factors**	**3.88**	**.958**
5.	Fluctuation in raw material price	3.63	1.142
6.	Cash flow difficulties by clients	4.25	1.385
7.	Fluctuations in exchange rate of currency	4.38	1.238
8.	Poor financial control on site	3.24	1.157
C.	**Managerial related factors**	**2.03**	**1.274**
9.	Delays in Decision making process	1.98	1.094
10.	Poor project management Leadership Style	1.86	1.085
11.	Frequent change of the management body	2.43	1.225

12.	Bureaucratic behavior in the organization	2.21	1.135
13.	Misuse of authority	1.68	1.178
D.	**Project-related Factors**	**3.14**	**.927**
14.	Increase in scope of work	2.84	.994
15.	Unrealistic time schedule imposed in the contract	3.93	.985
16.	Difference in perception of contract clauses	3.12	.976
17.	Conflict between owner and other parties	3.24	1.125
18.	Ill-defined /ambiguous specifications	2.57	1.197
E.	**Human related factors**	**2.66**	**1.053**
19.	Lack of co-ordination among stake holders	3.65	1.152
20.	Shortage of manpower	2.13	.955
21.	Low productivity of skilled workers	2.21	1.065

Factors that are presumed as having influence on the practice of project time and cost management are listed in table 4.2 above and respondents were asked to rate the level of influence on implementation practices. Factors that are considered as highly challenging by majority of the respondents were: Political unrest in the country (4.42), Fluctuations in exchange rate of currency (4.38), Cash flow difficulties by clients (4.25), Unrealistic time schedule imposed in the contract (3.93), and Lack of co-ordination among stake holders (3.65).

On the other hand some factors are considered as relatively less challenging on practices. These are: all Managerial related factors (2.03) such as Misuse of authority, Poor project management Leadership Style, Delays in Decision making process, Bureaucratic behavior in the organization, and Frequent change of the management body; Shortage of manpower (2.13) and Low productivity of skilled workers (2.21). Overall Economic and Finance related factors (3.88), and Political related factors (3.55) were highly challenging factors; and Managerial related factors (2.03) and Human related factors (2.66) were less challenging factors for the practice of practice of project time and cost management.

4.4 Discussion

This study was conducted to assess the project time and cost management practice and its challenges in Ethio-Telecom expansion. In order to achieve the objectives of these study 153 employee of the organization at Ethio-Telecom head office in Network and IPED department. Structured questionnaire were prepared by the researchers using related literature and adopted instrument as data collection instrument. In this part of the study the findings of the study will be discussed with the available literatures and presented as follows.

The finding of the current study concerning the project time and cost management practice was in agreement with various literatures which Telecom expansion project management practices. According to the results obtained in this study, mean value shows that average of responses of employees on project time management were higher than the expected mean score 3 which implies that Ethio-Telecom expansion projects were managed well to the timely completion of the project. However, project cost management was lower than the expected average of mean 3.0 which implies that project cost management processes was practiced at low level of rate.

This observation is consistent with findings of a study done in Pakistan showed that Project delays and cost overrun are common features in public sector construction projects (Idrees and Shafiq, 2021). In Ethiopia, study conducted by Tegenu (2018) on assessment of the practice of project management knowledge areas and challenges in implementing ICT projects in Ethio-Telecom. The finding revealed that project scope management, project time management, project quality management, project risk management, project communication and project stakeholders knowledge area are highly practiced during the implementation of the ICT projects whereas project integration management, project cost management and project procurement management knowledge areas are practiced at low level lack of relevant training and procurement delay were the main challenges during the implementation of the ICT projects.

The results regarding the challenges of project time and cost management, the result revealed that Economic and Finance related factors, and Political related factors were highly challenging; and Managerial related factors and Human related factors were less challenging factors. This result is consistent with findings of a study done Negalign (2020) conduct a study on determinants of cost overrun on public construction project: A case study in Gamo Zone Arba

Minch Town. The results of the study were indicated that socio political, economic, and managerial, timeliness of payment and financial factor and construction techniques and design changes were identified as causes of cost overrun in public construction project. The result also corresponds to the result of other researchers that showed the major challenges in project time and cost management (Medhin, 2019; Zadjali, Bashir, & Maqrashi, 2016; Idrees and Shafiq, 2021). In these literatures, it was reported that most critical reasons for delays in public sector projects are related to issues and problems beyond the control of a contractor and are more related to government institutions involved in planning and managing public sector projects. Nine out of top ten factors in public sector projects in Pakistan are directly under the control of government organizations, which are contractually the project owner's responsibility (Idrees and Shafiq, 2021). Lack of proper coordination with stakeholders, Lack of proper fund management in the project, Government Policy challenges, Project communication and integration management problems were identified as highly challenging factors by Medhin (2019).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

In this chapter of the study, summary of findings, conclusion drawn, recommendations and limitation of the study are stated. The purpose of the study was to assess the project time and cost management practice in Ethio-Telecom expansion.

5.1 Summary of Findings

- Majority of participants were project professional, first degree holder, well experienced in as project manager /project expert/project specialist/ professional have an experience above 5 years and worked in Ethio-Telecom for between 6 to 10 years.
- The calculated mean score of project time management practice were 3.61 which have statistical significant difference with the expected average of mean 3.0. This shows that participants reported the high level rate practice in project time management in Ethio-Telecom expansion projects.
- The calculated mean scores for project cost management is 2.21 which have statistical significant difference with the expected average of mean 3.0. This implies that project cost management in implementing projects was practiced at low level of rate.
- The finding revealed that Economic and Finance related factors (3.88), and Political related factors (3.55) were highly challenging factors; and Managerial related factors (2.03) and Human related factors (2.66) were less challenging factors for the practice of practice of project time and cost management.
- Specific factors that are considered as highly challenging by majority of the respondents were Political unrest in the country (4.42), Fluctuations in exchange rate of currency (4.38), Cash flow difficulties by clients (4.25), Unrealistic time schedule imposed in the contract (3.93), and Lack of co-ordination among stake holders (3.65).
- All Managerial related factors (2.03), Shortage of manpower (2.13) and Low productivity of skilled workers (2.21) were specific factors which are considered as relatively less challenging on the practice of project time and cost management.

5.2 Conclusions

This is a descriptive design with quantitative approach that assesses the project time and cost management practice in Ethio-Telecom expansion. A total of 153 employees in Ethio-Telecom head office Network and IPED department were participated in the study. Structured questionnaire were prepared by the researchers using related literature and adopted instrument as data collection instrument. Both descriptive and inferential statistics were used as data analysis method.

According to the research result, the calculated mean score of project time management practice were 3.61 which have statistical significant difference with the expected average of mean 3.0. This shows that participants reported the high level rate practice in project time management in Ethio-Telecom expansion projects. This implies that Ethio-Telecom expansion projects were managed well to the timely completion of the project which includes the process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule, the process of identifying and documenting the specific actions to be performed to produce the project deliverables. The calculated mean scores for project cost management is 2.21 which have statistical significant difference with the expected average of mean 3.0. This implies that project cost management processes involved in estimating, budgeting and controlling costs so that the project can be completed within the approved budget was practiced at low level of rate.

Regarding the challenges of project time and cost management, the result revealed that Economic and Finance related factors, and Political related factors; specifically Political unrest in the country, Fluctuations in exchange rate of currency, Cash flow difficulties by clients, Unrealistic time schedule imposed in the contract, and Lack of co-ordination among stake holders were highly challenging. Managerial related factors and Human related factors were less challenging factors for the practice of practice of project time and cost management. All Managerial related factors, Shortage of manpower and Low productivity of skilled workers were specific factors which are considered as relatively less challenging on the practice of project time and cost management.

5.3 Recommendations

Having analyzed, discussed and interpreted the data collected in this study, the researcher forwarded the following recommendations.

- The organization should give special attention to project cost management practice since it was practiced at low level of rate.
- Ethio-telecom should properly plan based on a scientific method of project management for its expansion project implemented in order to solve the problem of unrealistic time schedule imposed in the contract that will help as a reference during project execution.
- Lack of proper coordination with stakeholders was found as one basic challenge in project time and cost management practice and Ethio-telecom should develop effective and accurate coordination and communication culture with its stakeholders. Some of the most common key stakeholders of Ethio-telecom in network expansion projects are Ethiopian electric power corporation, Ethiopian water and sewerage authority, Ethiopian road authority, government, service users etc.
- Since the political system and economic factors, that have impact on project time and cost management practice, are mainly related with the government policy and law enforcement, Ethio-Telecom higher officials should adopt strategies to deal with external challenges.
- Further research can be conducted on identifying the root causes or factors associated to low level of project cost management practices of the company.

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Appendices

APPENDIX A

QUESTIONNAIRE FOR STUDY

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

GRADUATE PROGRAM

QUESTIONNAIRE FOR STUDY

TITLE OF THE THESIS "PRACTICE OF PROJECT TIME AND COST MANAGEMENT AND ITS CHALLENGES IN ETHIO TELECOM EXPANSION PROJECTS"

My name is Shimelis Dessalegn. I am a Master's of Project Management student at Addis Ababa University School of Commerce. The purpose of this questionnaire is to collect data in order to assess the project time and cost management practice level in Ethio-telecom Expansion Project.

I Kindly request your cooperation in filling the questionnaire as your genuine, complete, and timely responses are crucial for the success of my study. Besides, I would like to assure that the data collected using this questionnaire is purely for academic purpose and your responses will be held confidentially and anonymously. I also sincerely request you to respond to the questions as honestly as possible and return the completed questionnaires. Knowing that your time is valuable, please take few minutes of your time to complete the questionnaire.

Thank you in advance for your committed cooperation!

Yours Sincerely

Thank you for your cooperation

By: Shimelis Dessalegn

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Advisor: Dr. Tenkir S. (Ph.D.)

General Instruction and information:

- Section I includes demographic of general information.
- Section II includes **Project Time and Cost Management**
- Section III includes **The Possible Challenges of Project Time and Cost Management**

Direction:

This survey asks for your perception and experience about the project time and cost management practice level in Ethio-telecom Expansion Project. Because it asks for your judgment there is no right or wrong answer. Please respond based on your judgment regardless of what others expect or what is socially acceptable.

- Please attempt to answer all questions.

Section I: General Information

1. Position/role at the project

Program manager	☐	Project manager	☐
Project specialist	☐	Project professional	☐

2. Your highest level of education

High school	☐	Master	☐
Diploma	☐	Doctor of Philosophy	☐
Degree	☐		

3. Years of working experience as project manager /project expert/project specialist/ professional

Below 1 Year	☐	From 11 – 15 Years	☐
From 1 – 5 Years	☐	Above 15 Years	☐
From 6 – 10 Years	☐		

4. Years of working experience in the company

Below 1 Year	☐	From 11 – 15 Years	☐
From 1 – 5 Years	☐	Above Years	☐
From 6 – 10 Years	☐		

Section II: Project Time and Cost Management Practice

Please mark (X) for the five-point Likert scale question that best describes how you perceive the project time and cost management implementation practices in Ethio telecom Expansion Project, where: ***1=Very low, 2=Low, 3=Moderate, 4=High and 5= Very high***

No.	**Statement**	**Level of Agreement**				
A.	**Project Time Management**	**1**	**2**	**3**	**4**	**5**
1.	Establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule.					
2.	Identifying the specific activities that must be performed to produce various project deliverables					
3.	Identifying and documenting relationships among the project activities.					
4.	Estimating the type and quantities of material, human resources, equipment, or supplies required to perform each activity.					
5.	Estimating the number of work periods needed to complete individual activities with estimated resources.					
6.	Analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model.					
7.	Monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan.					

B.	Project Cost Management	1	2	3	4	5
1.	Establishes the policies, procedures, and documentation for					
2.	Developing an approximation of the monetary resources needed to complete project activities.					
3.	Aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.					
4.	Monitoring the status of the project to update the project costs and managing changes to the cost baseline					

Section III. Challenges of Project Time and Cost Management

The statements below refer to the possible challenges that influence project time and cost management practices. Please rank the factors based on your experience to express how much it influenced project time and cost management implementation practices towards its success in Ethio telecom Expansion Project by putting tick (√) mark on the space below the options provided.

1= Least, 2= Lower, 3= Moderate, 4= Higher, 5= Extremely

No.	Statement	Level of Agreement				
A.	**Political related factors**	1	2	3	4	5
1.	Lack of Policy and regulations					
2.	Political unrest in the country					
3.	Undue influence by political personnel (Political interference)					
4.	Transition/change of government					

B.	**Economic and Finance related factors**					
5.	Fluctuation in raw material price					
6.	Cash flow difficulties by clients					
7.	Fluctuations in exchange rate of currency					
8.	Poor financial control on site					
C.	**Managerial related factors**					
9.	Delays in Decision making process					
10.	Poor project management Leadership Style					
11.	Frequent change of the management body					
12.	Bureaucratic behavior in the organization					
13.	Misuse of authority					
D.	**Project-related Factors**					
14.	Increase in scope of work					
15.	Unrealistic time schedule imposed in the contract					
16.	Difference in perception of contract clauses					
17.	Conflict between owner and other parties					
18.	Ill-defined /ambiguous specifications					

E.	**Human related factors**					
19.	Lack of co-ordination among stake holders (owner, consultant, contractor, and govt. departments)					
20.	Shortage of manpower					
21.	Low productivity of skilled workers					

Thank you very much for your cooperation!