ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS SCHOOL OF COMMERCE

Assessment of Telecom Project Implementation Practices in Ethiopia: The case of Telecom Expansion Project

By

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A Project Work Report Submitted to Addis Ababa University College of Business and Economics School of Commerce in Partial Fulfillment of the Requirement for The Degree of MA in Project Management

Advisor: Solomon M. (PhD)

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Advisor	**Signature**
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STATEMENT OF DECLARATION

I, Abrhaley Atsbha, declare that this research study entitled "**Assessment of Telecom Project Implementation Practices in Ethiopia: The case of Telecom Expansion Project**" is my original research work and written by me. All sources of materials used for the study have been duly acknowledged on the reference. This study has not been presented for a degree in any university.

Abrhaley Atsbha

Signature: _____ Date: _____

LETTER OF CERTIFICATION

This is to certify that the project work presented in in this report, entitled "**Assessment of Telecom Project Implementation Practices in Ethiopia: The case of Telecom Expansion Project**" is conducted by Mr. Abrhaley Atsbha under my supervision and guidance. This work is original in nature and, in my opinion, suitable for submission in partial fulfillment of the requirement for the award of Master of Arts Degree in Project Management.

Advisor- Solomon M. (PhD)

Signature: _____ Date: _____

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ABBREVATIONS AND ACRONYMS

EPA	*Environmental Protection Agency*
GTP	*Growth and Transformation Plan*
ICR	*Inspection Criteria Reference*
IPMA	*International Project Management Association*
ISO	*International Organization for Standardization*
ITU	*International Telecommunication Union*
NMS	*Network Management System*
NOC	*Network Operation Center*
O&M	*Operation and Maintenance*
OGC	*UK Office of Government Commerce*
PAT	*Project Acceptance Test*
PIP	*Project Implementation Plan*
PM	*Project Management*
PM4DEV	*Project Management for Development*
PMBOK	*Project Management Body of Knowledge*
PMI	*Project Management Institute*
PMO	*Project Management Office*
SER	*South East Region*
SOP	*Standard Operating Procedures*
SPSS	*Statistical Package of Social Sciences*
TEP	*Telecom Expansion Project*
TSSR	*Technical Site Survey Report*
WBS	*Work Breakdown Structure*
ZTE	Zhongxing Telecom Enterprise

ABSTRACT

To satisfy the growing customer demand for new services and rapidly changing technologies, the Ethiopian Telecommunication Corporation (now Ethio Telecom) has undertaken many network upgrading projects since its establishment. However, the implementation management of these projects in Ethiopia face many challenges that bring obstacles in achieving their goals. It is important to identify and assess the implementation practices of telecommunication projects. This project work aims to assess the practices applied in implementation of the Telecom Expansion Project in Ethio Telecom. A descriptive type of study is used to evaluate the practices related to the project management knowledge areas, management support and project execution readiness processes. Stratified random sampling design is used to collect quantitative and qualitative data using questionnaire instrument from target population. SPSS version 20 statistical software was used to analyze the quantitative data to check reliability of the questionnaire; to produce the response percentages and number of responses. According to the survey, the project implementation plans, defining and sequencing activities were good; however, estimation of activity schedules were not properly practiced. In addition, the budget estimation was initially more than the actual project budget requirement and was not on the acceptable range. The scope management, resource management such as materials, equipment and team and stakeholder management are well practiced. The planned quality was not successfully implemented; there was no clear monitoring to check whether stakeholders' information requirement is satisfied; individual project risks were not properly identified; activities in the implementation, contracts including procurement contracts were not properly closed and finalized. There was good management support but incentive and training management was not properly applied. There were good readiness practices but training of Operation and Maintenance staffs and preparation of spare parts were not appropriate. In addition, there were not clear safety procedures and awareness of operating areas. Based on the findings, it is recommended to address the gaps in the project implementation practices for next telecom projects. Further researches can be done on the effect of these practices related to knowledge areas, management support and readiness processes for the success of project implementations.

Key Words: Project implementation, Project management, Ethio Telecom, Ethiopia, Knowledge areas, Management support, Readiness process,

CHAPTER ONE: INTRODUCTION

This chapter covers mainly the background of the problem, the problem statement, research objectives, purpose of the study, limitations, definition of terms and organization of the report.

1.1.Background of the problem

Nowadays, life without telecommunication services become hard to think of as its paramount influence on our daily life when we think of telephones, radio, television, cellphones and the internet. According to Isin & Ruppert (2015), digital and information societies are created that refers to societies in which the creation, dissemination, use and manipulation of information has become significant to political, economic, social and cultural endeavors. High-quality telecommunications may have a more significant impact on growth than other infrastructure inputs such as education, energy, and highways (Dholoakia & Harlam, 1994). The United Nations declared the broadband and internet access as basic human rights equal with the right to healthcare, shelter and food (UN, 2011). This indicates, higher attention is needed to the development of this sector and its projects. The need for coordination among all these parties, given the interdependencies, the high degree of technological and environmental uncertainties thus may lead to complex and costly communications, to excessive bureaucracy or both (Sherif, 2006). The multidisciplinary nature of telecom projects and the rapid telecom technology evolvement requires effective project management from planning to operation to achieve the intended objectives of the projects.

The Telecom Expansion Project (TEP) was one of the main projects accomplished by Ethio Telecom with the aim of achieving the ambitious Growth and Transformation Plan (GTP) for the telecom sector in Ethiopia. According to the TEP project Charter (TEP-Charter, 2013), the objectives mainly include: mobile and wireless network expansion, expansion and improvement of the backbone transmission network capacity and reliability, developing sustainable and reliable power system, enhancing the IS (Information Systems) domain and swapping the legacy network equipment.

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. As lot of activities are done

in this stage and most efforts exerted to meet the objectives of the project, it is most frustrating and pressurizing phase. For many years, project implementation success has been linked to the achievement of "The Iron Triangle" Time, Cost, and Quality (Atkinson, 1999), but now it is recognized that a broader set of outcome measures is generally needed (Atkinson, 1999; Pinto & Slevin, 1988; Wateridge, 1998) to identify the practices in implementation of projects. The project management practices in Africa and in Ethiopia in particular is 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 is poor project implementation practices in all sectors.

Assessment of the practices in telecommunication project implementation in Ethiopia will help to address the gap between theoretical and actual project implementation practices as well as to give proper attention and consideration for these practices in next telecommunication projects to bring implementation success.

1.2.Problem Statement

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 (Damoah, et al., 2015) 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 Telecom Expansion Project (TEP) faced up with schedule and cost variances that affected the overall performance of the project. From project closure documents, there was a variance between contract agreement and actual in the starting date (to about greater than a year) and finishing date of the implementation in the Northern and Eastern (N&E) Regions of the backbone transmission phase of the project. Similarly, the whole project had about one-year delay. This indicates there are some problems in time management during the project implementation that influences the time management performance of the project. As telecom technologies are changing at breakneck speed, it is necessary to assess time management practices on the actual implementation of the project. There was about -14% cost variance between contract agreement and actual budget on the N&E (Northern and Eastern) Region backbone transmission phase implementation of the project (TEP, 2016; TEP-

PIP, 2014). Similarly, from closure reports of TEP shows, the variation increased to about -37.5% for the overall implementation of the project. This also indicates there are some problems in cost management practices of the project implementation. 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.

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.

Studies have not been done specifically on assessment of project implementation practices for telecom projects in Ethiopia. Gemeda (2013) tried to evaluate project performance of Fixed Line-Next Generation Network (FL-NGN) project, a prject that took place before TEP. The study is focused on quality and customer satisfaction and key performance indicators. Cost management, stakeholder management and knowledge transfer are studied. The study tries to mention that generally project management knowledge areas need attention in managing projects but didn't study the project management knowledge area practices in detail. Woubshet (2017) studied on project logistics management practices for TEP; Gebretsadik (2018) also tried to study about risk management practices in TEP. But, the these studies are only focused to specific topics of logistics and risk practices respectively and were on project management in general but not on project implementation. Others such as Ayalew, et al. (2016) studied project management practices like resource, time, cost, quality, safety, communication, risk, handling maltiple project, organizational management and change management challenges and practices in the construction project management. Sileshi (2017) tried to study assessment of project management practices on Japanese Social Development Trust Fund Grant Project in Ethiopia. The study covered the 10 project management knowledge areas and indicated project scope, time, quality, cost, risk and integration management were not effectively practiced. In addition, Weldekidan (2017) studied the contribution of project management knowledge areas and the 5 process groups: initiation, plannning, executing, monitoring and controlling, and closing to project success by using correlation analysis. Outside Ethiopia, researchers such as Mukopi

(2016) tried to study the influence of factors on telecommunication network equipment project implementation in a Safaricom Limited Kenya (a private telecom company in Kenya). In the research the influence of scope, time, cost, procurement and communication management practices on project success are studied. In addition, the study concludes that the other remaining project management knowledge areas, skill set of employees and top management support can influence the project implementation. So, there is research gap on assessments of telecom project implementation practices on governement-owned telecom companies such as Ethio Telecom.

So, this research work tries to determine some of the practices that influence telecom project implementation management that are accomplished in Ethiopia by assessing the knowledge areas, management support and readiness practices on the implementation of Telecom Expansion Project (TEP) which was part of the Ethiopian Growth and Transformation Plan (GTP I) targets in telecommunication sector. The first plan (GTP I) was a 5-year plan, from 2010/11 to 2014/15, for achieving development and transformation in all sectors (MoFED, 2010). Determining and assessing these practices helps to fill the gap between the theoretical and actual project implementation practices. This also helps to effectively implement telecommunication projects and achieve the expected goals by identifying the practices required in the implementation of telecom projects. In addition, it helps to add to the limited research done on assessment of the challenges in implementing telecommunication projects in Ethiopia and assist in considering these practices in next projects.

1.3.Research questions

The research paper is sought to explore the following research questions:

1. How properly were the 10 project management knowledge areas practiced in the project implementation?
2. What were the management support practices by top managements during the project implementation?
3. How was the readiness process people, process and system practiced in the project implementation?

To answer these questions, a quantitative study based on questionnaire is done.

1.4.Research objectives

1.4.1. Main Objectives

The main objective of this study is assessing project implementation practices of telecom projects taking place in Ethiopia, in the case of Telecom Expansion Project (TEP).

1.4.2. Specific Objectives

Specifically, this research objective aims:

- ✓ To assess how the project management knowledge area related practices are applied in project implementation,
- ✓ To assess the management support practices of the project implementation,
- ✓ To determine how the readiness processes such as people, process and system readiness are practiced in the project implementation,

1.5.Significance of the study

This study helps project managers and project teams in the telecommunication environment be aware of the practices or factors related to the project management knowledge areas, management support and readiness processes on project implementation in Telecom projects in general and telecom projects in Ethiopia in particular. This is important for the implementation of similar telecommunication projects of Ethio Telecom project management success and decision making practices in future projects. It will also help for Ethio Telecom to recognize the value of capturing best practices in project implementation management and creating a best practices library or knowledge repository and documenting lessons learned in order not to repeat the same mistakes for future projects (Kerzner, 2009). This study is also important input for further researches in telecom implementation projects in Ethiopia and similar state owned telecommunication companies.

1.6.The scope of the study

There are several practices that influence the implementation of telecommunication projects in developing countries like Ethiopia. However, there are some practices that are known by most literatures which are significant for the success of telecom project implementations. Time, cost and scope (triple constraint) have been accepted as standard measure of success or failure of projects and

still are applied to ICT projects (Wateridge, 1998; Turner, 2009). Management practices of these factors has to be appropriately considered. But Wateridge also mentioned these factors are not enough and there are other additional factors to be assumed in project implementations.

Therefore, the project implementation practices studied in this research work are schedule management, cost management, scope management, quality management, communication management, risk management, resource management, integration management, procurement management, stakeholder management, management support, people readiness practices, process readiness practices and system readiness practices. In addition, the study is also limited to only Addis Ababa as the managements and teams who participated in the project are mostly found in Addis Ababa.

1.7.Limitation of the study

The project is very huge and multiple vendors participated. So, more information is required for better conclusions on the findings. Large number of the project participants were concerned with technical work and there is limited attention on the management practices of the project. So, there is higher tendency of choosing the middle on the scale even for smaller ambiguities. In addition, as a challenge and limitation to the study was more respondents were reluctant to fill the questionnaire because of becoming busy in day today activities. This was solved, by distributing more questionnaires and repeated phone calls and visits.

1.8.Definition of terms

The following key terms in this research are used as in the following sense:

Telecom Expansion Project (TEP): TEP was launched in 2013 to achieve the telecom sector objectives in the Growth and Transformation Plan (GTP I) of the Ethiopian government and targeted to solve quality, coverage and capacity challenges (TEP-Charter, 2013). It included mobile and wireless, backbone transmission, information system network expansion, capacity and quality improvement.

Implementation:	The implementation (execution) of a project is carrying out the activities in the work plan to output the deliverables. It includes time management, cost management, quality management, change management, risk management, procurement management, issue management, communication management, acceptance management and building deliverables.
Communication management:	According to the PMBOK (PMI, 2017), communication management is timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information.
Management Support:	Management support shows the level of attention and commitment of senior managers or concerned government officials on the overall implementation of the project. Willingness of top management to provide the necessary resources and authority/power for project success (Pinto & Slevin, 1987).
Procurement management:	Procurement management includes the process necessary to purchase or acquire products, services, or results needed from outside the project team (PMI, 2017).
Practices:	Generally accepted management and administrative activities and decisions from the starting to the ending of a project. They are factors that are practiced in project implementation and influence project success or failure if not properly managed. Practices may include techniques, tools, methods, or approaches used effectively to arrive at the desired outcome (Menon, 2015). Accordingly, a best practice is a technique, method, or process that is believed to be more efficient and effective in achieving a goal than any other techniques, methods and processes, when applied to a particular condition or circumstance (Ilies, et al., 2010).

Processes: Are actions, procedures and steps taken to achieve a certain result. According to the PMI (2017), the project management processes are a series of project management activites or practices executed to manage the project life cycle and produce deliverables or outcomes.

Telecommunication: Telecommunication is an industry or sector that includes any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems (ITU, 2016).

1.9. Organization of the Report

The research report is organized in 5 chapters and it also includes references, bibliography and appendices. Chapter 1 discusses background, the problem, the research questions, research objectives, the significance, the scope of the study and some definition of terms. The second chapter reviews literatures and concepts related to the study. It includes discussion of project life cycle in brief, project implementation success factors and success criteria, project implementation practices by relating to the well-known project management knowledge areas in the body of knowledge (PMBOK) and other project implementation practices related to management support and project implementation readiness processes. Chapter 3 of this report covers the research design and methodology used to reach the findings. It includes the research design, target population, sample size, data collection techniques and procedures, validity and reliability of the data collection instrument, data analysis methods used and ethical considerations of the study. In chapter 4 the data analysis, presentation and interpretation are discussed. The final section of this research report is discussed in chapter 5. In this chapter, the summary of study is covered and key findings are discussed. In addition, conclusions and recommendations are included in this chapter.

CHAPTER TWO: LITERATURE REVIEW

2.1.Introduction

The literature review includes the project life cycle, project implementation concept, project implementation practices of similar previous studies to identify and assess practices that influence ICT and telecommunication network projects.

2.2.Project life cycle brief

Organizations divide a project into different phases and stages in order to make the management and control of the project simple. Collectively these phases or stages are called life cycle.

According to PMBOK, the project life cycle serves to define the beginning and the end of a project. Figure 2.1 below shows a generic sample of the project life cycle given by PMI Standard Committee. This way of presenting the project life cycle is preferred to IT (Information Technology) projects (Wideman, 2004) that can be used as project life cycle for telecommunication projects with some modifications.

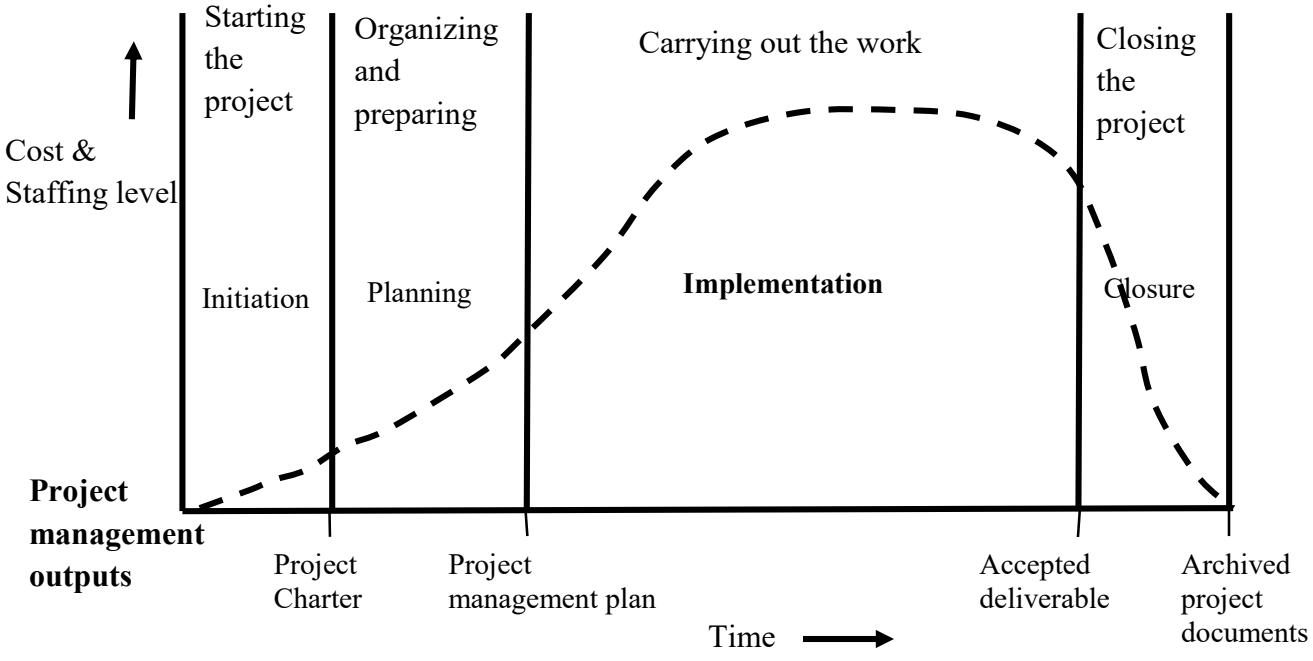

Figure 2-1: Sample Generic Project Life Cycle (PMI, 2015 p. 39) and phases

Many project life cycles have similar names but there is variation in the number of phases for different projects. Phases include activities that result in certain output or deliverable that are carried out in an arranged way from start to the end of a project, but may be performed out of order in practice. For example, if there is scope change during the implementation of the project the project manager may go back to the planning phase. For this reason, they are officially called process groups in the PMBOK. According to the PMI (2017), each of these phases of the project management life cycle have 5 process groups. Project management process group is a logical grouping of project management inputs, tools and techniques, and outputs that include Initiating, Planning, Executing, Monitoring and Controlling, and Closing for each project phases in the life cycle. For instance, the Implementation phase in the project cycle includes the initiating, planning, executing, monitoring and controlling, and closing processes. They overlap and interact to each other in different levels at each step.

Westland (2006) divided the project life cycle to four phases: project initiation phase, project planning phase, project execution phase and project closure phase. In each of these phases different activities are accomplished. Cavendish and Martin (1982) as cited in (Wideman, 2004) also tried to show the project life span from contractor's point of view and tried to mention some activities done in each phases as follows:

Conceptual: activities include goals, select manager team, scope objectives, formal authority, bidding and estimating.

Planning: activities include costing, work break-down, define targets, make or buy decisions, scheduling.

Implementation: activities include manage contracts, monitor, identify problems, re-plan, adjust targets, sub contract management.

Phase-out: resolve operating problems, reward personnel, reassign personnel, review

Similarly, Archibald (1976), clarifies the words in the generic project life cycle in broad alternative terms as:

Concept: initiation, identification, selection.

Definition: feasibility, development, demonstration, design prototype, quantification.

Execution: implementation, production, and deployment, design/construct/commission, install and test.

Closeout: termination and post completion evaluation.

The telecommunication projects phases are also shown by Sherif (2006) as: concept definition, initiation and preliminary planning, implementation, controlled introductory, general availability and close-out. Therefore, in this study the project implementation and project execution are used interchangeably.

2.3. Project Implementation Concept

The project implementation is carrying out activities proposed in the plan according to the scope definition with the aim of achieving project objectives and deliver results and outputs. In this stage, progress is continuously monitored and controlled in which appropriate adjustments are made for any deviations or variances from the original plan. According to Sherif (2006), the implementation process involves planning, executing, and control of the project tasks that are needed to deliver the project out-put and consists of sub-phases including detailed design, laboratory testing and acceptance, installation, test, and service turn-ups. The outputs of this phase are defined architecture with specific equipment, equipment configurations, geographic location of hop sites, the required transmission capabilities, dismantling old equipment and retirements, procedures for spare storages, and returns of defective parts. Additional activities include site survey and preparation, constructing, purchasing and leasing space of buildings, land acquisitions, human resource developments, training teams, preparing training materials, establishing internal standards, considering external standards and so on. Westland (2006) summarized the activities as in the following Figure 2-2 as follows:

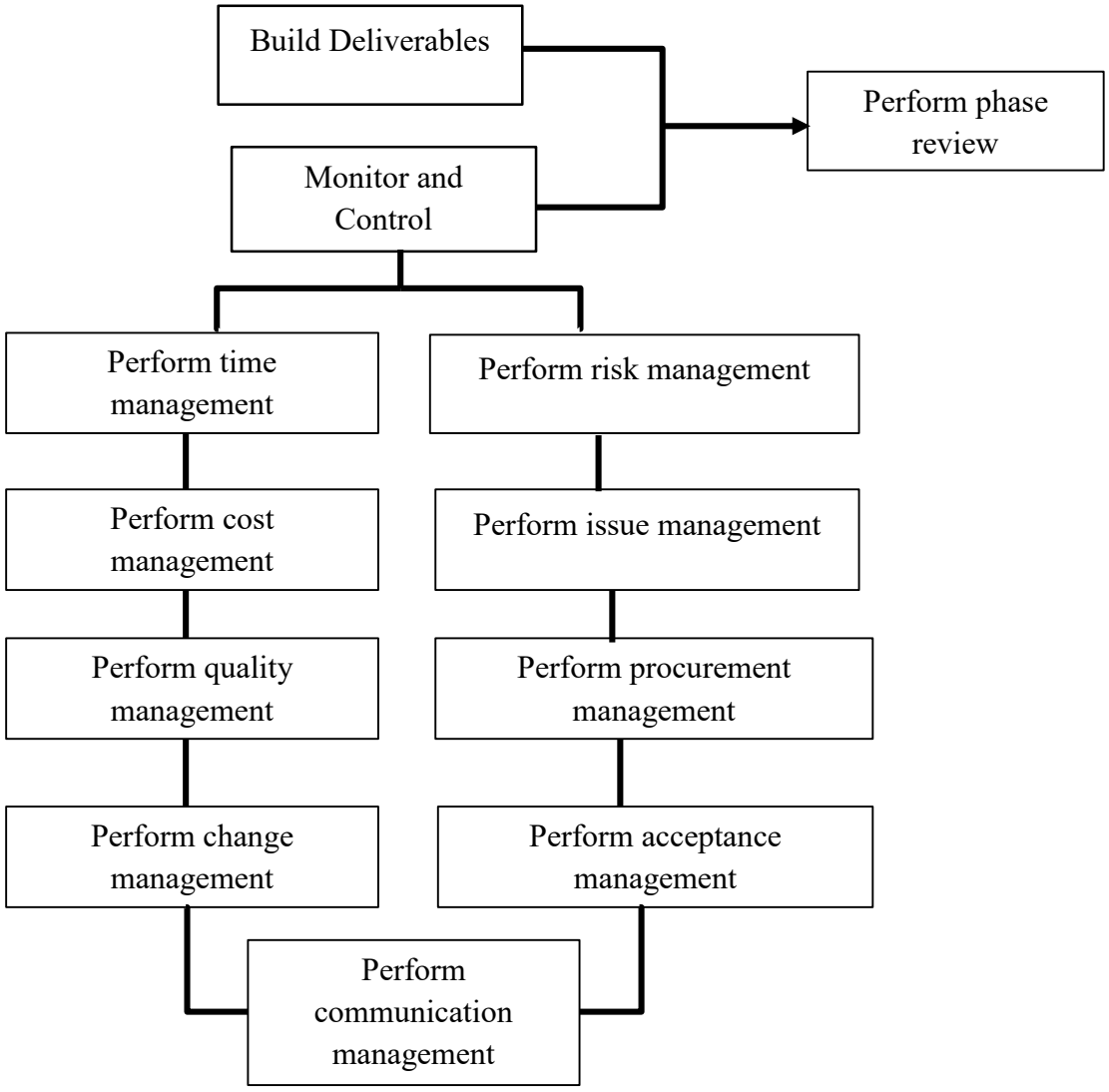

Figure 2-2: Project execution activities (Westland, 2006 p. 11)

Build Deliverables: involves physically constructing each deliverable for acceptance by the customer to meet their quality requirements.

Monitor and Control: While the project team are physically producing each deliverable, the project manager implements a series of management processes to monitor and control the activities being undertaken by the project team. The management processes include: time, cost, quality, change, risk, issue, procurement, acceptance, and communications management. A careful monitoring and control processes should be employed to achieve the objectives.

Perform phase review: this is done at the end of the execution phase to ensure whether the project achieved its objectives as planned.

Therefore, this study is assessment of these activities discussed by (Westland, 2006) in relation to the project management knowledge areas, readiness processes and management support practices.

As Westland (2006) mentioned it, each of these activities has to be fully implemented in order to successfully deliver the project on time, within budget, and to specification. According to (Mearman, 2004), the heart of any implementation is carefully defining requirements in order to build a clear scope of what the project is going to entail. Requirements need to be signed off by both the vendor (contractor) and client. Requirements then drive project scope definition. If the requirements are defined once, change orders help to modify the contents of the document and the associated implementation scope of the project.

2.3.Project Implementation Practices

2.3.1.Project Implementation Success factors and criteria

Implementing successful projects generate positive effects on the organization, influencing not just short and medium, but also long term development (Beleiu, et al., 2015). Success is the dream of every project owner and manager in implementing projects that makes it an interesting topic. Success or failure of projects in general and IT and telecom projects success/failure in particular seem to be more likely non-binary; because, a project may be successfully finished on time, on cost but not to the required standard (some functionality modules may be absent, or has no the required specification). Most of the time success and failure is seen as 'black and white'. However, projects may not be seen as completely successful or complete failure (Wateridge, 1996). As (Milis, 2002) also indicated, success factors include factors that lead to more than average success termed as 'Success Factors (SF)' and 'Factors that Prevent from Failure (FPF)'. In addition, it is important to know success may mean different to different peoples in different projects and this leads to the introduction of multi-dimensional frameworks for the assessment of project success which would reflect different interests and different points of view (Shenhar, et al., 2001).

Several researchers such as Wateridge (1998); Baccarini (1999); Morris & Hough (1987); Turner (2009); Jugdev & Muller (2005); Muller & Turner (2007) classified project success-related factors as

success factors and success criteria. Project success factors are independent variables which includes activities, practices or elements of a project that can be influenced to increase the likelihood of success of a project in achieving its objectives. Whereas, project success criteria are dependent variables and are considered as the measures by which we judge the successful outcome of a project or the project success. Both success factors and success criteria differ from project to project and from industry to industry. Success factors and success criteria are dependent to each other. For instance, if there is proper management of project cost, one success criteria of project implementation on cost is fulfilled. So, management of these factors increases the probability of successful implementation of the project whereas inefficiency on performance or mismanagement of these factors leads to failure of the project to achieve its initial objectives or plan.

Researchers have been trying to identify different success factors based on different types of projects Beleiu, et al. (2015). The ten success factors listed by Pinto & Slevin (1987)); Hartman & Ashrafi (2002); Turner & Muller (2005) include project mission, top management support, schedule and plans, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback, communication and troubleshooting. These factors are assumed to be as project success factors of Information System projects. Most Information System projects are done based on existing telecommunication infrastructure projects. But Telecom Expansion Project is itself an infrastructure project.

By reviewing different literatures, Els, et al., (2012) listed the different dimensions of projects success comprising the success criteria and success factors. According to Els, et al., the success criteria are: stakeholders' appreciation, completes within time, meets the required quality and completes within cost. The success factors are: team & leadership, project manager, communication, stakeholder management, planning, scheduling, monitoring and control, quality management, risk management, organization structure, financial resources, policy and strategy, learning from experience, external environment, procurement and contract, contractor, technical and innovation. These factors are more general to projects. So, more specific success factors that influence implementation of telecommunication projects are needed.

According to Mukopi (2016), the factors that influence implementation of telecommunication network equipment projects are: scope management, time management, cost management, procurement and communication managements. These factors that influence implementation of telecommunication network equipment projects studied by Mukopi are five of the ten knowledge

areas that are known by the project management body of knowledge (PMBOK). Mukopi also mentioned that the other knowledge areas can influence the implementation of telecommunication network equipment projects. This study also is focused with implementation of telecom projects by a privately owned company (Safaricom Limited). The Telecom Expansion Project (TEP) is more of an infrastructure project in the telecom sector that covers from fiber expansion to equipment installations similar to road construction accomplished by the government. So, the factors that influence the implementation of such projects will not be the same. However, the approach of integrating the project management knowledge areas as influencing success factors of telecommunication project implementation such as Telecom Expansion Project (TEP) is a better consideration. Because of the many disciplines integrated together in telecommunication projects and implementation a project includes the management of knowledge areas in the monitoring and control, it is good approach to assess practices in the knowledge areas of the PMBOK.

2.3.2.The 10 project Management Knowledge Areas

According to PMBOK (PMI, 2017), a knowledge area is an identified area of project management defined by its knowledge requirements and described in terms of its component processes, practices, inputs, outputs, tools, and techniques which are considered to be applied in almost all kinds of projects. These practices are identified by experts from their practical experiences in project management and need to be given focus by project managers. There are several bodies of knowledge, frameworks, standards and guides such as IPMA (2006); OGC (2007); PMBOK which are also mentioned by Zwikael (2009) that support project management in practice. In addition, Varajao (2016) mentioned PMBOK and ISO (2012) as some of the influential publications that can be used by organizations, and the proper implementation of project management processes' best practices recommended in these guides should improve project management performance, thus improving success.

Zwikael (2009) conducted a study on the relative importance and influence of the PMBOK knowledge areas in project success. The study used PMBOK Guide of the second edition (PMI, 2000) and focused on the planning phase of a project. Till the fourth edition of PMBOK (PMI, 2008), the nine project management knowledge areas covered are project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communication management, project risk management

and project procurement management. In order to identify which of the nine knowledge areas have the greatest impact on project success, Zwikael used a model that includes the nine knowledge areas as independent variables and project success as dependent variable which is measured by four variables of success (time, cost, quality and customer satisfaction). Accordingly, Zwikael ranked the nine knowledge areas based on their impact on project success as: time, risk, scope, human resource, integration, quality, communication, cost and procurement from the highest to the lowest and also summarized different rankings for different industries (construction & engineering, software, production, communications, services and government).

In the latest edition of PMBOK, (PMI, 2017), the human resource management is split into resource management and stakeholder management, and so accordingly, there are 10 project management knowledge areas identified and are important in the project management practices. Ibbs & Kwak (2002) integrated project management practices, processes and project management knowledge areas in their project management process maturity model for effective project management of an organization. According to Ilies, et al. (2010), the Project Management Body of Knowledge (PMBOK) is a collection of processes and knowledge areas generally accepted as best practice within the project management discipline.

The 10 project management knowledge areas from PMBOK are discussed as follows:

1. Project Schedule Management:

   Project schedule management is the process of comparing actual schedule performance to the baseline schedule to determine variances, evaluate possible alternatives, and take the appropriate action (Richman, 2011). It includes the processes required to manage the timely completion of a project. The project scheduling provides a detailed plan that represents how and when the project will deliver the products, services, and results defined in the project scope and serves as a tool for communication stakeholders' expectations, and as a basis for performance reporting (PMI, 2017). According to the PMBOK, the project schedule management includes the following process:

   Planning schedule management: is the process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule.

Defining activities: is the process of identifying and documenting the specific actions to be performed to produce the project deliverables.

Sequencing activities: is the process of identifying and documenting relationships among the project activities.

Estimating activity duration: is the process of estimating the length of time or period needed to complete individual activities with the estimated resources.

Developing schedule: is the process of analyzing activity sequences, duration, resource requirements, and schedule constraints to create the project schedule model for project execution and monitoring and controlling.

Controlling schedule: is the process of monitoring the status of the project to update the project schedule and manage changes to the schedule baseline.

2. Project Cost Management:

Project cost management is the process of comparing actual expenditures to the baseline cost plans to determine variances, evaluate possible alternatives, and take appropriate action (Richman, 2011). It is the process of estimating the cost starting with the work breakdown structure and then controlling the expenditures in an environment of continuous change (Sherif, 2006). According to the PMI (2017), cost management includes the following processes:

Planning cost management: is the process of defining how the project costs will be estimated, budgeted, managed, monitored, and controlled.

Estimating costs: is the process of developing an approximation of the monetary resources needed to complete an activity.

Determining budget: is the process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.

Controlling costs: is the process of monitoring the status of the project to update the project costs and manage changes to the cost baseline.

3. <u>Project Scope Management:</u>

Project scope management is closely aligned with integrated change control and the project manager needs to focus on what is needed to complete the project successfully (Pheng, 2017). The project scope management process contains the procedures which confirm that project will

be completed as planned and intended if it is only comprises the required work (Al-Rubaiei, et al., 2018). The PMI (2017) defined the processes of project scope management as follows:

Plan Scope Management: The process of creating a scope management plan that documents how the project and product scope will be defined, validated, and controlled.
Collect Requirements: The process of determining, documenting, and managing stakeholder needs and requirements to meet project objectives.
Define Scope: The process of developing a detailed description of the project and product.
Create Work Breakdown Structure (WBS): The process of subdividing project deliverables and project work into smaller, more manageable components.
Validate Scope: The process of formalizing acceptance of the completed project deliverables.
Control Scope: The process of monitoring the status of the project and product scope and managing changes to the scope baseline.

4. Project Quality Management:

Project quality is the degree to which a set of inherent characteristics fulfils the project requirements (IPMA, 2006). As IPMA described it, the basis for project quality is the quality management practices by all members participating in the project and the organization involved by determining the quality policy, objectives and responsibilities of the project and applying quality management systems. According to the PMI (2017) the project quality management includes the processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirements, in order to meet stakeholders' expectations. The processes of quality management discussed in the PMBOK are:

Plan Quality Management: The process of identifying quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with quality requirements and/ or standards.
Manage Quality: The process of translating the quality management plan into executable quality activities that incorporate the organization's quality policies into the project.
Control Quality: The process of monitoring and recording the results of executing the quality management activities to assess performance and ensure the project outputs are complete, correct, and meet customer expectations.

5. Project Communication Management:

Communication covers the effective exchange and understanding of information between parties (IPMA, 2006). It describes the possible means by which an information can be sent or received, either through communication activities, such as meetings and presentations, or artifacts, such as emails, social media, project reports, or project documentation (PMI, 2017). Generating, collecting, distributing, updating, and storing project-related data and documentation in a standardized manner and ultimately disposing of project related information is important to achieve effective information exchange (Sherif, 2006). There are 3 project communication processes in the PMI (2017).

Planning communications management: is the process of developing an appropriate approach and plan for project communication activities based on the information needs of each stakeholder or group, available organizational assets, and the needs of the project.
Managing communications: is the process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of project information.
Monitoring communications: is the process of ensuring the information needs of the project and its stakeholders are met.

6. Project Risk Management:

Risk is an event or condition that disrupts the implementation of a project and reduces chances of achieving schedule, cost, quality objectives of projects if it is not mitigated timely. Every project has its own risk and if not properly managed can result in a failure of the project. Risk management is the process of identifying, analyzing, mitigating or responding and monitoring risks in order to decrease its impact on project success. Many researches accepted risk as one of the main factors influencing projects success ((Karadsheh, et al., 2009; Eid, et al., 2015; Bhatia & Kapoor, 2011; De Bakker, et al., 2010).

According to the PMI (2017), risk management includes the following processes:

Plan Risk Management: is the process of defining how to conduct project risk management activities.

Identify Risk: is the process of identifying individual project risks and the sources of overall project risk, and documenting their characteristics.

Risk Analysis: Risk analysis includes qualitative and quantitative methods. Qualitative risk analysis is the process of prioritizing individual risks for further analysis or action by assessing their source of uncertainty, their impact or other characteristics. Quantitative risk analysis is the process of numerically analyzing each identified project risks or other sources of uncertainty on the project objectives.

Plan Risk Response: is the process of developing options, selecting strategies, and agreeing on actions to address or mitigation of overall risk exposure and uncertainty, treat individual project risks.

Monitor Risks: Monitoring risk is the process of monitoring the implementation of agreed-upon risk mitigation plans, tracking identified risks, identifying and analyzing new risks, evaluating risk process effectiveness throughout the project.

7. Project resource Management:

project resource management is the identification, planning, allocation resources with the required capabilities and optimizing the way these resources are utilized in the time schedule as well as the continuous monitoring and control of the resources (IPMA, 2006). The resources include people, materials and the infrastructure (materials, equipment, facilities, services, information technology, information and documents, knowledge) required to carry out project activities successfully (IPMA, 2006; Kerzner, 2009; PMI, 2017). According to the (PMI, 2017), the project resource management includes the following processes:

Plan Resource Management: The process of defining how to estimate, acquire, manage, and utilize physical and team resources.

Estimate Activity Resources: The process of estimating team resources and the type and quantities of material, equipment, and supplies necessary to perform an activity of the project work.

Acquire Resources: The process of obtaining team members, facilities, equipment, materials, supplies, and other resources necessary to complete project work.

Develop Team: The process of improving competencies, team member interaction, and the overall team environment to enhance project performance.

Manage Team: The process of tracking team member performance, providing feedback, resolving issues, and managing team changes to optimize project performance.

Control Resources: The process of ensuring that the physical resources assigned and allocated to the project are available as planned, as well as monitoring the planned versus actual use of resources, and performing corrective action as necessary.

8. Project Integration Management:

Integration management refers to a comprehensive managerial activity which coordinates and integrates all managerial activities on project schedule, cost, quality, scope, procurements, and others from a big picture view to maximize the overall results of a project (Cleland & Ireland, 2008). It includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities and touches all the process of initiating, planning, executing, controlling and monitoring, and closing of the project to achieve the objectives. The project integration management process groups are discussed in the PMI (2017) as follows:

Develop Project Charter: The process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.

Develop Project Management Plan: The process of defining, preparing, and coordinating all plan components and consolidating them into an integrated project management plan.

Direct and Manage Project Work: The process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives.

Manage Project Knowledge: The process of using existing knowledge and creating new knowledge to achieve the project's objectives and contribute to organizational learning.

Monitor and Control Project Work: The process of tracking, reviewing, and reporting overall progress to meet the performance objectives defined in the project management plan.

Perform Integrated Change Control: The process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating the decisions.

Close Project or Phase: The process of finalizing all activities for the project, phase, or contract.

9. Project Procurement Management:

Procurement involves obtaining the best value for money from suppliers of goods or services to the project (IPMA, 2006). Project procurement management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team (PMI, 2017).

The success of the project implementation necessitates well-executed equipment deliveries and if procurement is carried out properly or if the right equipment has been purchased at an acceptable price with precisely timed deliveries, the project has good opportunity to be successfully implemented (Vehvilainen, 2006). Most of the telecom projects in Ethiopia had been accomplished with the help of vendors. The Telecom Expansion Project (TEP) was also based on multi-vendor sharing strategy and thus equipment and technology as a whole was purchased from different vendors. So, for this kind of project the project procurement management practices need to be effective to achieve the objectives. The PMI (2017) discussed the project procurement management processes as follows:

Plan Procurement Management: The process of documenting project procurement decisions, specifying the approach, and identifying potential sellers.
Conduct Procurements: The process of obtaining seller responses, selecting a seller, and awarding a contract.
Control Procurements: The process of managing procurement relationships, monitoring contract performance, making changes and corrections as appropriate, and closing out contracts.

10. Project Stakeholder Management:

Stakeholders are individuals, peoples and organizations related with the project who may affect the project or be affected by the project. According to McElroy & Mills (2000), Stakeholders are individuals or a group of individuals, who are influenced by or able to influence a project. Project stakeholders may include top managements, project manager, resource manager, project team, peers in the projects, customers, suppliers or vendors, contractors, government and so on. Managing stakeholders is about identifying stakeholders, their interest level, and their influence potential to the project; and managing and controlling the relationships and communications between stakeholders and the project. In addition, McElroy & Mills (2000) indicated that the

purpose of stakeholder management is to achieve project success through the continuing development of their interrelationships. Therefore, appropriate project stakeholder management practices are important in project implementation success.The PMBOK (PMI, 2017) described Project Stakeholder Management processes as follows:

Identify Stakeholders: The process of identifying project stakeholders regularly and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success.

Plan Stakeholder Engagement: The process of developing approaches to involve project stakeholders based on their needs, expectation, interests, and potential impact on the project.

Manage Stakeholder Engagement: The process of communicating and working with stakeholders to meet their needs and expectations, address issues, and foster appropriate stakeholder engagement involvement.

Monitor Stakeholder Engagement: The process of monitoring project stakeholder relationships and tailoring strategies for engaging stakeholders through the modification of engagement strategies and plans.

2.3.3. Management Support

Top management support is the degree of commitment, involvement, attention, direction, resources given to a project by senior managements. Top management in this research indicates higher government officials such ministry of communication, Chief Executive Officer (CEO), managers and immediate supervisors of the project. Top management is generally the individuals functioning in the capacity of CEO, President, Chairman, Chairperson, Director or other official positions at senior management level (Denis and Denis, 1995). According to the (TEP-Charter, 2013), the higher level TEP governance body includes: Board of Directors (BoD), TEP Vendor's Steering Committee, TEP Steering Committee and TEP Committee. Under these bodies CEO, TEP director, Chief Technical Officer (CTO), Chief Information Officer (CIO), Chief Quality & Process officer (CQ&PO), Chief Human Resource Officer (CHRO), Chief Sourcing and Facility Officer (CSFO), managers and supervisors are involved in the TEP project. Top managements are considered projects stakeholders that may have different influence levels for their project implementation.

Top management support is an essential factor in project success and has been examined in various studies as one of the critical success factors (Khan, et al., 2014). Top management involvement is

particularly crucial during the implementation stage of project cycle as sufficient resources in the forms of monetary, manpower as well as materials are needed in carrying the project task and to achieve the intended purpose of the project (Kandelousi & Abdollahi, 2011; Liu, et al., 2013).

Since its establishment, Ethio Telecom has been the sole telecom service provider in Ethiopia and fully owned by the government. So, Ethio Telecom projects are part of the government plans in different sectors such as education, health, agriculture and other infrastructures such as telecommunication. Telecom Expansion Project (TEP) is also part of the ambitious Growth and Transformation Plan (GTP) decided by the government to focus on the improvement of telecommunication services, considering it as a key lever in the development of Ethiopia. Therefore, top management support is identified as one of the main critical success factors for projects (Zwikael, 2008; Kandelousi & Abdollahi, 2011; Imtiaz, et al., 2013; Young & Poon, 2013; Iqbal, et al., 2015), particularly for IT and ICT projects. So, it is important to assess how management support is practiced on telecommunication projects especially government owned telecoms like Ethio Telecom projects.

According to the TEP-Charter (2013), there are several responsibilities assigned to the governance bodies. The critical success factors summarized in the charter are: full support from the government, full support of Executive Management Board (EMB), empowered program managers, qualified and sufficient resources, commitment of the program management team, appropriate incentives to drive need behavior to deliver the expected milestones, standard process, quick decision making, resource availability, proper change management and escalation procedures, realistic schedule and communication at all levels to create ownership. Top management support includes the following practices:

Commitment and follow-up: commitment and follow-up is the direct participation of highest level executives in a specific aspect or program of the project issues, dedication, close and persistent follow up of the project. One of the factors that is widely recognized as critical for achieving technology implementation success (and, for that matter, projects in general) is top management commitment (Amoako-Gyampah, et al., 2018). Follow-up includes monitoring and controlling of time, cost, scope, risk by tracking, assessing, reviewing and regulating progress.

Quick decision making: decision making is a judgement or choice between alternatives (Tiainen, 2014) and is critical for project success (Parth, 2013).

Commit resources and prioritizing: top management also plays a crucial role in providing and facilitating the required resources for project success (Iqbal et al, 2015). Usually top management support results in availability of financial resources, in-time allocation of human and other physical resources and also it refers to the delegation of necessary power to project leaders and project team for successful completion of projects (Kandelousi & Abdollahi, 2011). Prioritization is also important for effective project implementation.

Manage training and knowledge transfer: knowledge transfer is subset of knowledge management that involves conveying and diffusing knowledge throughout an organization to leverage the ways it can be used to solve problems and strengthen performance (Kess, et al., 2007). According to the PMI (2015), knowledge transfer is the methodical replication of the expertise, wisdom, insight, and tacit knowledge of key professionals into the heads and hands of their coworkers. Knowledge can be transferred by documentations, on-job mentoring and trainings especially for new technologies. Most telecommunication companies in the developing countries including Ethio Telecom outsource their projects to outside vendors. TEP also was implemented based on vendor financing scheme. For success of the project implementation and smooth operation of the network after implementation, training and knowledge transfer is needed. According to (Ross & Kathryn, 2015), knowledge management is a key determinant of project success and have a significant impact on project performance.

Appropriate incentive management: Incentives tend to be financial rewards given for reaching an agreed objective and their purpose is to motivate employees (Beel, 2007). So, appropriate management of incentives is a key factor in motivating project teams and influences project performance. The acknowledgment of the important role of motivation and its influence on project success has led to the increased use of incentive schemes (Bower, et al., 2002).

2.3.4.Project Implementation readiness processes

There are 3 readiness processes that are essential requirements for the execution of any commercial and industrial projects successfully (Lutchman, 2011). According to Lutchman, these readiness process are people, process, and system that are considered key components of an overall milestone readiness process which, when managed properly, greatly increases the ability of project leaders to deliver projects on budgets and on schedules.

1. People Readiness:

People are the building blocks and the foundation of all projects. The management of the human resources on a project has a major impact on the project's success or failure (Mishra , 2007). So, the people readiness is related to the project human resource preparation of the competence, skills, qualifications and number of personnel required for the successful implementation of the project. Employee must be ready for the execution of the project in their skills through trainings and motivated to successfully implement it. Lutchman identified 3 criteria for people's readiness before moving from one milestone to the other milestone in the project execution that include:

Adequate personnel are hired and properly oriented: Adequate number of manpower has to be ready at the right time for the successful implementation of the project. Manpower planning is the process by which an organization ensures that it has the right number of people, at the right place, at the right time, doing things for which they are economically most useful (Ibojo, 2012). Acquiring project staff includes the processes to: identify potential sources (external/department in the organization) of project staff; define skill and activity descriptions that can be used by recruiters and resource managers to obtain staff from appropriate sourcing organizations; finding the right people, with appropriate skills, available when needed, for the right duration, within planned costs (Mishra , 2007).

Standard operating procedures (SOPs) are developed for all operating areas: Standard operating procedure is a tool for controlling company's operations to reach the desired outcome of products and services and it includes written documents from which employees can check step-by-step what is the next task in their workstation (Valtanen & Perälä, 2017). Developing and implementing as accurate SOP's as possible has many benefits in project implementation and company's operations in general. When employees follow the accurate and acceptable steps in SOP, it has impacts on costs, inventory, delivery, safety and quality; and also reduces expenses, variation and throughput time that therefore increases productivity for every work station and facility (EPA, 2007).

Adequate personnel are properly trained, assessed, and qualified: people must be trained and acquainted with the required skills for the project implementation. According to Pinto & Slevin (1988), it is necessary to ensuring the implementation personnel possess the necessary technical skills and have to be adequatly trained.

2. Process Readiness:

Process readiness is related with the readiness of operation and maintenance of equipment that are installed, identification of criticality of equipment and their risk exposure, procurement of spares, retirement of old equipment, warehousing systems and maintenance workshops. In addition, support services for the working employees such as human resources, accounting, communications, information technology and other assistance programs. According to Lutchman (2011), the criteria for process readiness include:

The equipment hierarchy has been fully developed for a computerized maintenance management system (CMMS): A good CMMS program allows the operations organization in a facility to perform proactive inspections and monitoring of equipment and assets to improve overall reliability, availability, and operating efficiency (Lutchman, 2011). According to Kamoun (2005), The efficient and comprehensive use of a CMMS is an essential prerequisite for properly planning, tracking, controlling and evaluating network maintenance and can play a key role in optimizing work-order management, including enhanced planning, scheduling and cost control.

Preventive maintenance schedules have been fully developed for all critical equipment: The network engineer should identify those critical devices that need special performance monitoring and provision thresholds on such items as error rate, packet-discard rates, fan status and selected test-point temperatures (Kamoun, 2005). Most critical equipment in the network are nodes that aggregate different services from different customers and even small duration functioning interruption of the equipment is great loss for the company and economy of the country. So, preventive maintenance scheduling and planning is important when ready to implement the implementation and installation tasks of the project.

Accounting systems have been developed, and all methods for procurement of support and services have been organized: This is the functionality needed to manage inventory and spare parts for maintenance of the assets and includes integration with the inventory data for parts checkout, stock availability, and materials costing on work orders; and integration with the procurement system to initiate purchase requests and track order fulfillment and receipt of parts and materials (McDonald, 2015).

3. System Readiness:

System readiness indicates the preparedness of all systems needed for the project execution. This includes complete mechanical installations and installations of any required systems, confirmation to quality and operating standards, conformity with generally accepted and regulatory standards, safety systems installations and notices. Similarly, in the case of telecom companies, the systems include but not limited to electrification systems for the equipment, air conditioners, infrastructures such as roads and installation of other necessary systems has to be prepared. The Technical Site Survey Report (TSSR) is done before designing the telecom equipment. Lutchman (2011), listed system readiness criteria include:

Mechanical completeness: According to Lutchman (2011), mechanical completeness of the system refers to readiness of the system to be turned over to the commissioning organization so that the system can be commissioned and started up safely and consistent with the designed drawings. One of the key practices for successful project execution (implementation) is to achieve mechanical completion of each System; ensure punch list (list of uncompleted works) is developed with operations input; ensure turnover documentation is as per contract requirements (McIntosh, 2018).

Design quality and operating standards and adherence to a management of change (MOC) process: Prior to turning on of any system, it is important to ensure that the system conforms with the design quality, operating standards, and must follow the management of change (MOC) process for any change of the planned change in the project implementation (Lutchman, 2011).

Controls tested within design limits: The acceptance criteria for the system to be implemented from the vendor is stated in the statement of work at the beginning of the project planning.

In the implementation of the project, the system has to be designed according to the specification in the project acceptance test (PAT) document before it goes live. After the actual testing of the project, a test report is prepared. The acceptance report indicates the hardware and software versions accepted, their compatibility with other systems already deployed in the network and any known problems that were deferred and ways to avoid them (Sherif, 2006).

Regulatory compliance: It is important to test the systems implemented are in accordance to regulatory compliance of international and national regulations. Some international regulations may include mandatory standards, including standards covering electromagnetic interference and health issues such as exposure to electromagnetic radiation, interferences and frequency licenses. National regulations may include government laws and regulations.

Safety systems installed and functional: Before the system is turned on all safety systems, safety communication notices has to be checked, personnel trained and qualified on how to use safety systems (Lutchman, 2011).

2.4.Conceptual Framework

According to Svinicki (2010), a conceptual framework is an interconnected set of ideas (theories) about how a particular phenomenon functions or is related to its parts and serves as the basis for understanding the causal or correlational patterns of interconnections across events, ideas, observations, concepts, knowledge, interpretations and other components of experience. Miles & Huberman (1994) defined a conceptual framework as a visual or written product that explains, either graphically or in narrative form, the main things to be studied, the key factors, concepts, or variables and the presumed relationships among them.

This study is an assessment case study and does not include correlational analysis of dependent and independent variables. So, the conceptual frame work in the Figure 2-3 shows the overall study graphically. It is prepared based on the research questions, problems and literature review of the study to clarify concepts, provide a context for interpretation findings, explain observations.

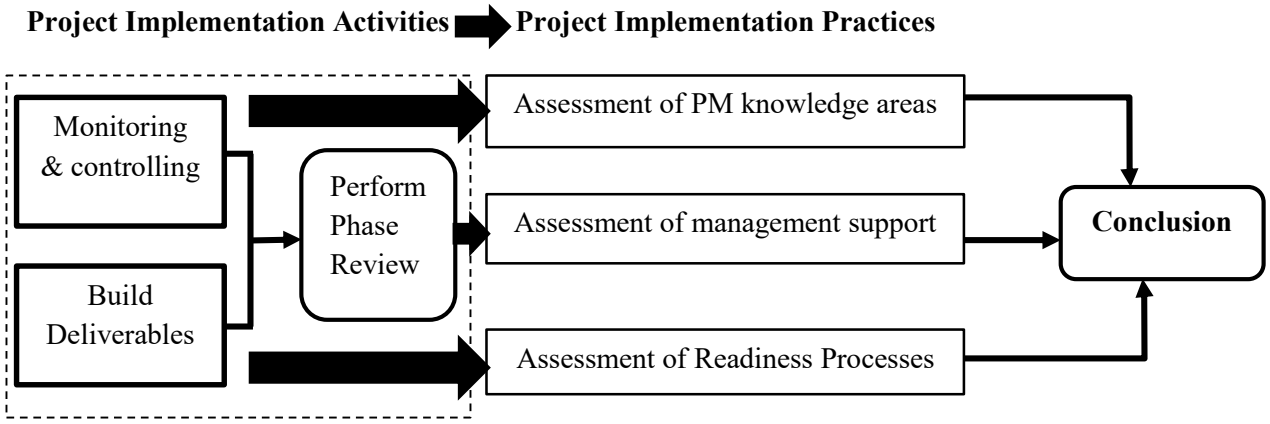

Figure 2-3: Conceptual Framework (Source: Adopted from (Westland, 2006 p.11))

2.5.Summary of literature review

In this chapter, the project implementation practices are discussed that includes mainly the 10 project management knowledge areas, management support and readiness processes that influence the implementation of projects. The project implementation is carrying out activities proposed in the plan according to the scope definition with the aim of achieving project objectives and deliver results and outputs.

The 10 project management knowledge areas are accepted as the best practices in project management. Project implementation success is influenced by the practices of the project management knowledge areas that include schedule management, cost management, scope management, quality management, communication management, risk management, resource management, integration management, procurement management and stakeholder management.

Management support is essential for project success and has been considered by studies as one of the critical success factors. The management support practices in the project implementation include commitment and following-up the project, quick decision making, prioritizing and committing resources, managing training and knowledge transfer, and appropriate incentive management.

The readiness practices for the project implementation include: people's readiness, maintenance readiness and systems readiness. The readiness practices are important for the successful execution of a project.

The project management knowledge areas are related to the control and monitoring, the readiness processes are related to the building of the deliverables and the management support practices are related to the performing phase reviews of the project management activities discussed by (Westland, 2006) in project execution. The management support related practices are important in project implementation of projects especially for government owned companies such as Ethio Telecom. Therefore, appropriate management of the knowledge areas, management support and readiness processes are critical for the successfully implementation of a project.

CHAPTER THREE: RESEARCH DESIGN AND METHEDOLOGY

3.1.Introduction

In this chapter the research design and methodology used are discussed. It covers the research design, target population, data collection methods, validity and reliability, data analysis methods and ethical considerations.

3.2.Research Design

A research design is a framework for the collection and analysis of data (Alan & Emma, 2011) to answer the research questions. The function of research design is to provide for the collection of relevant evidence with minimal expenditure of effort, time and money (Kothari, 2004). Kothari added that the research designs can be exploratory, descriptive, diagnosis and experimental types. As Grover (2015) described the research approaches include quantitative, qualitative and mixed methods. Descriptive study tries to discover answers to the questions who, what, when, where, and, sometimes, how (Cooper & Schindler , 2014). Since this study is assessment of telecom project implementation practices in Ethiopia, it is a descripitive design type and uses quantitative research approach.

3.3.Target population

The study is focused on assessing project implementation practices of Telecom Expansion Project (TEP) that took place in Ethiopia by Ethio Telecom starting from 2013. The project governance is important to ensure smooth communication and fast decision making, to avoid conflict of interest, to assess critical milestones before moving to the next milestone, to ensure responsibility of divisions in implementation of the project, to implement the project timely and follow up of implementation schedule in general. The Project Management Office (PMO) of TEP project was established by the name TEP office which includes program director, program managers, project managers, project coordinators and supervisors, and project professionals (TEP-Charter, 2013). So, the target population for this study are Ethio Telecom employees, specifically TEP program managers, project managers, coordinators and professionals who participated on the project implementation. The summary of working level or roles distributions of the participants of TEP project is depicted on the table below.

Table 3-1: Target population distribution

SN	Working Level	Head Count (Ni)
1	Program Director	1
2	Program Managers	5
3	Project Managers	67
4	Project Coordinators/Specialists/Supervisors	483
5	Project Professionals/Technicians	486
	Total (N)	**1042**

Source: TEP-Charter (2013); Gebretsadik (2018)

3.4.Data Collection Methods

Data collection method is done using a survey method and the instrument is questionnaire to collect information from individuals. The questionnaire consists of introductory letter to respondents, general respondent's profile and close-ended questions to collect respondents' perceptions in telecom project implementation practices. The closed-ended questions helped to capture telecom project implementation practices related to project management knowledge areas, top management support and readiness processes. The open-ended questions are included to know general opinion of respondents on telecom project implementation practices in Ethiopia.

3.5.Sample Design

Researchers may use census or sample to collect data from target population. For small number of population census can be used, however, sampling techniques is mostly used for large number of population. Researchers neither have time nor the resources to analyze the entire population so they apply sampling technique to reduce the number of cases (Taherdoost, 2016). So, this study uses stratified random sampling design. According to this, the target population is divided into subgroups (strata) and randomly a sample is taken from each strata of the population that include the program director, program managers, project managers, coordinators and professionals. So, specifically the study uses 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).

3.6.Sample Size

Sample size refers to the number of items to be selected from the universe to constitute a sample (Kothari, 2004). Too small sample size may fail to detect important aspects needed by the study; on the contrary, too large sample size may escalate to high cost, higher complexity and even inaccuracy in research results (Ajay & Micah, 2014; Kothari, 2004). So, an adequate sample size must be used that can represent the target population effectively.

For this study the sample size is obtained using the rule of thumb that Dr. John Curry, Professor of Educational Research, North Texas State University used in 1984 as also cited by (Yount, 2006) and used for sampling population. The table below shows the rule for sampling.

Table 3-2: Sample Size Rule of Thumb

Rule	Target Population Size (N)	Sample Size (%)
1st	0-100	100%
2nd	101-1,000	10%
3rd	1,001-5000	5%
4th	5,001-10,000	3%
5th	10,000+	1%

Source: Yount (2006)

The target population size (N) for this research is 1042 as shown on Table 3-1 above which lies in the 3rd rule of thumb Table 3-2. Therefore, 5% of the target population is considered enough for this study. So, the sample size (n) is 53 (n=5%*1042=53). The proportional stratified random sampling is used and hence the distribution is as shown on Table 3-3 below.

Table 3-3: Stratified Random Sampling Proportion

SN	Working Level	Head Count (Ni)	Strata Size Calculation [(n/N)*Ni=ni]	Strata Sample Size (ni)
1	Program Director	1	(53/1042)*1	1
2	Program Managers	5	(53/1042)*5	1
3	Project Managers	67	(53/1042)*67	3
4	Project Coordinators/Specialists/Supervisors/Experts	483	(53/1042)*483	24
5	Project Professionals/Technicians	486	(53/1042)*486	24
	Total	**1042**	**(53/1042)*1042**	**53**

Source: Own Survey (2018)

Accordingly, 53 questionnaires are distributed and 51, which is 96.22% of them are collected. Some of the respondents were contacted with the help of phone call to collect back the distributed questionnaires.

3.7.Validity and reliability

As measurements are subject to errors and fluctuations, it is important to check the validity and the reliability of the instrument of data collection to get good results.

Validity is the meaningfulness and unbiasedness of the measurement. It is the ability of an instrument to measure what is intended to measure. The questionnaire is checked and commented by senior graduates in project management, by supervisor and people from target population. Then it is revised and rechecked according to the inputs and final questionnaire was content wise validated by supervisor.

Reliability is the consistency and stability of the measurement results. It implies the repeatability of a measurement results or research findings. Cronbach's Alpha (Cronbach,1951) is used to measure internal-consistency (reliability) which is most commonly applied when you have multiple Likert scale questions in a questionnaire. The coefficient varies between 0 and 1 and there is no lower value

limit. As Cronbach's Alpha is close to 1, it is the greater the internal consistency or reliability of the items in the scale.

According to George & Mallery (2003), the reliability rule of thumb is: α > .9 = excellent, α >.8=good, α >.7=acceptable, α > .6=questionable, α > .5=poor and α < .5=unacceptable.

The Cronbach's Alpha scores of each major variable is summarized in the following table 3-4 below:

Table 3-4: Cronbach's Alpha scores for each major variables

SN.	Project Implementation Practices	Cronbach's Value (α)
1	Schedule Management	**0.79**
2	Cost Management	**0.83**
3	Scope Management	**0.837**
4	Quality Management	**0.897**
5	Communication Management	**0.859**
6	Risk Management	**0.92**
7	Resource Management	**0.872**
8	Integration Management	**0.804**
9	Procurement Management	**0.793**
10	Stakeholder Management	**0.898**
11	Management Support	**0.855**
12	People Readiness	**0.853**
13	Process Readiness	**0.857**
14	System Readiness	**0.833**

Source: Own Survey (2018)

The overall Cronbach's Alpha (α) of this research is Excellent and the test result for each category is shown in Table 3-5 below.

Table 3-5: Overall Cronbach's Alpha Reliability test values

Project Implementation Practices	Knowledge Area Practices	Management Support Practices	Readiness Practices	Overall
Cronbach's Value (α)	0.965	0.855	0.921	**0.973**

Source: Own Survey (2018)

(See Appendix 4 for the overall Cronbach score)

So, the data collection instrument for this study is reliable.

3.8.Data analysis methods

Using the questionnaires quantitative data is collected for the qualitative study. So, SPSS (Statistical Package for Social Sciences) software version 20.0 is used for the analysis of the quantitative data from respondents and other statistical tools such as Excel and tables are used.

3.9.Ethical Consideration

The research is bound to the ethical considerations of Addis Ababa University College of Commerce and Ethio Telecom. Any business or other information aspects which are confidential are treated and protected. Participants are given with the option of choosing to discontinue participation at any time; Their identity is not disclosed in this report and data is stored confidential. So, any publications resulting from this research will not include identifiers of participants. Data collected are only used for research purposes.

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1. Introduction

This chapter discusses about data analysis, presentation and interpretation of the collected data by questionnaire. General opinion responses of respondents help to get their perception on some issues. The quantitative data is analyzed with the help of descriptive statistical technique using SPSS Version 20 statistical software tool and Excel Sheets. Data is shown using tabular presentations, interpreted and discussed below.

4.2.Response Rate

The 53 questionnaires were distributed to managers, supervisors, coordinators, specialists, professionals and technicians who are participants of the project. 51 out of the 53 questionnaires or about 96.22% of them are properly filled and collected. Respondents are presented with different attitudinal statements in the items and are asked to score each statement on Likert Scale. A 5-point Likert scale is used for the close-ended questions to know the perception of respondents on project implementation practices with 1=**Strongly Disagree (SD), 2=Disagree (D), 3=Uncertain (U), 4=Agree (A) and 5=Strongly Agree (SA).** Open-ended questions are also used to allow respondents for their general opinion. The working level and role of respondents' distribution during the project is presented in Table 4-1 below.

Table 4-1: Response Rate of Respondent Working Level

Working level during the time of the project (TEP)

Roles		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Managerial	3	5.9	5.9	5.9
	Supervisory	6	11.8	11.8	17.6
	Expert	1	2.0	2.0	19.6
	Specialist	17	33.3	33.3	52.9
	Professional	11	21.6	21.6	74.5
	Technician	13	25.5	25.5	100.0
	Total	51	100.0	100.0	

Source: Own Survey (2018)

The response found is 33.3% from specialist roles, 25.5% from technicians, 21.6% from professional levels, 11.8% from supervisory levels, 5.9% from managerial roles and only 2% from expert level.

4.3.Respondents' Profile

The basic information of respondents' characteristics such as education qualification, working experience and working experience in the project are discussed below sub sections.

4.3.1.Education Qualification of Respondents

The education qualification of respondents is shown in the table below.

Table 4-2: Education Qualification Distribution of Respondents

Education Qualification		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Degree	43	84.3	84.3	84.3
	Masters	8	15.7	15.7	100.0
	Total	51	100.0	100.0	

Source: Own Survey (2018)

Most of the respondents, 84.3% (43), are degree holders and only 15.7% (8) are master's degree holders. None of the respondents had high school, technical school, diploma or doctorial qualifications. In Ethio Telecom, high value is given for experience where holding a degree is enough requirement. Therefore, it is believed the respondents with this education qualification are able to answer understand and respond to the questionnaire appropriately.

4.3.2.Work Experience

The work experience of respondents in Ethio Telecom is presented in the table below.

Table 4-3: Respondents' Work Experience distribution

Work Experience (Years)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2-5	22	43.1	43.1	43.1
	6-10	6	11.8	11.8	54.9
	11-15	15	29.4	29.4	84.3
	>16	8	15.7	15.7	100.0
	Total	51	100.0	100.0	

Source: Own Survey (2018)

As it is shown in the table, the respondents who participated in this study had an experience in the organization in which 43.1% (22) of them from 2 to 5 years work experience, 29.4% (15) of them from 11 to 15 years of experience, 15.7% (8) of them greater than 16 years and 11.8% (6) of them are between 6 to 10 years of experience in the organization. This indicates, more of the respondents are relatively new to Ethio Telecom in general and to the project in particular. For new staffs of the project participants, it is important to focus on trainings, team development practices and readiness practices.

4.3.3.Work Experience in the Project

The following table is about the experience of the respondents in the project in years.

Table 4-4: Working Experience of Respondents in the Project

Experience in the project		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<1	9	17.6	17.6	17.6
	1-3	14	27.5	27.5	45.1
	>3	28	54.9	54.9	100.0
	Total	51	100.0	100.0	

Source: Own Survey (2018)

The table presents the working experience of respondents in the TEP project. According to the table, more than half of the respondents, about 54.9% (28) of them, worked in the project for greater than 3 years. 27.5% (14) of the respondents worked from 1 to 3 years and 17.6% (9) of them worked for less than 1 year. This shows more than 80% of the respondents worked more than 1 year in the project. So, this is important in identifying the challenges and practices of the project implementation as the target population has the experiences of the project from starting to the ending.

4.4. Project Implementation Practices

In this sub section, the distribution of respondents about project implementation practices related to project management knowledge areas, management support and readiness processes are presented, analyzed and interpreted. The attitudes of respondents towards how the different dimensions are practiced in the project implementation is measured using the 5-point Likert scale given the practices so that respondents could then choose the response option that best reflects their position on that dimension (practice) where, **SD**=Strongly Disagree=1, **D**=Disagree=2, **U**=Uncertain=3, **A**=Agree=4 and **SA**=Strongly Agree=5. Accordingly, the mean, standard deviation and frequency distributions of responses and respondents are used. A mean from 1 to 1.8 is interpreted as SD, from 1.81 to 2.60 as

D, from 2.61 to 3.4 as U, from 3.41 to 4.2 as A and from 4.21 to 5 as SA as this method used by some authors such as (Al Marashi & Al Zghool, 2018). So, the responses collected about each project implementation practices from 51 respondents are analyzed quantitatively, presented and interpreted as follows.

4.4.1.Project Management Knowledge Areas

The responses found from the survey about the practices related to the 10 knowledge areas on the project implementation are discussed below.

4.4.1.1.Schedule Management Practices

The response found from respondents on how project schedule management is practiced in the implementation of the project is summarized in the Table 4-7 below.

Table 4-5: Schedule Management Practices

SN	Schedule Management Practices	Mean	Std. Deviation	SD %	D %	U %	A %	SA %
1	Activities in the project implementation plan (PIP) were well defined	3.69	.905	3.9	9.8	7.8	70.6	7.8
2	Activities in the project implementation plan (PIP) were well sequenced	3.41	1.023	2.0	25.5	9.8	54.9	7.8
3	The estimation of duration for activities was good	2.90	1.044	3.9	39.2	27.5	21.6	7.8
4	Initial project schedule was maintained throughout the project	2.73	1.133	17.6	23.5	31.4	23.5	3.9
	Overall Mean	**3.18**						

Source: Own Survey (2018)

The survey participants were asked to rate if activities in the Project Implementation Plan (PIP) were well defined. As the above table shows, the average response rate of the survey participants is 3.69 with standard deviation of 0.905. This indicates that the average response that respondents perceive the activities in PIP document were well defined is agree. The average response of respondents for how the activities were sequenced in the Project Implementation Plan (PIP) is 3.41 and standard deviation is about 1.023. This indicates, there is variation in response whether activities in the PIP were well sequenced. However, the tendency of respondents is towards agreement that the activities in the PIP were well sequenced. The central tendency of respondents about how good was the estimation of project activities duration is 2.9 with dispersion of 1.044. This indicates, more respondents are distributed around the uncertainty on how good the activities' duration was estimated.

But the tendency is towards disagreement about it as can be seen from the frequency distribution. Regarding the idea of initial project schedule was maintained throughout the project, the average respondents are clustered around 2.73 with a deviation of 1.133. This indicates, there is variation on the responses and the average response is around uncertainty and disagreement. Even if the tendency is towards the disagreement, considerable respondents also agreed that indicates some of them only evaluated or assumed their respective tasks.

From these results, in the project schedule management, the respondents on average believed that project implementation activities were well defined and properly sequenced. However, it is believed by more respondents that project activities duration was not well estimated nor initial project schedule was maintained throughout the project implementation. This implies, the project is not finished on time. One of the Telecom Expansion Project (TEP) phases is the South Eastern Circle (SER) wireless expansion which was planned to be completed within 2 years and begun in 2014 and is still underway as of September 2018. In addition to the above reasons, there was delay in delivery of installation equipment, problems of the vendor's recruitment policies, the problem of timely acquisition of power requirement from EEPCO (Ethiopian Electric Power Corporation) contributed for the delay of the project. So, it is important to estimate the time required to complete each task using past experience or expert knowledge with the help of techniques such as PERT (Program Evaluation and Review Technique) and CPM (Critical Path Method) (Nafkha, 2016).

4.4.1.2.Cost Management Practices

The Table 4-8 below summarizes the mean, percentage and deviation of respondents answered on how project cost management was practiced in the implementation of the project.

Table 4-6: Cost Management Practices

SN	Cost Management Practices	Mean	Std. Deviation	SD	D	U	A	SA
				%	%	%	%	%
1	Project cost was effectively estimated	3.10	1.005	5.9	21.6	35.3	31.4	5.9
2	Budget allocation for the project activities was appropriate	3.18	.932	2.0	23.5	35.3	33.3	5.9
3	Project cost was properly controlled	3.04	1.038	5.9	27.5	29.4	31.4	5.9
	Overall Mean	**3.11**						

Source: Own Survey (2018)

The table shows, the average response of survey participants is 3.1, 3.18 and 3.04 for effective estimation of project costs, appropriateness of budget allocation of activities and proper controlling of project cost respectively. This indicates, the tendency of respondents is towards uncertainty.

However, the overall result from the frequency distribution shows that more respondents replied positively that cost management was good especially, cost allocation for activities and cost control is good. But, considerable number of respondents are uncertain in the cost management practices in general.

This indicates, more project participants are unaware of the costs or believed that finishing the project under budget is good performance. The researcher reviewed some of the closure documents of the project phases and observed there was about -14.87% in budget variances. In addition, the overall budget variance of the project is about -37.5%. These variances came from some technical changes introduced during the project implementation. This indicates, most of the time people are sensitive only to over budget (over cost) problems. But, budgeting more money than the required amount is also problematic. According to PM4DEV (2015), contract budget estmation is mostly from -10% to +25% variance in cost which is a basis for negotiations and more accurate, -5% to +10% budget variance, estimations based on work breakdown structure (WBS) are used for actual purchase decisions before actual payments are made. So, it is important to have an acceptable margin of budget variance before implementation which is important for monitoring and controlling changes, scope and quality of the project. Otherwise, the cost management performance of the project implementation is low.

4.4.1.3. Scope Management Practices

The response collected on how the scope management is practiced in the implementation of the project is presented as follows.

Table 4-7: Scope Management Practices

SN	Scope Management Practices	Mean	Std. Deviation	SD %	D %	U %	A %	SA %
1	Stakeholder's requirements were properly collected	3.31	.990	3.9	19.6	23.5	47.1	5.9
2	Detailed description of the project was developed	3.37	.979	5.9	15.7	15.7	60.8	2.0
3	Project work was subdivided to smaller manageable components	3.53	.966	2.0	17.6	15.7	54.9	9.8
4	Project scope changes were managed appropriately	3.12	.973	3.9	27.5	23.5	43.1	2.0
	Overall Mean	**3.33**						

Source: Own Survey (2018)

As shown on the table, survey participants are asked to rate scope management related practices that includes proper collection of stakeholder's requirements, developing detailed project description, subdividing project works to smaller manageable components and managing project scope changes. Accordingly, the respective average response was 3.31, 3.37, 3.53 and 3.12 where the deviations from each means is less than 1. This indicates, the tendency of survey participants' response for all scope management related activities in the project implementation is from uncertainty to agreement that stakeholder's requirements were properly collected; detailed description of the project was developed; project work was subdivided to smaller manageable component; and project scope changes were managed appropriately. This can be observed clearly from the frequency of the respondents on the table that more participants agree and strongly agree. However, there are considerable number of respondents who disagree and are uncertain whether the project scope was managed appropriately.

When summarized the result indicates, the processes in the scope management of the PMBOK such as collecting stakeholder needs and requirements, scope definition, Work Breakdown Structure (WBS) development and scope changes were properly practiced in the implementation of the project.

4.4.1.4. Quality Management Practices

The following responses are collected for the quality management practices in the implementation of the project.

Table 4-8: Quality Management Practices

SN	Quality Management Practices	Mean	Std. Deviation	SD	D	U	A	SA
				%	%	%	%	%
1	Relevant quality standards were identified	3.24	1.124	7.8	21.6	17.6	45.1	7.8
2	Planned quality was properly implemented	2.98	1.086	5.9	33.3	25.5	27.5	7.8
3	Quality was being monitored for meeting customer expectations	3.20	1.000	2.0	29.4	21.6	41.2	5.9
	Overall Mean	**3.14**						

Source: Own Survey (2018)

The average score of respondents about quality management practices is clustered around uncertainty but with high dispersion of responses. From the frequency distribution, more respondents agree that relevant quality standards were identified. But, more respondents are uncertain and disagree that planned quality was properly implemented but also considerable respondents agree that the planned

quality was properly implemented. This variation shows, some people perceive quality implementation success differently. This agrees with the idea of (Prabhakar, 2008) that says, quality is intertwined with issues of technical performance, specifications, and achievement of functional objectives and it is achievement against these criteria that will be most subject to variation in perception by multiple project stakeholders. Atkinson (1999) also mentioned that quality is an emergent property of peoples' different attitudes and beliefs, which often change over the development life-cycle of a project. Similarly, even if more respondents agree that quality was monitored for meeting of customer expectations in the project implementation, considerable number of respondents disagree about this.

When the result is generalized, with different perceptions about quality practices success in the project management, more respondents agree that relevant quality standards were identified and quality was monitored to meeting customer expectations in the project implementation. However, the planned quality was not properly implemented. This indicates, quality requirement of customers may be satisfied, but some telecom technical standards related to quality are not properly implemented in which the effect cannot be noticed today and will bring quality issues in the future operation of the system.

4.4.1.5.Communication Management Practices

Table 4-11 presents the result for communication management practices in the implementation of the project.

Table 4-9: Communication Management Practices

SN	Communication Management Practices	Mean	Std. Deviation	SD	D	U	A	SA
				%	%	%	%	%
1	Appropriate communication plan was developed	3.53	.902	2.0	13.7	21.6	54.9	7.8
2	There was timely communication of project information	3.20	1.149	9.8	19.6	19.6	43.1	7.8
3	Information need of stakeholders was satisfied	3.02	1.029	3.9	33.3	25.5	31.4	5.9
	Overall Mean	**3.25**						

Source: Own Survey (2018)

From the table, the mean score of respondents on appropriateness of communication plan development practice in the project implementation is 3.53 with standard deviation of 0.902 which indicates the tendency is to agreement. The frequency distribution also shows that with some considerable uncertainty. With regard to the timely delivering of project information, there is high variation of response and the average score is close to uncertainty. The frequency distribution shows

more respondents agree that there was timely communication of project information with considerable number of respondents disagree and uncertain. In addition, there is high variation of responses for the statement that says information need of stakeholders was satisfied.

According to these results, appropriate communication plan was developed as also is reviewed in the project charter and responsibility matrices. There was timely communication of project information practices in the project implementation. However, it is difficult to be sure that there was good monitoring of the information communication in ensuring the information needs of the project and the stakeholder are met. Since the project was broad, different stakeholders and vendors participated with different experiences in the country. For instance, vendors participated in this project include ZTE, Huawei and Ericsson. Previous expansion projects such as Next Generation Network (NGN) NGN were mainly done by ZTE in the whole country that provided the company with more experience in such projects in Ethiopia. As varying in experiences the information need for such companies also varies. The result also shows some of them satisfied and some of them are not satisfied with the information according to their information requirements. As stakeholders may have different KPI (Key Performance Indicator) interests and what information they would like to see in performance reports, there must be an agreement on what information is needed for each stakeholder, when the information is needed, and in what format the information will be presented (Kerzner, 2011).

4.4.1.6. Risk Management Practices

Responses about risk management practices in the project implementation is summarized as follows.

Table 4-10: Risk Management Practices

SN	Risk Management Practices	Mean	Std. Deviation	SD	D	U	A	SA
				%	%	%	%	%
1	Risk management was planned	3.16	.987	7.8	15.7	31.4	43.1	2.0
2	Individual project risks were identified properly	2.86	1.040	7.8	33.3	27.5	27.5	3.9
3	Risks were analyzed	2.94	.988	7.8	21.6	45.1	19.6	5.9
4	Risks were timely addressed	2.73	.961	9.8	31.4	37.3	19.6	2.0
5	Risks were monitored effectively	2.78	.966	7.8	33.3	33.3	23.5	2.0
	Overall Mean	**2.89**						

Source: Own Survey (2018)

From the table, the average score on planning of risk management is 3.16 with standard deviation of 0.987 which tends to uncertainty. But from the frequency distribution, even if considerable number of respondents are uncertain, more respondents agree about it. For the risk management practices

that include proper identification of project risks, analyzing, timely addressing and monitoring effectively of the projects risks, considerable number of respondents are uncertain. Especially, more number of respondents are uncertain that risks were analyzed. The central tendencies are also close to the middle but with high dispersion from the mean, especially, with the identification of risks. However, from the frequency distribution, it shows even if there are considerable number of respondents who are not certain that risk management was planned, more respondents agreed that risk management was planned. More respondents disagreed that individual project risks were properly identified. More respondents are uncertain whether the risks are analyzed, respondents who disagreed are more than respondents who agreed about this. Even if, there are sizeable number of respondents who are uncertain that risks were timely addressed, more respondents disagreed and strongly disagreed about that. Finally, although some considerable number of respondents are uncertain that risks were monitored effectively, more respondents disagreed and strongly disagreed about that.

This indicates, there was risk management plan but individual project risks are not properly identified. Since the individual risks were not properly identified, there were problems in analyzing risks, addressing them and monitoring the risks. Risk identification comes at the early stages of the project before the project is launched and there is also an on-going risk identification which is necessary to identify new risks that did not previously arise (Dinu, 2012).

4.4.1.7.Resource Management Practices

Respondents' attitudes about resource management practices are summarized in the Table 4-13 below.

Table 4-11: Resource Management Practices

SN	Resource Management Practices	Mean	Std. Deviation	SD	D	U	A	SA
				%	%	%	%	%
1	Resource management was planned	3.59	.983	3.9	13.7	11.8	60.8	9.8
2	Activity resources were properly estimated	3.31	1.010	3.9	19.6	25.5	43.1	7.8
3	Project team was developed effectively	3.33	1.125	5.9	23.5	11.8	49.0	9.8
4	Allocated resources were used as planned	3.18	1.014	2.0	27.5	31.4	29.4	9.8
	Overall Mean	**3.35**						

Source: Own Survey (2018)

The above table shows, a mean of 3.59 with standard deviation 0.983 is rated on average by respondents that resource management was planned. The frequency distribution also shows that more

number of respondents agree with it. For the other resource management practices that includes proper estimation of resource for activities, effective development of project team and spending of allocated resources as planned, the respondents highly varied in their answer according to the standard deviation. In addition, the frequency distribution shows that there is dispersion of responses especially for practice of using allocated resources as planned, there are considerable number of respondents who are uncertain and that disagrees.

When summarized, the result shows more respondents agreed that resource management was planned, activity resources were properly estimated and project team was effectively developed. Although there are considerable respondents who are uncertain and who disagreed that allocated resources were used as planned, more respondents agree and strongly agree that the allocated resource were used as planned in the project implementation. This implies the project resource such as equipment, material and team management was good, but there was variation in properly applying allocated resources in some cases and phases. This is related to some risk identifications and scope changes in the project implementation.

4.4.1.8.Integration Management Practices

Response on integration management practices are presented in the following table.

Table 4-12: Integration Management Practices

SN	Integration Management Practices	Mean	Std. Deviation	SD %	D %	U %	A %	SA %
1	Project charter that authorizes the project existence was developed	3.69	.905	2.0	7.8	25.5	49.0	15.7
2	An integrated project management plan was developed	3.37	.958	2.0	19.6	25.5	45.1	7.8
3	Project knowledge was managed effectively	3.04	.916	2.0	31.4	29.4	35.3	2.0
4	Progress was monitored to meet the project management plan goals	3.25	1.036	2.0	29.4	17.6	43.1	7.8
5	Project activities were finalized appropriately	2.86	1.077	7.8	35.3	25.5	25.5	5.9
	Overall Mean	**3.24**						

Source: Own Survey (2018)

Based on the mean score which is 3.69 with standard deviation of 0.9, more respondents agree and are aware of that the project charter was developed. From the frequency distribution, some respondents are not aware of the project charter development. The remaining mean scores are clustered around the uncertainty about development of integrated project management plan, effective management of project knowledge, monitoring of progress to meet the project management plan goals and finalizing of project activities appropriately.

But, from the frequency distribution of respondents about project integration management practices, more respondents agree that project charter was developed, an integrated project management plan was developed, project knowledge was managed as possible and project progress was monitored to meet the project management plan goals. However, more respondents disagree that the project activities were finalized appropriately. According to the ITU (2013), after detailed activities are planned and resource assigned, the implementation phase includes closing of all activities before transferring to other results. So, finalizing the activities appropriately is one indication of the project implementation success practice.

4.4.1.9. Procurement Management Practices

Responses found for the procurement management practices are summarized in following table.

Table 4-13: Procurement Management Practices

SN	Procurement Management Practices	Mean	Std. Deviation	SD	D	U	A	SA
				%	%	%	%	%
1	Potential vendors (sellers) were properly identified	3.75	1.074	3.9	9.8	19.6	41.2	25.5
2	Contracts were awarded appropriately	3.41	1.062	5.9	13.7	25.5	43.1	11.8
3	Relationships with the vendors was properly managed	3.57	.831	2.0	9.8	23.5	58.8	5.9
4	Contracts were properly closed	2.80	1.020	7.8	37.3	23.5	29.4	2.0
	Overall Mean	**3.38**						

Source: Own Survey (2018)

From the table, the mean scores 3.75, 3.41 and 3.57 indicate more respondents agreed that potential vendors were properly identified, contracts were awarded appropriately and relationships with vendors were properly managed respectively, but with high dispersion in responses. The frequency distribution of respondents also indicates the same result. However, the mean score 2.8 shows more respondents are uncertain that the contracts were properly closed. From the frequency distribution, even if considerable number of respondents agree, more respondents disagree that the contracts were properly closed.

Generally, more respondents agree that potential vendors were properly identified, contracts were appropriately awarded and relationships with the vendors was properly managed. However, although considerable number of respondents agreed contracts were properly closed, more respondents disagree that the contracts were properly closed. This indicates, although there was a good practice of project procurement, there were problems in closing out procurement contracts. According to the (PMI, 2017), all the procurement contracts and activities has to be closed out in controlling the

procurements and meeting the requirements and terms of the legal agreements between sellers and buyers.

4.4.1.10. Stakeholder Management Practices

The response on stakeholder management practices in the project implementation was summarized as follows.

Table 4-14: Stakeholder Management Practices

SN	Stakeholder Management Practices	Mean	Std. Deviation	SD	D	U	A	SA
				%	%	%	%	%
1	Stakeholders were identified	3.51	.967	2.0	17.6	17.6	52.9	9.8
2	The engagement of stakeholders was planned	3.53	.924	2.0	15.7	17.6	56.9	7.8
3	Stakeholders' participation in the project was managed well	3.27	.981	2.0	25.5	21.6	45.1	5.9
	Overall Mean	**3.43**						

Source: Own Survey (2018)

From the table, the average response of respondents is 3.51, 3.53 and 3.27 for the items of identifying stakeholders, the planning of stakeholders' engagement and managing of stakeholders' participation well respectively. This indicates, respondents agree that stakeholders were identified and the engagement of stakeholders was planned; But, respondents are uncertain that the stakeholders' participation in the project was managed well with considerable dispersion of responses from the mean.

However, the frequency distribution of respondents shows more respondents agree that stakeholders were identified, the engagement of the stakeholders was planned and stakeholders' participation in the project was well managed. In addition, the overall mean 3.43 on the table indicates that the stakeholder related management practices are well exercised in the project implementation with some variation in responses. So, generally the result indicates that stakeholder management was well practiced in the project implementation.

According to the overall mean of the 10 project management knowledge areas, the stakeholder management with score of 3.43 is the only practice which indicates the average response is agree. However, even if the overall mean is around the uncertainty, from the frequency distribution of each tables the scope management and resource management practices are also well exercised. The overall tendency of response for the remaining project management knowledge areas schedule, cost, quality, communications, risk, integration and procurement management practices are clustered in the uncertainty. This indicates, there are problems in the practices related to these knowledge areas. But,

from the frequency distribution, some activities are well practiced. The problems identified in the project management knowledge areas include: activity durations are not well estimated and initial schedule not maintained, cost estimation not appropriate, planned quality not properly implemented, monitoring the different need of information for every stakeholder was not satisfied, problems in individual risk identification, risk analysis, risk monitoring and addressing. In addition, project activities are not finalized and procurement contracts not closed properly.

4.4.2.Management Support Practices

The respondents' attitude on the management support practices in the project implementation are summarized in the table below.

Table 4-15: Top Management Support Practices

SN	Management Support Practices	Mean	Std. Deviation	SD %	D %	U %	A %	SA %
1	Senior managements were committed in following-up the project	3.71	.855	.0	13.7	13.7	60.8	11.8
2	There was quick decision making of higher managements	3.41	.942	.0	19.6	31.4	37.3	11.8
3	Top managements were good at committing resources	3.31	1.029	2.0	27.5	15.7	47.1	7.8
4	Top managements managed staff training appropriately	2.61	1.060	11.8	43.1	21.6	19.6	3.9
5	There was appropriate incentive management	2.98	1.086	7.8	29.4	25.5	31.4	5.9
	Overall Mean	**3.204**						

Source: Own Survey (2018)

The central tendency (3.71 & 3.41) and measure of dispersion (0.855 & 0.942) of respondents shown on the table is towards agreement that senior management support was committed in following-up the project and there was quick decision making in the project implementation respectively. However, from frequency distribution, some respondents are uncertain with regard to making quick decisions. This indicates, even if there was quick decision making practices in the project implementation, there was some problems in the hierarchy. Higher managements may make quick decisions, but sometimes there is low confidence of medium managements or some managements personnel in the hierarchy in decision making. The central tendencies, 3.31, 2.61 and 2.98 with their respective measure of dispersion show the responses are clustered around the uncertainty whether top management were good at committing resources, managed staff training appropriately or was appropriate incentive management respectively and the respective standard deviation show there is variation of responses. However, from the frequency distribution, more respondents agree that top management were good at committing resources, but more respondents disagree that top managements managed staff training

appropriately. In the appropriateness of incentive management practice, response is highly dispersed on the scale.

When summarized, more respondents agree that senior management were committed in following-up the project, there was quick decision making by higher managements and top management were good at committing resources for the project. But, more respondents disagreed that top managements managed staff training appropriately. However, equal number of respondents disagree and agree that there was appropriate incentive management. This indicates trainings were not appropriately managed and the incentive management was not fair for all staffs. As the Ethio Telecom is the sole state-owned telecom service provider in Ethiopia, there were high pressures from governments to achieve the Growth and Transformation Plan (GTP) in the telecom sector. Therefore, as there was high commitment of the government in achieving the plan, there is also senior managements' commitment in following-up the project implementation, making quick decisions and investing resources on the project. Some respondents also mentioned that the top management support was one of the best practices in the TEP project implementation.

4.4.3.Readiness Processes Practices

The response rates collected from the survey of 51 sample of respondents on the practices related to the project readiness practices in project implementation are discussed in this sub section.

4.4.3.1.People Readiness Practices

People readiness practices in the implementation of the project are rated by respondents as in the following Table 4-18.

Table 4-16: People Readiness Practices

SN	People Readiness Practices	Mean	Std. Deviation	SD %	D %	U %	A %	SA %
1	Adequate personnel were hired for the project implementation	3.37	1.019	2.0	25.5	13.7	51.0	7.8
2	People were properly oriented about the project	3.10	1.082	3.9	33.3	19.6	35.3	7.8
3	Standard Operating Procedures were developed for operating areas	3.08	.913	2.0	29.4	29.4	37.3	2.0
4	Adequate personnel were qualified	2.86	.960	2.0	41.2	31.4	19.6	5.9
	Overall Mean	**3.102**						

Source: Own Survey (2018)

As can be seen from the table the overall average response of participants on people's readiness practice lays at 3.1 which is uncertain. Each mean score also is clustered around uncertainty with some variations in responses especially with regard to hiring personnel and people orientation of the project implementation.

However, from the frequency distribution respondents, it shows there are more peoples who agreed that adequate personnel were hired for the project implementation, but more of the respondents disagreed that adequate personnel were qualified. Technical Tasks refers to the necessity of not only having the necessary personnel for the implementation team, but ensuring that they possess the necessary technical skills and have adequate technology to perform their tasks (Pinto & Slevin, 1987). Even if more people agreed that people were properly oriented about the project, considerable number of respondents also disagreed and are uncertain that people were properly oriented about the project. This is because, there was no appropriate orientation of the people especially at the lower hierarchy in the project implementation and mostly the higher managements were properly oriented about the overall project. Similarly, while more people agreed that standard operating procedures were developed for operating areas, considerable number of the respondents are uncertain and also disagree about this.

4.4.3.2.Process (Maintenance) Readiness Practices

The following table shows that how the respondents rated the process (maintenance) readiness practices.

Table 4-17: Process Readiness Practices

SN	Maintenance Readiness Practices	Mean	Std. Deviation	SD %	D %	U %	A %	SA %
1	Proactive computerized maintenance management system was applied	3.10	1.005	3.9	23.5	41.2	21.6	9.8
2	Preventive maintenance plans were prepared for critical equipment	2.86	.960	3.9	39.2	25.5	29.4	2.0
3	Network Management Systems (NMSs) were properly prepared	3.53	.924	2.0	11.8	29.4	45.1	11.8
4	O&M (Operation & Maintenance) staffs were well trained	3.04	.916	2.0	29.4	35.3	29.4	3.9
5	Network Operation Center (NOC) properly supported the implementation	3.45	.879	.0	19.6	21.6	52.9	5.9
6	Purchase of required maintenance spare parts was properly planned	2.98	.948	2.0	33.3	35.3	23.5	5.9
	Overall Mean	**3.16**						

Source: Own Survey (2018)

On the table above, the mean 3.53 and 3.45 with their respective standard deviation show respondents agree that NMSs were properly prepared and NOC properly supported the project implementation.

The remaining mean scores show that the average responses are uncertain. But according to the response frequency distribution statistics, more respondents are unware of the proactive computerized maintenance management system is applied; but more respondents disagreed that preventive maintenance plans were prepared for critical equipment. According to Onawoga & Akinyemi (2010), critical equipment as have to be identified and scheduled maintenance is needed to minimize stoppage incidents. In addition, more respondents agree that network management systems were properly prepared; while considerable number of respondents agree, more respondents are uncertain that operation and maintenance staffs were well trained in the project implementation. More respondents agree that the network operation center properly supported the implementation, while the same number of respondents are uncertain and disagreed that the purchase of the required maintenance spare parts was properly planned.

After project implementation, the result and responsibility is transferred to the operations and maintenance staffs. So, training of the staffs is important as well as maintenance tools, components, management systems and spare parts has to be ready for the system to function as required.

The project implementation is then successful when it operates properly and operation and maintenance staffs enable the system function as planned initially.

4.4.3.3.System Readiness Practices

The response for the system readiness practices of the project implementation are presented in the following table.

Table 4-18: System Readiness Practices

SN	System Readiness Practices	Mean	Std. Deviation	SD %	D %	U %	A %	SA %
1	Installation was according to Inspection Criteria Reference (ICR) checklist	3.67	.841	.0	11.8	21.6	54.9	11.8
2	Any design change from initial specifications was implemented by following Management Of Change (MOC) process	3.18	.974	2.0	27.5	27.5	37.3	5.9
3	Safety procedures were well practiced	3.10	.900	2.0	25.5	37.3	31.4	3.9
4	Project commissioning was properly done	3.29	.965	3.9	17.6	29.4	43.1	5.9
5	Project Acceptance Test (PAT) documents were well prepared	3.61	1.041	2.0	17.6	15.7	47.1	17.6
6	Project Acceptance Test (PAT) was properly implemented	3.49	1.007	2.0	17.6	23.5	43.1	13.7
	Overall Mean	**3.39**						

Source: Own Survey (2018)

According to the mean score, the average responses 3.67, 3.61 and 3.49 respectively show that the average responses of participants are in agreement that installation was according to the planned ICR checklist, PAT documents were well prepared and PAT was properly implemented respectively. But average responses are close to uncertainty that any design change from initial specifications was implemented by following MOC process, safety procedures were well practiced and project commissioning was properly done. Moreover, the response frequency distribution statistics shows that more respondents agree that any design change from initial specifications was implemented by following MOC process but also considerable number of the respondents are uncertain and disagree which implies high variation in responses. More respondents are uncertain whether safety procedures were well practiced with considerable number of respondents who disagree and also agree. Regarding to the commissioning practices more respondents agree that it was done properly but with considerable uncertainty. From the above result, more respondents agreed that installation of equipment was according to the Inspection Criteria Reference (ICR) checklist. Using the ICR was good practice in the project implementation that helped for successful resource management such as materials and required equipment management. More respondents also agreed that any design change from initial specifications was implemented by following Management of Change (MOC) process; project commissioning was properly done; project acceptance test (PAT) documents were properly prepared and implemented. However, even if considerable number respondents agree that safety procedures were well practiced, more respondents are not certain whether safety procedure were practiced. Therefore, there was no awareness, precautions and orientation of the staff how/what safety procedures to follow. So, it is important to reduce risks to a level that is as low as reasonable and as practicable especially, electrical safety is more important, because we could not apparently realize that, what amount of current a simple cable or a bare conductor carrying or at a glance we could not ascertain whether a conductor is alive or dead (Ghosh, et al., 2015).

Comparing the overall means of the readiness practices, the system readiness process is better practiced in the project implementation management. But, all the readiness practices are rated on average to uncertainty. The frequency distribution of the responses helps to identify the readiness practices performance in the project implementation. Accordingly, all staffs were not properly oriented about the project clearly, there was no adequate personnel qualified for the project, the development of standard operating and safety procedures were not effective and not practiced well. In addition, there is no proactive intelligent system for maintenance and no preventive maintenance for critical equipment, no planned purchase of spare parts and O&M personnel not adequately trained.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1.Summary of Findings

The focus of the study is to assess telecom project implementation practices in Ethiopia by taking a case of Telecom Expansion Project (TEP) that have been done recently, beginning from 2013. The assessment covered how the 10 project management knowledge areas of the latest PMBOK edition, management support and readiness processes are practiced in the project implementation. A sample of 53 respondents are taken from 1042 population who are participants of the project and that includes managers, coordinators, supervisors, specialists, professionals and technicians using questionnaire interviews. Out of the 53 sample size 51 responses are collected and analyzed using SPSS Version 20 to find the mean, standard deviation and frequencies of responses on 5-point Likert scale. The responses are presented, analyzed and interpreted in chapter 4 above. The mean and standard deviation results are difficult to conclude; because of the drawbacks of using mean for descriptive statistics that uses ordinal scale. Using mean and standard deviation are invalid parameters for descriptive statistics whenever data are on ordinal scales and so for analyzing ordinal data (Jakobsson, 2004). Therefore, in addition to the mean and standard deviations, the frequency distribution is also used. Accordingly, the summary of the findings is discussed as follows:

- ✓ Project Implementation Plan (PIP) was developed and the activities were well defined and sequenced. The PIP of TEP was developed using Microsoft Project 2010 software. Activity definition and activity sequencing are two of the processes included in the project schedule management that are required for timely completion of project. However, the study found the estimation of the duration for each activities was not good. Because of this the project initial schedule couldn't be maintained throughout the project that leads to a delay.

- ✓ Although there was negative cost variance at the end of the projects, it is considered as the project cost management is well practiced. With some uncertainties, most of the respondents in this study agreed that project cost management was good. Thus, under budget or excess initial budgeting than the required budget for the project implementation was taken positively by respondents as the project is completed without any additional budget and even with lower budget than initially expected.

- ✓ Project scope management practices including collecting the requirements, defining the scope, developing Work Breakdown Structure (WBS) and managing the scope changes were properly practiced in the project implementation.

- ✓ The quality management processes such as identifying the required quality standards and monitoring of quality to meet customer expectations was practiced well in the project implementation. However, the planned quality was not successfully implemented. This may result in temporary quality success to satisfy current customer needs, but the sustainable quality of the network system is assured when the planned quality is successfully completed and meets future quality requirements of customers.

- ✓ In the communication management practices of the project implementation, appropriate communication plan was developed and there was timely communication of the project information. According to the survey, it can't be decided that the information need of all stakeholders was satisfied in the project implementation. Because there were variable information needs of stakeholders with variable project implementation experiences in Ethiopia. As a result, some of them were satisfied and some of them were not satisfied according to their information requirements. The result of the study also indicates this.

- ✓ According to the survey conducted, there was risk management plan. However, individual project risks were not properly identified. This results problems in risk analysis, monitoring, controlling and timely addressing the risks in the project implementation.

- ✓ The project management resource was planned; resources needed for the project implementations such as team resources, materials, equipment and other supplies necessary for the project work are estimated properly; team developments such as team member interaction, cooperation and the overall team environment to enhance project performance was effective; controlling of resources such as physical resources assigned and allocated to the project are available as planned, as well as monitoring the planned versus actual use of resources, and performing corrective action as necessary was good. So, resource management of the project implementation was effective.

- ✓ In the project integration management practices, the project charter was developed. According to the PMBOK (PMI, 2017), the project charter authorizes the existence of the project and enables the project manager to apply resources for its implementation. In the project implementation, an

integrated project management plan was developed, existing knowledge was effectively managed and project progress was monitored to meet project management plan goals. However, there was problem of finalizing the project implementation activities and closing contracts.

- ✓ In the procurement management related practices the potential sellers, vendors in the case of Ethio Telecom, were properly identified, contracts were appropriately awarded and relationships with vendors was properly managed. However, procurement contracts were not closed properly in the project implementation.

- ✓ The stakeholder management related practices were applied properly in the project implementation. Stakeholders of the project implementation were identified, engagement of stakeholders was planned and their engagement or participation was managed well.

- ✓ In the management support practices, government and senior management were committed in following-up the project implementation, in making quick decisions and committing resource requirements. This implies the commitment of the government in the achieving the country-wide transformation plan in the telecom sector was important for the implementation of the project. However, staff training and incentive managements were not appropriately managed. The incentive management must be carefully managed, especially it is important for next similar projects in motivating employees.

- ✓ Regarding the people's readiness for the project implementation, adequate personnel were hired for the project implementation. However, the project participants were not adequately qualified. In addition, all project teams are not oriented on the project implementation. This is because the project implementation was accomplished with the help of the vendors, and thus the project implementation was done in leadership and collaboration of the vendors. Finally, although standard operating procedures were developed for operating areas, there were awareness creation problems for all staffs.

- ✓ In the case of Ethio Telecom, there is no an intelligent system that proactively manages the maintenance of the network. However, there are preventive maintenance practices based on Network Management Systems (NMSs) and different network performance measures. However, there are no plans for preventive maintenance of critical equipment. Network Management Systems (NMSs) were properly planned and implemented; however, the Operation and

Maintenance (O&M) staffs were not ready to run the system as required after the project implementation. The Network Operation Center (NOC) properly supported the project implementation. However, the purchase of spare parts for maintenance purposes was not properly planned. After the network system installations, finding the required spare parts in the warehouse is one of challenging issues.

- ✓ In the system readiness practices for the project implementations, equipment installation was according to the Inspection Criteria Reference (ICR) checklist; design changes from initial specifications were implemented according to Management of Change Practices (MOC) processes; project commissioning was properly done; project acceptance test (PAT) documents properly prepared and implemented. However, there were not clear safety procedures in the project implementation.

5.2.Conclusions

The purpose of the study is to assess the project implementation practices related to the project management knowledge areas, management support and readiness process that are important for successful execution of telecom projects. Based on the findings, analysis and interpretations the following conclusions can be drawn:

The 10 project management knowledge areas are important practices for the telecom project implementation success. In the TEP project implementation the scope management, resources such as team, material, and equipment planning, estimating, monitoring of the planned versus actual use of resources, and stakeholder management were practiced properly. Moreover, the project implementation plans including activity definition and sequencing, identifying quality requirements, planning and timely communicating, developing project charter and integrated planning, procurement processes including the identification of potential vendors, contract awarding and relationships with vendors were properly managed and practiced. However, activity durations were not well estimated and initial schedule not maintained, cost estimation not appropriate, planned quality not properly implemented, problems in monitoring the different information need of stakeholders, problems in individual risk identification, risk analysis, risk monitoring and risk addressing are also weak performances in the project implementation. In addition, project activities are not finalized and procurement contracts not closed properly.

In the management support practices, government and senior management were committed in following-up the project implementation, in making quick decisions and committing resource requirements. However, staff training and incentive managements were not appropriately managed.

Regarding to the readiness practices of project implementation in terms of the people, process and system readiness, the findings reveal that some processes are well practiced, however there are also readiness practices not properly practiced that lead to failure in the project long run operation. In the people's readiness, the personnel hired for the project implementation were adequate, but were not adequately trained and oriented for the implementation. In addition, although standard operating procedures were developed for operating areas, there were awareness creation problems for all staffs. In the maintenance (process) readiness practices, Ethio Telecom has not applied an intelligent and centralized system that proactively manage the network maintenances. The required Network Management Systems (NMSs) were properly planned and implemented; there are also preventive maintenance systems assisted by these NMSs with the help of different network performance measures; however, there are no preventive maintenance plans specifically for the critical equipment. Moreover, the Operation and Maintenance (O&M) staffs were not well trained for the project implementation. The Network Operation Center (NOC) properly supported the project implementation. However, the purchase of spare parts for maintenance purposes was not properly planned. In the system readiness practices for the project implementations, equipment installation was according to the Inspection Criteria Reference (ICR) checklist; design changes from initial specifications were implemented according to Management of Change Practices (MOC) processes; project commissioning was properly done; project acceptance test (PAT) documents properly prepared and implemented. However, there were not clear safety procedures in the project implementation.

Generally, from respondents' qualitative data teams and staffs' commitment, management support and follow-up, project implementation plan (PIP) preparations including site surveys, resources management such as proper material management, the establishment of separate project management office for the project and system readiness practices such as use of ICR, MOC and PAT were best practices in the project implementation.

5.3.Recommendations

Based on the findings and conclusions, the researcher suggests some recommendations to improve future project implementations and for future related studies.

For future project implementations:

- Regarding to the project management practices related to the knowledge areas, Ethio Telecom has to do thorough study of available resources before estimating the schedule and budgets of the project. Planned quality has to be implemented effectively, stakeholders' information requirements satisfaction must be monitored timely. Individual project risks have to be identified, analyzed and addressed throughout the project. Project activities and contracts should be finalized and closed appropriately. To solve these problems, lesson's learned from previous project implementation has to be used especially for estimating schedules, budget of each activities and identifying risks. So, to use lesson's learned of previous projects it is important to have the culture of documentation in Ethio Telecom which has been the main problems of previous and current projects' closures. Dedicated server is also needed for database of lesson's learning repository.

- The higher management support committed in following-up the project and making quick decision making are important practices that has to be learned for future projects. However, alongside to their commitment, the top managements has to manage staff training and incentives fairly and appropriately that helps in successful implementation of the projects.

- In the readiness practices for project implementation, Ethio Telecom has to implement an intelligent and centralized system that proactively manage the network maintenances. This helps to proactively prevent service interruptions of customers, to maintain operating equipment before actual loss or damage to businesses occurred and to help maintenance team a manual way of collecting complaints. In addition to this, preventive maintenance plans are needed especially for critical equipment and sufficient spare parts has to be ready for maintenances. Network Management Systems (NMSs) need to be maintained for any failures after implementation and timely updated their version as well as their topology after new network elements are added. To solve this, the Network and Operation Center (NOC) staffs need to be trained and adequately staffed. Finally, clear safety procedures and standards have to be practiced and staffs need to be aware of these procedures during project implementations.

For future researchers, it is recommended:

- To study the influence of the project implementation practices for project success. This study would be more important for the organization and for other project implementers if the best practices of the project implementation are identified and their relationship to success are correlated.
- To include qualitative data to get more detailed information for better results.

In addition, it would be good if sample is taken from other stakeholders of the project implementation especially from vendors to get more data to have better findings.

REFERENCES

Ajay, S. S. & Micah, M. B., 2014. Sampling Techniques & Determination of Sample Size in Applied Statistics Research: An Overview. *International Journal of Economics, Commerce and Management,* 2(11), pp. 1-22.

Al Marashi, T. M. & Al Zghool, M. . M., 2018. Factors Influencing Job Performance among Nurses Who areWorking in Saudi Mental Health Hospitals. *American Journal of Nursing Research,* 6(2), pp. 67-81.

Alan, B. & Emma, B., 2011. *Business Research Methods.* 3rd ed. New York: Oxford University Press Inc.

Al-Rubaiei, Q. H. S., Nifa, F. A. A. & Musa, S., 2018. *Project scope management through multiple perspectives: A critical review of concepts.,* s.l.: s.n.

Amoako-Gyampah, K., Meredith, J. R. & White Loyd, K., 2018. Using a Social Capital Lens to Identify the Mechanisms of Top Management Commitment: A Case Study of a Technology Project.. *Project Management Journal,* Volume 49(1), p. 79–95.

Archibald, R. D., 1976. *Managing High-Technology Programs and Projects.* This book is now in its Third Edition, 2003 ed. Wiley, NY: s.n.

Atkinson, R., 1999. Project management: cost, time and quality, two best guesses and a phenomenon, it's time to accept other success criteria. *International Journal of Project Management,* Volume 17(6), pp. 337-342.

Ayalew, T., Dakhli, Z. & Lafhaj, Z., 2016. Assessment on Performance and Challenges of Ethiopian Construction Industry. *Journal of Architecture and Civil Engineering,* 2(11), pp. 1-11.

Baccarini, D., 1999. The logical framework method for defining project success. *Project Management Journal,* Volume 30(4), pp. 25-32.

Beel, J., 2004. *Project team rewards rewarding and motivating your project team.* Zur Salzhaube 3a 31832 Springe , Germany: CreateSpace LLC, Part of the Amazon.com group of companies, 100 Enterprise Way, Suite A200 .

Beel, J., 2007. *Project team rewards rewarding and motivating your project team.* First ed. Zur Salzhaube 3a 31832 Spring: Part of the Amazon.com group of companies: CreateSpace LLC, 100 Enterprise Way, Suite A200.

Beleiu, I., Crisan, E. & Nistor, R., 2015. Main Factors Influencing Project Success. *Interdisciplinary Management Research XI,* Volume Vol. 11, pp. 59-72.

Bhatia, N. & Kapoor, N., 2011. *Fuzzy Cognitive Map based Approach for Software Quality Risk Analysis.* s.l.:ACM SIGSOFT Software Engineering Notes.

Bloom, N. et al., 2014. *The New Empirical Economics of Management,* London: Centre for Economic Performance (London School of Economics and Political Science).

Bogale, W., 2005. *A Background Paper on Telecom & Telecom Statistics in Ethiopia,* Addis Ababa: Ethiopian Telecommunications Corporation, B&MIS.

Bower, D. &. A., Gerald, G. &. & Kanyike & Smyk, W., 2002. Incentive Mechanisms for Project Success. *Journal of Management in Engineering - J MANAGE ENG.,* Volume 18(1).

Cavendish, P. & Martin, M. D., 1982. *Negotiating & Contracting for Project Management.* San Francisco: Project Management Institute, PA, John Wiley and Sons Ltd Publishing House.

Cleland, D. I. & Ireland, L. R., 2008. *Project Manager's Handbook: Applying Best Practices Across Global Industries.* New York: McGraw-Hill Companies, Inc.

Cooper , D. R. & Schindler , . P. S., 2014. *Business Research Methods.* 12th ed. New York: The McGraw-Hill Companies, Inc.

Cronbach, L. J., 1951. Coefficient alpha and the internal structure of tests. *PSYCHOMETRIKA*, September, Volume 16(3), p. 297–334.

Damoah, I., Akwei, C. & Mouzughi, Y., 2015. *Causes of government project failure in developing countries – Focus on Ghana...* Portsmouth University, BAM-British Academy of Management .

Davis, K., 2014. Different stakeholder groups and their perceptions of project success. *International Journal of Project Management,* Volume 32, p. 189–201.

De Bakker, K., Boonstra, A. & Wortmann, H., 2010. Does risk management contribute to IT project success? A meta-analysis of empirical evidence. *International Journal of Project Management,* Volume 28(5), p. 493–503.

Denis, D. J. & Denis, D. K., 1995. Performance Changes Following Top Management Dismissals. *The Journal of Finance,* Volume 50(4), p. 1029–1057.

Dholoakia, R. & Harlam, B., 1994. *Telecommunication and Economic Development,* s.l.: Telecommunication Policy 18 470-7.

Dinu, A.-M., 2012. Modern Methods of Risk Identification in Risk Management. *International Journal of Academic Research in Economics and Management Sciences,* 1(6), pp. 67-71.

Dvir, D., Lipovetsky , S., Shenhar , A. & Tishler , A., 1998. In search of project classification: a non-universal approach to project success factors. *Research Policy 27*, p. 915–935.

Eid, M., Georgy, M., Osman, H. & Ibrahim, M., 2015. *Mitigating and Managing Risks in Mobile Telecom Projects.* s.l.:SEC Press.

Els, M., Van der Merwe, M. & Hauptfleisch, A., 2012. *Critical success criteria and success Factors in Project Management: A Quest to Enhance Generic Professional Practice.* Bremen, Germany, ICEC.

EPA, E. P. A., 2007. *Guidance for Preparing Standard Operating Procedures (SOPs).* Washington, DC: Office of Environmental Information, U.S. Environmental Protection (EPA).

FDRE, 2011. Ethio-Telecom Establishment Council of Ministers Regulation No.197/2010. *Federal Negarit Gazeta*.

Gebretsadik, T., 2018. *Assessment of The Practice of Project Risk Management System in Ethio-Telecom,* Addis Ababa: Unpublished Report.

Gemeda, D. M., 2013. *Project Performance Evaluation: The case study of Fixed Line-Next Generation Network Project of Ethio Telecom,* Addis Ababa: Unpublished.

George, D. & Mallery, P., 2003. *SPSS for Windows step by step: A simple guide and reference.* 4 th (11.0 update) ed. Boston: Allyn & Bacon.

Ghosh, M. C. et al., 2015. An Article on Electrical Safety.. *International Journal for Scientific Research & Development,* 3(10), pp. 503-506.

Grover, V., 2015. Research Aproach: An Overview. Golden Reserach Thoughts. *International Multidisciplinary Research Journal,* 4(8), pp. 1-8.

Hartman, F. & Ashrafi, R. A., 2002. Project management in the information systems and information technologies industries. *Project Management Journal,* 33(3), pp. 5-15.

Ibbs, C. & Kwak, Y., 2002. Project Management Project Maturity (PM)2 Model. *Journal of Management in Engineering,* 18(3), pp. 150-155.

Ibojo, B., 2012. Manpower Planning and Organization Objectives Nexus: A Theoretical Approach. *Pakistan Journal of Business and Economic Review,* 3(1), pp. 116-124.

Ika, L. & Saint-Macary, J., 2014. Special Issue : Why Do Projects Fail in Africa?. . . .. *Journal of African Business,* 15(3), pp. 151-155.

Ilies, L., Crisan, E. & Muresan, N. I., 2010. Best Practices in Project Management. *Revista De Management Comparat International/ Review of International Comparative Management,* March, 11(1), pp. 43-51.

Imtiaz, A., Al - Mudhar, A. S., Mirhashemi, T. & Ibrahim, R., 2013. Critical Success Factors of Information Technology Projects. *International Journal of Social, Management, Economics and Business Engineering,* Volume Vol. 7 No. 12.

IPMA, 2006. International Project management Association Competence Baseline Version 3.0. *International Project Management Association.*

Iqbal, J., Long, S., Goh, F. & Bukhari, S., 2015. Moderating Effect of Top Management Support on Relationship between Transformational Leadership and Project Success. *Pakistan Journal of Commerce and Social Science,* Volume 9, pp. 540-567.

Isin, E. & Ruppert, E., 2015. *Being Digital Citizens,* London © University of York (author: Susan Halfpenny): RLI.

ISO, 2012. *ISO 21500:2012 Guidance on project management.* s.l.:International Organization for Standardization.

ITU, 2013. *Project Management Guidelines.* Geneva, Swizerland: International Telecommunication Union.

ITU, 2016. Radio Regulations Articles. *International Telecommunication Union (ITU) Article 1 No. 3*.

Jakobsson, U., 2004. Statistical presentation and analysis of ordinal data in nursing research. *Scandinavian Journal of Caring Sciences,* 18(4), pp. 437-440.

Jugdev, K. & Muller, R., 2005. A retrospective look at our evolving understanding of project success. *Project Management Journal,* 36(4), p. 19–31.

Kamoun, F., 2005. Toward best maintenance practices in communications network management. *International Journal of Network Management,* Volume 15, p. 321–334.

Kandelousi, S. & Abdollahi, A., 2011. Key Success Factors for Managing Projects.. *Engineering and Technology International Journal of Economics and Management Engineering,* Volume 5, No:11.

Karadsheh, L. et al., 2009. *A Theoretical Framework for Knowledge Management Process: Towards Improving Knowledge Performance.* s.l.:Communications of the IBIMA.

Kerzner, H., 2009. *Project management: A systems approach to planning, scheduling, and controlling.* 10th ed. Hoboken, New Jersey: John Wiley & Sons, Inc.

Kerzner, H., 2011. *Project Management Metrics, KPIs, and Dashboards: A Guide to Measuring and Monitoring Project Performance..* New York: John Wiley & Sons, Inc.

Kess, P., Torkko, M. & Phusavat, K., 2007. Knowledge Transfer for Effective Outsourcing Relationships. pp. 69 - 74.

Khan, S., Sang Long, C. & Iqbal, S., 2014. Top Management Support, a Potential Moderator between Project Leadership and Project Success: A Theoretical Framework. *Research Journal of Applied Sciences, Engineering and Technology,* Volume 8, pp. 1373-1376.

Kothari, C., 2004. *Research Methodology: Methods & Techniques.* 2nd ed. New Delhi : New Age International (P) Ltd.

Liu, G., Wang, E. & Chua, C., 2013. *Obtaining Management Support for IT Projects: A Persuasion View.* s.l.:s.n.

Lutchman, C., 2011. *Project Execution A practical approach to industrial and commercial project management.* New York: CRC Press.

McDonald, H. S., 2015. *Computerized Maintenance Management System Assessment,* California: City of Oxnard Public Works Integrated Master Plan.

McElroy, B. & Mills, C., 2000. *Managing stakeholders. In Gower Handbook of Project Management.* 4th ed. Aldershot, UK: Gower.

McIntosh, S. A., 2018. *Keys Successful Major Project Execution.* Colorado, USA: Long International, Inc.

Mearman, M., 2004. *Implementation project management: now that you bought it what do you do?.* North America, Anaheim, CA. Newtown Square, PA, Project Management Institute.

Menon, S., 2015. *Best Practices and Implementation Challenges in Effective Project Management,* Minneapolis, Minnesota: s.n.

Miles, M. B. & Huberman, A. M., 1994. *Qualitative Data Analysis: An Expanded Source Book.* 2nd ed. Newbury Park, CA: Sage.

Milis, K., 2002. *Success Factors for ICT Projects. Empirical research, utilizing qualitative and quantitative approaches (incl. Bayesian networks, Probabilistic feature models),* s.l.: Faculteit Toegepaste Economische Wetenschappen.

Mishra , S., 2007. Human Resource Management in a Project. *PM World Today*, Julay, IX(VII), pp. 1-18.

MoFED, 2010. *Growth and Transformation Plan (GTP) 2010/11-2014/15-Draft.* Addis Ababa: Ministry of Finance and Economic Development (MoFED).

Morris, P. & Hough, G., 1987. *The Anatomy of Major Projects: A Study of the Reality of Project Management.* Chichester, UK: John Wiley & Sons, Ltd..

Mukopi, G., 2016. Factors influencing implementation of telecommunication network equipment projects in kenya: a case of safaricom limited.

Muller, R. & Turner, R., 2007. The influence of project managers on project success criteria and project success by type of project. *European Management Journal ,* 25(4), p. 298–309.

Nafkha, R., 2016. The PERT Method in Estimating Project Duration. *Information Systems in Management,* 5(4), pp. 542-550.

OGC, 2007. *Managing Successful Programmes.* 3rd ed. Norwich, UK: The Stationery Office.

Olorunniwo, F. & Udo, G., 2002. The Impact of management and employees on cellular manufacturing implementation. *International journal of production and Economics,* Volume 76, pp. 27-38..

Onawoga, D. T. & Akinyemi, O. O., 2010. Development of Equipment Maintenance Strategy for Critical Equipment. *The Pacific Journal of Science and Technology,* 11(1), pp. 328-342.

Parth, F. R., 2013. *Critical decision-making skills for project managers. Paper presented at PMI® Global Congress 2013—EMEA, Istanbul, Turkey.* Newtown Square, PA, Project Management Institute.

Pheng, L. S., 2017. *Project Scope Management. Project Management for the Built Environment,* s.l.: s.n.,

Pinto, J. K. & Slevin, D. P., 1988. Project success: definitions and measurement techniques. *Project Management Journal,* 9(1), p. 67–72.

Pinto, J. & Slevin, D., 1987. Critical Success Factors in Effective Project Implementation. *IEEE Transactions on Engineering Management,* 34(1), pp. 168-190.

PM4DEV, 2015. *Project Budget Management.* s.l.:PM4DEV- Project Management for Developement Organizations.

PMI, 2000. *A Guide to the Project Management Body of Knowledge (PMBOK® Guide).* 2nd ed. Newtown Square, PA: PMI Publishing.

PMI, 2008. *A Guide to the Project Management Body of Knowledge (PMBOK® Guide).* 4th ed. Newtown Square, PA: PMI Publishing.

PMI, 2015. *Capturing the Value of Project Management Through Knowledge Transfer,* Newtown Square, PA USA: PMI Publshing.

PMI, 2017. *A Guide to the Project Management Body of Knowledge (PMBOK® Guide).* 6th ed. Newtown Square, PA: PMI Publishing.

PMI, 2018. *A Guide to the Project Management Body of Knowledge (PMBOK® Guide).* Newtown Square, PA: PMI Publishing.

Prabhakar, G., 2008. what is Project Success?: A literature review. *International Journal of Business and Management,* 3(9), pp. 3-10.

Richman, L., 2011. *Successful Project Management.* 3rd ed. New York: AMACOM, American Management Association International.

Ross , P. & Kathryn, C., 2015. Towards Effective Knowledge Transfer in High-tech Project Environments: Preliminary Development of Key Determinants. Volume 64, pp. 17-23.

Shenhar, A. J., Dvir, D., Levy, O. & Maltz, A. C., 2001. Project Success: A Multidimensional Strategic Concept. *Long Range Planning*, Volume 34, p. 699–725.

Sherif, M. H., 2006. *Managing projects in telecommunication services.* New York: John Wiley and Sons.

Sileshi, T., 2017. *Assessment on Project Management Practices: a case study on,* Addis Ababa: Unpublished.

Staehr, L., 2010. Understanding the role of managerial agency in achieving business benefits from ERP systems. *Information Systems Journal,* 20(3), pp. 213-238.

Steliana Sandua, B. C., 2014. Impact of R&D and Innovation on high - tech export. *Emerging Markets Queries in Finance and Business*, pp. 80-90.

Svinicki, D. M., 2010. *A Guidebook On Conceptual Frameworks For Research In Engineering Education.* Texas: University of Texas.

Taherdoost, H., 2016. Sampling Methods in Research Methodology; How to Choose a Sampling. *International Journal of Academic Research in Management (IJARM),* 5(2), pp. 18-27.

TEP, 2016. *TEP Lot-4 Northern and Eastern Circles DWDM Backbone Transmission Project ,* Addis Ababa: Ethio Telecom.

TEP-Charter, 2013. *Telecom Expansion Program Charter.* Addis Ababa, Ethiopia: Ethio Telecom.

TEP-PIP, 2014. *TEP LOT4 Project Implementation Briefing,* Addis Ababa: Ethio Telecom .

Tiainen, A., 2014. *Decision-Making in Project Management.* Helsinki, Finland: Allianz Managed Operations and Services SE Data Centre Consolidation Programme.

Turner, J., 2009. *Handbook of Project-based Management: Improving the Process for achieving Strategic Objectives.* 3rd ed. London: McGraw-Hill.

Turner, J. & Muller, R., 2005. The project manager's leadership style as a success factor on projects: a review. *Project Management Journal ,* 36(2), p. 49–61.

UN, 2011. *Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression,* s.l.: Frank La Rue. A/HRC/17/27.

Valtanen , P. & Perälä, P., 2017. *Standard Operating Procedure, Preventive Maintenance and Layered Pro.* Kuopio, Finland: Savonia University of Applied Sciences .

Varajao, J., 2016. *Success Management as a PM knowledge area – work-in-progress..* s.l., s.n., p. 1095 – 1102.

Vehvilainen, J., 2006. *Procurement in Project Implementation,* Lappeenranta, Finland: Lappeenranta University of technology.

Wateridge, J., 1998. How can IS/IT projects be measured for success?. *International Journal of Project Management,* 16(1), pp. 59-63.

Wateridge, J., 1996. *Delivering successful IS/IT projects: eight key elements from success criteria to review via appropriate management, methodologies and teams,* Henley Management College, Brunel University: s.n.

Weldekidan, B., 2017. *The practice of project management in Ethiopian real estate industry and its contribution to project success: The case of selected company in Addis Ababa,* Addis Ababa: Unpublished.

Westerveld, E., 2003. The Project Excellence Model: linking success criteria and critical success and critical success factors. *International Journal of Project Management,* Volume 21, p. 411–418.

Westland, J., 2006. *The Project Management Life Cycle: A complete step-by-step methodology for initiating, planning, executing & closing a project successfully.* London : Kogan Page.

Wideman, M., 2004. *The Role of the Project Life Cycle (Life Span) in Project Management,* Vancouver, BC: AEW Services.

Woubshet, M., 2017. *Assessment of Logistics Practice in Project Context: The case of Ethio Telecom Expansion Project (TEP),* Addis Ababa: Unpublished .

Young, R. & Poon, S., 2013. Top management support: almost always necessary and sometimes sufficient for success: Findings from a fuzzy set analysis. *International Journal of Project Management,* 31(7), pp. 943-957.

Yount, W., 2006. *Research Design and Statistical Analysis for Christian Ministry..* 4th ed. s.l.:Dr. Rick Yount.

Zikmund, W. G., Barry, B. . J., Jon , C. C. & Griffin, M., 2009. *Business Research Methods.* 8th ed. Boston, United States: Cengage Learning.

Zwikael, O., 2008. Top management involvement in project management: Exclusive support practices for different project scenarios. *International Journal of Managing Projects in Business,* 1(3), pp. 387-403.

Zwikael, O., 2009. The relative importance of the PMBOK® Guide's nine knowledge areas during project planning. *Project Management Journal,* 40(4), pp. 94-103.

APPENDIX 1: COVER LETTER

Addis Ababa University College of Business and Economics School of Commerce Master of Art in Project Management

Abrhaley Atsbha Kinfe

Tel: +251930015476

Email: abrhaley.atsbha@gmail.com

Addis Ababa, Ethiopia

RE: A REQUEST TO FILL THE QUESTIONNAIRE

Dear respondent, the purpose of this questionnaire is to **Assess Telecom Project Implementation Practices in Ethiopia: The case of Telecom Expansion Project (TEP)**. This research will help me for the completion of my MA in Project Management at Addis Ababa University School of Commerce.

I kindly request you to take a few minutes and respond to questions of the following 4 pages. The data collected will strictly be used for the purpose of this study only. Your identity will be anonymous and your name is not needed or shall not be recorded.

I sincerely ask you again to respond to all questions as honestly and truthfully as possible. For any inconveniences please feel free to contact me via my phone or email above.

Thanks for giving me your precious time in advance!

Yours Faithfully,

Abrhaley Atsbha
(Student)

APPENDIX 2: QUESTIONNAIRE

Part I: Basic Profile (Please Tick [✓] where appropriate)

1. Gender: Male ☐ Female ☐
2. Age (year): 18-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ >56 ☐
3. Education Qualification:

   High School ☐ Technical School ☐ Diploma ☐
   Degree ☐ Masters ☐ Doctoral ☐

4. Working level during the time of the project (TEP):

   Managerial ☐ Supervisory ☐ Expert ☐
   Specialist ☐ Professional ☐ Technician ☐

5. Work Experience (years):

   < 2 ☐ 2-5 ☐ 6-10 ☐ 11-15 ☐ >16 ☐

6. For how many years did you work in the project? (years)

   < 1 ☐ 1-3 ☐ >3 ☐

Part II: Close-Ended Questions

Please **tick** (✓) on the five scale of all questions under each categories that best describes your perception of how project management practices are applied in TEP project implementation **as honestly as possible**;

Where:

Strongly Disagree(SD)=1, Disagree (D) = 2, Uncertain (U) = 3, Agree (A) = 4 and Strongly Agree (SA) = 5.

A) Project Management Knowledge areas

SD" = Strongly Disagree, "**D"** =Disagree, "**U"** =Uncertain, "**A"** =Agree, "**SA"** = Strongly Agree

7	**Schedule Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
7.1	Activities in the project implementation plan (PIP) were well defined	☐	☐	☐	☐	☐
7.2	Activities in the project implementation plan (PIP) were well sequenced	☐	☐	☐	☐	☐
7.3	The estimation of duration for activities was good	☐	☐	☐	☐	☐
7.4	Initial project schedule was maintained throughout the project	☐	☐	☐	☐	☐
8	**Cost Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
8.1	Project cost was effectively estimated	☐	☐	☐	☐	☐
8.2	Budget allocation for the project activities was appropriate	☐	☐	☐	☐	☐
8.3	Project cost was properly controlled	☐	☐	☐	☐	☐
9	**Scope Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
9.1	Stakeholder's requirements were properly collected	☐	☐	☐	☐	☐
9.2	Detailed description of the project was developed	☐	☐	☐	☐	☐
9.3	Project work was subdivided to smaller manageable components	☐	☐	☐	☐	☐
9.4	Project scope changes were managed appropriately	☐	☐	☐	☐	☐
10	**Quality Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
10.1	Relevant quality standards were identified	☐	☐	☐	☐	☐
10.2	Planned quality was properly implemented	☐	☐	☐	☐	☐
10.3	Quality was being monitored for meeting customer expectations	☐	☐	☐	☐	☐
11	**Communications Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
11.1	Appropriate communication plan was developed	☐	☐	☐	☐	☐
11.2	There was timely communication of project information	☐	☐	☐	☐	☐
11.3	Information need of stakeholders was satisfied	☐	☐	☐	☐	☐
12	**Risk Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
12.1	Risk management was planned	☐	☐	☐	☐	☐
12.2	Individual project risks were identified properly	☐	☐	☐	☐	☐
12.3	Risks were analyzed	☐	☐	☐	☐	☐
12.4	Risks were timely addressed	☐	☐	☐	☐	☐
12.5	Risks were monitored effectively	☐	☐	☐	☐	☐

13	**Resource Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
13.1	Resource management was planned	☐	☐	☐	☐	☐
13.2	Activity resources were properly estimated	☐	☐	☐	☐	☐
13.3	Project team was developed effectively	☐	☐	☐	☐	☐
13.4	Allocated resources were used as planned	☐	☐	☐	☐	☐
14	**Integration Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
14.1	Project charter that authorizes the project existence was developed	☐	☐	☐	☐	☐
14.2	An integrated project management plan was developed	☐	☐	☐	☐	☐
14.3	Project knowledge was managed effectively	☐	☐	☐	☐	☐
14.4	Progress was monitored to meet the project management plan goals	☐	☐	☐	☐	☐
14.5	Project activities were finalized appropriately	☐	☐	☐	☐	☐
15	**Procurement Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
15.1	Potential vendors (sellers) were properly identified	☐	☐	☐	☐	☐
15.2	Contracts were awarded appropriately	☐	☐	☐	☐	☐
15.3	Relationships with the vendors was properly managed	☐	☐	☐	☐	☐
15.4	Contracts were properly closed	☐	☐	☐	☐	☐
16	**Stakeholder Management Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
16.1	Stakeholders were identified	☐	☐	☐	☐	☐
16.2	The engagement of stakeholders was planned	☐	☐	☐	☐	☐
16.3	Stakeholders' participation in the project was managed well	☐	☐	☐	☐	☐

B) <u>Management Support Practices</u>

17	**Top Management Support Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
17.1	Senior managements were committed in following-up the project	☐	☐	☐	☐	☐
17.2	There was quick decision making of higher managements	☐	☐	☐	☐	☐
17.3	Top managements were good at committing resources	☐	☐	☐	☐	☐
17.4	Top managements managed staff training appropriately	☐	☐	☐	☐	☐
17.5	There was appropriate incentive management	☐	☐	☐	☐	☐

C) Readiness Processes

18	**People readiness Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
18.1	Adequate personnel were hired for the project implementation	☐	☐	☐	☐	☐
18.2	People were properly oriented about the project	☐	☐	☐	☐	☐
18.3	Standard Operating Procedures were developed for operating areas	☐	☐	☐	☐	☐
18.4	Adequate personnel were qualified	☐	☐	☐	☐	☐
19	**Maintenance (Process) Readiness Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
19.1	Proactive computerized maintenance management system was applied	☐	☐	☐	☐	☐
19.2	Preventive maintenance plans were prepared for critical equipment	☐	☐	☐	☐	☐
19.3	Network Management Systems (NMSs) were properly prepared	☐	☐	☐	☐	☐
19.4	O&M (Operation & Maintenance) staffs were well trained	☐	☐	☐	☐	☐
19.5	Network Operation Center (NOC) properly supported the implementation	☐	☐	☐	☐	☐
19.6	Purchase of required maintenance spare parts was properly planned	☐	☐	☐	☐	☐
20	**System Readiness Practices**	**SD**	**D**	**U**	**A**	**SA**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
20.1	Installation was according to Inspection Criteria Reference (ICR) checklist	☐	☐	☐	☐	☐
20.2	Any design change from initial specifications was implemented by following Management Of Change (MOC) process	☐	☐	☐	☐	☐
20.3	Safety procedures were well practiced	☐	☐	☐	☐	☐
20.4	Project commissioning was properly done	☐	☐	☐	☐	☐
20.5	Project Acceptance Test (PAT) documents were well prepared	☐	☐	☐	☐	☐
20.6	Project Acceptance Test (PAT) was properly implemented	☐	☐	☐	☐	☐

Part III: General Opinion Questions

21. what other project implementation practices can you mention other than the above in the TEP implementation?----------
    ----
    ----------.

22. What project implementation best practices can we take from TEP implementation?

    ----------.

The End! Thanks for your precious Time!

APPENDIX 3: ETHICAL CLEARANCE

Addis Ababa University
College of Business and Economics
School of Commerce

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Ref. No. CBAGS 321/2018
Date: 29/10/2018

To Whom It May Concern

The Addis Ababa University School of Commerce currently runs for Postgraduate programs: Human Resource Management, Project Management, Marketing Management, Supply Chain and Logistics Management, beside its preparation to embark on launching some more expedient programs very soon.

As an immediate and direct stakeholder to this socioeconomically pragmatic move, we would like you to cooperate with us by way of assisting our students to conduct academic researches and case analyses in our organization. As such, we kindly request your esteemed organization to provide student Abrhaley Atsbha Kinfe

ID.No. GSD/9495/08 with information pertaining to Assessment of Telecom project Implementation practices in Ethiopia: The Case of Telecom Expansion Project(TEP). A copy of the paper produced may be provided to you if so demanded.

APPENDIX 4: RELIABILITY TEST SPSS RESULT

A) Project Management Knowledge Areas

```
RELIABILITY
  /VARIABLES=Q7.1 Q7.2 Q7.3 Q7.4 Q8.1 Q8.2 Q8.3 Q9.1 Q9.2 Q9.3 Q9.4 Q10.1 Q10.2
  Q10.3 Q11.1 Q11.2 Q11.3 Q12.1 Q12.2 Q12.3 Q12.4 Q12.5 Q13.1 Q13.2 Q13.3 Q13.4
  Q14.1 Q14.2 Q14.3 Q14.4 Q14.5 Q15.1 Q15.2 Q15.3 Q15.4 Q16.1 Q16.2 Q16.3
  /SCALE ('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=SCALE.
```

Scale: Knowledge Area Alpha Test

Case Processing Summary

		N	%
Cases	Valid	51	100.0
	Excluded[a]	0	.0
	Total	51	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.965	38

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
122.67	652.427	25.543	38

B) Management Support

```
RELIABILITY
  /VARIABLES=Q17.1 Q17.2 Q17.3 Q17.4 Q17.5
  /SCALE ('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=SCALE.
```

Scale: Management Support Alpha Test

Case Processing Summary

		N	%
Cases	Valid	51	100.0
	Excluded[a]	0	.0
	Total	51	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.855	5

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
16.02	15.780	3.972	5

C) Readiness Processes

```
RELIABILITY
  /VARIABLES=Q18.1 Q18.2 Q18.3 Q18.4 Q19.1 Q19.2 Q19.3 Q19.4 Q19.5 Q19.6 Q20.1
  Q20.2 Q20.3 Q20.4 Q20.5 Q20.6
  /SCALE ('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=SCALE.
```

Scale: Readiness Process Alpha Test

Case Processing Summary

		N	%
Cases	Valid	51	100.0
	Excluded[a]	0	.0
	Total	51	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.921	16

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
51.71	107.732	10.379	16

Overall Reliability

```
RELIABILITY
  /VARIABLES=Q7.1 Q7.2 Q7.3 Q7.4 Q8.1 Q8.2 Q8.3 Q9.1 Q9.2 Q9.3 Q9.4 Q10.1 Q10.2
  Q10.3 Q11.1 Q11.2 Q11.3 Q12.1 Q12.2 Q12.3 Q12.4 Q12.5 Q13.1 Q13.2 Q13.3 Q13.4
  Q14.1 Q14.2 Q14.3 Q14.4 Q14.5 Q15.1 Q15.2 Q15.3 Q15.4 Q16.1 Q16.2 Q16.3 Q17.1
  Q17.2 Q17.3 Q17.4 Q17.5 Q18.1 Q18.2 Q18.3 Q18.4 Q19.1 Q19.2 Q19.3 Q19.4 Q19.5
  Q19.6 Q20.1 Q20.2 Q20.3 Q20.4 Q20.5 Q20.6
  /SCALE ('Over All Scale') ALL
  /MODEL=ALPHA
  /STATISTICS=SCALE.
```

Scale: Overall Alpha Test Result

Case Processing Summary

		N	%
Cases	Valid	51	100.0
	Excluded[a]	0	.0
	Total	51	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.973	59

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
190.39	1378.323	37.126	59