ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

THE CORRELATION BETWEEN PROJECT MANAGEMENT EFFECTIVENESS AND PROJECT SUCCESS FOR LTE ADVANCED PROJECT IN ETHIO-TELECOM

BY

WONDWOSSEN MERINE

ID, SGS/0623/2011A

Feb, 2021

ADDIS ABABA, ETHIOPIA

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List of Abbreviations and Acronyms

3GPP	Third Generation Partnership Project
4G	Fourth Generation
CSFs	Critical Success Factors
IT	Information Technology
ITU-R	International Telecommunication Union Radio communication
IP	Internet Protocol
LTE	Long Term Evolution
LTE-A	Long Term Evolution Advanced
PM	Project Management
PMPOK	Project Management Body of knowledge
QoS	Quality of Service
SPSS	Statistical Package for Social Sciences
UE	User Equipment
UMTS	Mobile Terrestrial Radio Access System

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Abstract

Telecom industry is complex and competitive, and its projects are characterized by their importance and complexity. The telecom operator has a great importance not only to the economic and social life, but also to the needs and inspiration of the local culture. To achieve customer satisfaction and company revue telecom companies have to initiate and complete projects to scope, schedule, cost and quality. The objective of the study is to investigate the correlation between Project Management Effectiveness and Project Success terms of Organizational culture, Leadership ability, Technical competency, Project Manager, Project team, and Stakeholders. The single-case study conducted in this study were modern project-oriented business companies such as ethio-telecom based on the recent Addis Ababa LTE Advanced project. The thesis hence emphasizes the need to understand effective project management as an area of management in which various players share the responsibility for its Initiation, planning, design, executing, monitoring, and closing. The research employed correlational research method. Main data sources were 15 respondents participated in filling the survey instrument. Quantitative data analysis techniques such as one-sample t-tests and correlation analyses were conducted, and research findings were identified. The data analyses revealed that the LTE project was performed in accordance with project management approach; and was highly successful and effective. The effectiveness and success of the project were highly related, r=0.670., *which revealed that* 44.9 *% of the project success was due to the effectiveness of the project in terms of leadership, organizational culture, technology competency, and management effectiveness. The research concludes that project effectiveness had considerable effect on the project success, but other measures may be required to fully explain the overall success of the LTE project.*

Keywords: Leadership, LTE-Advanced, Organizational Culture, Project Manager, Project Management Effectiveness, Project Success, and Technical competency.

CHAPTER ONE

INTRODUCTION

This chapter provides a brief overview of the study presented in this thesis. This chapter introduces the reader to the problem statement, objective of the study, the scope, significance of the research, and research question, as well as the organization of the research.

1.1 Background to the Study

Telecom is a vital sector contributing significantly to the economics of all countries. The mobile telecommunication industry must be dynamic to be able to respond to the changes that the world is constantly facing, as well as the social, economic, and technological challenges affecting all industries. The opportunities and problems in telecommunication especially wireless communication such as GSM, WCDMA, LTE and LTE Advanced are different from those of the last decades. The unprecedented soaring demand for capacity and coverage on wireless networks creates a fundamental challenge for telecom operators, since the number of mobile users and their data-rates demands have increased exponentially; to keep up, management must change too.

Nowadays, any telecom organization must have a strategic plan and vision that lead the way to achieving its business goals. The key to achieving that lays in successful management, by identifying needs, customer requirement, and goals the company wants to achieve. To do that, the project management effectiveness directly depends on the success of its projects (Mekhilefet al., 2011). The success of project-based company depends upon how well project management is implemented and how experienced the company is in this field.

This research will address the growing need to develop project management in ethio-telecom, which in turn will help in shaping the goals of the current and future. Ethio-telecom is a government organization and project-based telecom sector. Over the years, ethio-telecom have committed a lot of manpower and capital towards expanding network capacity and improving customer Quality of Service (QoS) by ensuring ubiquitous service wherever and whenever the need beckons. This company is growing at a phenomenal rate. On a daily basis, there is a continuous inflow of mobile users and sophisticated devices into the existing mobile network. This has triggered a meteoric rise in mobile traffic; forcing the company to embark on a series of projects to increase the capacity and coverage of mobile networks throughout Ethiopia in line

with growing traffic demands and to meet reliable QoS. As a last resort, LTE-Advanced project is one of a critical project in ethio-telcom to provide better quality of service, to provide high data service, to meet the expected revenue and will support for competitive advantage.

1.2 Statement of the Problem

Projects usually involve attention to a variety of human, budgetary and technical variables. Human and organizational aspects of project activities may possibly couple in stimulating entrepreneurial behaviors towards a project success that emphasize on human interactions and decision-making practices. Other factors i.e., leadership and organizational technical skills are also important.

Many known projects have been either delayed, have had cost overruns, or did not meet the initial objectives. Project success seems to be a "human factors" approach wherein each stakeholder group – e.g., customers, senior management, project manager, etc. – takes a view of the project success from a different angle on the start of the project and to identify the possible cost before making monetary investment and managing it within a milestone. The logic here is that measures of project success need to include the diversity of stakeholder interests, expected quality, project manager performance, leadership ability and proper cost estimate and budgetary control (Kerzner ,2001).

Projects continue to fail at an astounding rate in all fields (Ramazani &Jergeas, 2015; Harrington & Frank, 2015). However, sustainable success of a project is more likely to be achieved effective company's project portfolios. These portfolios may be dependent on project management effectiveness that includes individual, project, and organizational factor. Thus, this research intends to provide the correlation between project management effectiveness and project success in telecom industry.

Analyzing project management effectiveness within an organization in the telecommunication sector has been considered a potential solution to the problem of carrying out a business project within the context of an organization's strategic plan, and of minimizing failed projects. Although there are quite numerous conceptual studies, analytical and empirical studies there are limited both in terms of numbers and the extent and depth of the analysis on the relationship between the project management effectiveness and project success. Moreover, it is evident that no local study has been done on the correlation between project management effectiveness and

the project performance (such as success) of in telecom industry, hence a knowledge gap exists. This study therefore sought to make a contribution to the knowledge gap by providing some empirical evidence on the correlation between project management effectiveness and success in project-based company. The study investigates the effect of project management effectiveness in telecom industry in Addis Ababa City county by considering four case of project management effectiveness practiced that include Organization Structure and Culture, Project Manager, Leadership Style, and Technology.

1.3 Research Question

Based on the research objectives the following questions were posed:

1. Does the LTE project was executed in accordance to the standard project management practice?
2. How effective was the implementation of LTE project?
3. How successful was the LTE project in terms of its outcome, achieving expected quality, and was completed within the budget and time schedule?
4. Is there any link between the implementation of the Project Management Effectiveness and Success of LTE project at ethio-telecom?
5. How does Project Management Effectiveness contributed to the Success of LTE project at ethio-telecom?

1.4 Objectives of the Study

1.4.1 General Objective

The purpose of this quantitative, correlation study was to assess the effectiveness and success of LTE project implementation practice; and study the relationship between project management effectiveness and project success as determined by a case study of LTE Advanced project. The study sought effective ways of enhancing quality project deliverables aimed at reducing the rate of project failure and maintaining competitive advantage, customer satisfaction and company revenue.

1.4.2 Specific Objectives

The following are the specific objectives of the study:

1. To assess the project management practice of the LTE Project of Ethio-Telecom

2. To evaluate the effectiveness and success of LTE project
3. To analyze the correlation between project management effectiveness and the project success of telecom industry in Addis Ababa City County, Ethiopia.
4. To examine the effect of Organization Structure and Culture, Project Manager, Leadership Style, and Technology on the project success of the LTE project
5. To examine the benefits of using Project Management Effectiveness of the LTE Project of Ethio-Telecom

1.5 Significance of the Study

The primary purpose of this study was to explore the effectiveness of project management that contribute to the success of a project focusing on several key factors such as the organization, the individual and the project factors. The project factor includes the project schedule, cost and scope.

This research is to provide sound recommendations to project-based organizations in telecom sector and decision makers regarding the effect of project management effectiveness on project success. As an academic work, this research has contributed to already existing knowledge in the area of study as well as would act as a source of future reference. In addition to this; even though much has been written on the project management effectiveness and project success, very little has been done on the correlation between them. This research has filled that gap.

The study is significant also in terms of its contribution to understanding the significance of project management effectiveness in the Ethiopian telecom industry. This would enable vendors, management, and telecom managers to be able to deal with and justify the resources spent on technology as well as planning, implementation, and evaluation of different projects.

1.6 Scope of the Study

The study was limited to telecom industry since telecom industry have a complex and project-based organization. Besides that, the focus was on the correlation between project management effectiveness and project success based on the single-case LTE-Advanced Project.

1.7 Organization of the Study

The study has been organized in a logical manner in order to enable the reader to gain insight and understanding of how the key study objectives and study questions have been achieved. The layout of the thesis is in a logical sequence, commencing with the introduction to the study in

chapter one to the conclusions and recommendations in chapter five. The thesis chapters have been arranged as follows:

Chapter One outlined the introduction to the work, and this puts the work in perspective. It provides the background to the study, problem statement of the study, the research objective as well as the thesis contributions. Furthermore, this chapter describes a brief overview of the other chapters.

Chapter two contains the literature review. The chapter surveys relevant and pertinent literature relating to the central problem of the study. The basic philosophy project and project management, project success and component of project management effectiveness are provided. Moreover, the basic concept of LTE/LTE Advanced technology present. The focus of the literature review is closely associated with the problem being investigated.

Chapter three presents the methodology used in this research in order to achieve the required objectives. The chapter touches different areas such as, data collection techniques, and method of data analysis and presentation of results. This chapter was responsible for the design and the implementation of the survey.

Chapter four focuses on the outcome of the interviews and questionnaires were discussed and analyzed in this chapter. It analyses the data in relation to the objectives of the study. The chapter has been organized under the following major sub-headings: demographics and strategy, project management effectiveness in terms of Organizational culture, Leadership style, Technical competency, Project Manager, Project team and Stakeholders. The data collected from the questionnaire will be analyses by using IBM Statistical Package for Social Science (SPSS) software platform. This chapter also addresses the analysis of data and findings on aspects of project success and key indicator of project success such as time, quality and barriers to the success of project. This follows the objectives of the research which are dependent on each other and thus follow a sequence.

Chapter five presents the summary of research findings, conclusion, limitation of the study to knowledge, and recommendations and gives potential areas for future work.

CHAPTER TWO

LITERATURE REVIEW

In this chapter, the researcher reviewed basic theoretical background of this research stated in chapter one focusing on the variables used in the study that seeks to determine relationship between project management effectiveness and success of project. The variables include in this study are the organization culture, leadership style, project manager performance, and technology capability. In addition to this, this chapter will present the theoretical background of LTE and LTE Advanced cellular technology so as to be support the technical highlight for the selected single -case project. In sum, the aim of this literature review is to identify key aspects to design the survey instrument and develop a detailed, interview and case study questionnaire.

2.1 Project

Companies succeed business benefits, produce, and improve products, design, and develop systems and services, and invest in company infrastructure primarily through project accomplishments (Davies & Hobday, 2005), it can also use for competitive advantage. So, it is essential to understand what is meant by 'project' in this context. PMBOK (2013) defines a project as; "a temporary group activity designed to produce a unique product, service or result". Technically, then, the Body of Knowledge (PMBOK) guide describes a 'project' as a unique (i.e. creation of a unique product, service, or result distinguishes) set of coordinated activities which is designed to accomplish a certain goal. The temporary nature of a project means that it has definite starting and finishing point. A project is ended when its objectives within defined schedule cost and performance parameters have been met, or it is determined that the objectives will not or cannot be met, or the need for the objective no longer exists.

Alternatively, as defined by Wysocki, Beck and Crane (2000), is a sequence of unique, complex, and connected activities having one goal or purpose that must be completed by a specific time, within budget, and according to requirements. It is also an integration of human and non-human resources to fulfill a well-defined specific objective, such as the production of goods or services, in order to make a profit or to provide a service for a customer or community. Projects are executed to achieve different companies' strategic objectives driven by either or combination of market demand, organizational need or strategy, customer need, technological advancement, and it create a unique product, service, or result (Hyväri, 2006).

For the purposes of this thesis the above ideas have been combined in terms of the following project characteristics:

- Is Unique,
- Has defined start and completion dates
- Consumes resources,
- Achieves a pre-set objective,
- Is a series or complex mix of tasks,
- Meets specific requirements or specifications.
- Provide reasonable benefits to the owner

2.1.1 Project Life Cycle

The life cycle of project work is another way to show its unique nature. Understanding project life cycle is crucial to effective project management, because without this understanding, it is very difficult to develop a plan that satisfies the needs of the project in any phase of its stages (Kerzner,2006). The concept of a life cycle suggests that a project has a life. This implies sequence of phases through which the project will evolve, i.e., from planned and implemented through to completion (Blackman, 2003). The model is based on the concept that, although all projects are different, they all progress through same fundamental structure. The project cycle also provides a structure to ensure that stakeholders are consulted, and relevant information is available throughout the life of the project, so that decisions can be made at key stages in the life of a project.

There are a number of different project life-cycle models in project management literature and many of them are unique to a specific industry or type of project but Larson and Gray (2011) and Westland (2006) give an example of a generic project life-cycle that consists of four phases; project initiation (defining), planning, executing and closing (see Figure 2.1).

Figure 2.1: *Generic Project Lifecycle*

2.2. Project Success

One of the most beloved word of any project practitioner is "success" (Howsawi et al., 2014). The successes of a project as well as the factors that affect this success are considered in a various way by different project management researcher. However, there is no unified treatment and definitions of these concepts, i.e., different stakeholders have different perceptions on project management and interpret project success differently (Ebbesen& Hope, 2013; Prabhakar ,2008).

There are two main success concepts when talking about projects: project success (result of evaluation of overall project goals achievement) and project management success (project management success relates to traditional measurements of time, cost and quality performance) (Ika , 2009; Cooke-Davies, 2002).

According to Allen et al., (2014), success can only be likened with projects that are completed. Serrador and Turner (2014) states that the definition of project success extends beyond quality, expenses, and schedule limitation. In the same year, Sundqvist, el. al., (2014), express success it is usually stated that it refers to doing things right, which means that regardless of what is being performed, it is being performed in the best way possible. Deacon (2011) also describe that project success is sum of project efficiency (i.e., achieving the project objectives within time, within cost, and at the desired scope, while utilizing resources effectively and at the desired level of quality) and project effectiveness (i.e., end user satisfaction and return on investment).

Although many explanations exist in a success factor of a project, a comprehensive answer to the question of which factors are critical to project success depends on main factors including the

original dimensions (time, cost, and quality); and other important facets such as: (i) meeting the strategic goals of the client organization, (ii) attaining satisfaction of all other stakeholders, and (iii) achieving satisfaction of the end users.

2.2.1 Project Success Factor

Project success is a complex, ambiguous concept that changes during the project life cycle. Project cost, time, quality, and scope are important project success factors during project execution phase; however, after project completion and delivery of the product to the customer, these success factors lose their importance; satisfaction of the customer, improved efficiency and effectiveness for the owner organization and other key stakeholders assumes importance as the project success factor (ÖzdemirGüngör&Gözlü, 2016). So, if the project is highly complex and uncertain, it is strongly recommended to define project success factors clearly and beyond the basic understanding of success (Yu&Kwon,2011).

A review of extant literature shows that the concept of project success has been and continues to be a major concern in this field. The two different aspects of issue are the following: (a) How success is measured (success criteria), and (b) what are the factors that contribute to project success Crawford (2007). Khan (2013) developed an accurate model of project success factors derived from a literature review and the model contains the three criteria for the iron triangle (Cost, time, scope) plus additional project success criteria dimensions:

- Project efficiency
- Organizational benefits
- Project impact
- Stakeholder satisfaction

Moreover, project success also recognizes as the success of the project management, is a result of the dynamic interaction of stakeholders goals, project environment, leadership and ownership , project management methodology , project management technology use, project resources and project organization (Noordzij, 2014, p.58). Figure 2.2 present the dependence between elements mentioned above. The project efficiency reflects the speed and harmony of informational, financial, and material flow which indicates the flexibility of a company's project realization. While effectiveness reflects the degree of achieving primary project goals more related to added value for owners and users while situational condition refers to environmental circumstance

(Zekic, et al. 2012). For this study we consider both parameters selected from effectiveness and efficiency for project success factor.

Figure 2.2: *Project management Success model (Zekic, et al, 2012)*

2.3 Project Management

One of the most notable trends in all countries is the increased number of projects. Projects are operated by governments, organizations and individuals as means to achieve strategic goals. Beside that the effectiveness of a project depends upon successful project completion, project management field of study has emerged as a distinct discipline from general management (Cleland & Ireland, 2002).

The Association for Project Management defines project management as the discipline of successfully managing projects (APM, 2000). The Project Management Institute (PMI) defines project management as the application of knowledge, skills, tools and techniques to project activities to meet project requirements (PMI, 2004). As a discipline, project management is planning, organization, monitoring and control of all aspects of project, with motivation of all included to achieve set project parameters of scope, cost, time, quality, performance criteria and customer satisfaction (Maina and Gathenya, 2014).

Project management is focus as an application of knowledge, skills, and techniques to project planning, directing, and controlling resources in order to meet the needs of project requirements, according to (Heagneym, 2011:25). Furthermore, project management operates the systems approach to management by having functional personnel (the vertical hierarchy assigned to a

specific project (The horizontal hierarchy)" (Kerzner,2006). Figure 2.3 shows that project management is designed to control the key elements that provide practical information for achieving project objectives in an efficient and effective way, which is normally expressed in terms of time, cost, quality and stakeholder satisfaction perspectives.

Figure 2.3:*Overview of PM (Kerzner,2006)*

2.3.1 Important of Project Management

The important of project management and the benefits that are possible from implementing project management methodologies are well documented with many scholars. There are many justifications why projects and effective project management are important to businesses. For instant projects is to serve as a component to business operations (Valčić et al, 2016). Effective project management (PM) is designed to better utilization of resources, shorter development times, customer satisfaction, reduced costs, competitive advantage, enhance quality of service, inter departmental cooperation that builds synergies across the organization, and a better focus on results , and create good customer relations (Morris, 2007; Killen and Hunt 2013).

In addition to this, projects can also be effective in implementing corporate strategy (Hyväri, 2016) and converting corporate vision into reality (Serra and Kunc, 2015). On the base of this fact, one might conclude that projects provide an opportunity to undertake the core businesses of firms, which generates business value. Hence, project management is relevant to any organization with the core strategy and objectives of scope, quality, schedule, customer requirements and cost" (Hutson, 1997).

2.4 Project Management Effectiveness

Project management effectiveness is extremely interesting topic from scientific, as well as practical point of view. A successful project execution is the key business objective of many organizations. From the research of Henderson and Walkinshaw (2002), it is evident that effectiveness pertains specifically to the accomplishment of the goals, milestones, and objectives as defined by the requirements of the context or the stakeholders. Despite these findings, project failures have often been traced back to project management effectiveness, so the question is, 'What is project management effectiveness? How can it be measured? And how does project management effectiveness impact on project success?

According to Olsson (2008), addressed project effectiveness can be related on doing the right things. The effectiveness of a telecom network infrastructure can be seen as the ability of the process to satisfy the basic requirements, define objectives and priorities related to customers in the telecom industry, primarily the project owners. On the other hand, Wysocki (2007) claimed that a lack of effective practices would lead to (a) unacceptable products or services, (b) customer complaints, (c) high warranty costs, (d) decreased market share, (e) backlog, (f) redoing of completed work, (g) rejected output, and (h) late output of product or service delivery.

Project management effectiveness include individual characteristics (e.g., competencies, project team performance (Randeree and Ninan, 2011), project manager (Emil Berg and Terje Karlsen 2014), project sponsor, etc), and organizational and contextual factors (e.g., organizational design Technology utilization, organization culture (Cavaleri et al. 2012), etc). These various approaches combine to drive project management processes toward task accomplishment and effectiveness. However, this research study will be focused on the most influence project management effectiveness factor to correlate the project success.

2.4.1 Organization Structure and Culture

The organization is larger than the project. An organization can have several projects running oncurrently. The project is influenced by the organization factors that contribute to project success, such as organizational culture, style, size, structure, the level of project management maturity also influences project success (Dyett, 2011). In terms of project management, organizations can be divided into two categories: project-based organizations and non-project-

based organizations. Most of a project-based organization's work will pertain to projects whereas non-project-based organizations focus more on one single task (PMI, 2004).

The way an organization is structured can determine its effectiveness in project development and implementation. The classic organizational structure is called a functional organization (in this scenario each employee has one direct supervisor). In a project-oriented organization teams are organized based on project need (see Figure 2.4). This study selects one of project-based organization in Ethiopia such as Ethio-telecom.

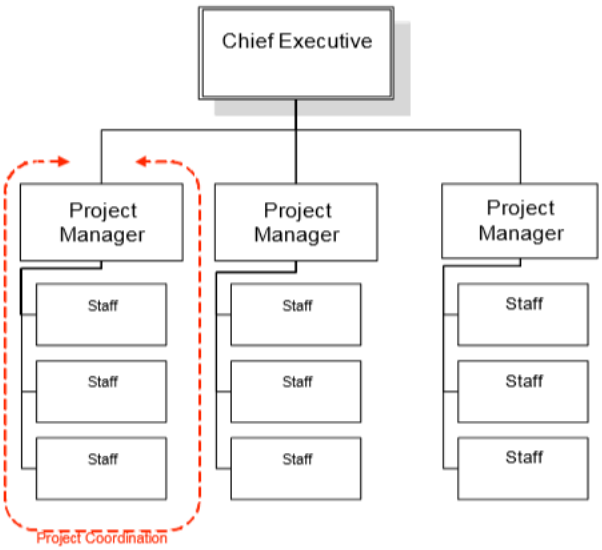

Figure 2.4: *Simplify Project-Oriented Organization*

Organizational culture is defined as the guiding beliefs, norms or perceptions and shared values of workers on how work is done within an organization or organizational unit (Robbins& Coulter, 2005; Trompenaars and Prud'homme ,2004).

In carrying it out projects, it is required to have a business environment that possesses features that complements the requirements of what a good project management effectiveness entail. This view is supported by other authors who consider Organizational Culture impacts on the success rate of a project in four different ways (Pinto ,2010). It impacts on departments in terms of their levels of support and interaction in the pursuit of definite goals. It also affects a project in terms of how it influences project team commitment level to project goals and how to balance competing goals. Thirdly, it impacts in the process involved in allocating resources to projects; finally, it affects the performance evaluation of teams and the outcome of the project done by managers (Pinto, 2010). Ochiel, Iravo and Wandera (2017) found the following to positively

influence project performance, diversity, communication, and leadership. Organizational culture can also extend to include stakeholders along the value chain, creating a broader culture that may further compound project success (Zuo et al., 2014).

2.4.2 Project Manager

From the literature review, it was motivating to find that project manager was rarely considered by the critical success factors of the project. Project managers occupy an essential position in every project. The development of project activities requires project managers who understand the objectives, scope, resource, and limitations of the project, as well as the roles of each participant (PMI,2008).

Kloppenborg et al. (2003) illustrate that all projects have unlimited constraints in regard to how well and how fast the proposed project goals can be achieved. These constraints may include financial, human, resources, scheduling, timelines, and finally technological limitations. Moreover, projects with a high level of data complexity could involve complicated tasks, and coupled with uncertainty (Yang et al., 2013). These limitations generate risks and tend to obstruct timelines in meeting objectives. And hence, experienced project manager is an asset in terms of minimizing costs by utilizing the best practices suitable for the project, improving quality by reducing delays by preordering materials and equipment, and reducing risk. In sum, project managers are individuals assigned with the highest level of responsibility to manage and execute the project and to ensuring deliverables across all project phases.

Project managers must be capable of effectively applying technical and intellectual tools and strategies in order to manage the project successfully. Project managers should be competent in most or all of the details of the technical area and effective project managers are required to have an ethical, interpersonal and conceptual skill that helps them analyze situations and interact with team members appropriately, PMI (2013). In a high-level generalization, the core skills for a project manager can be theoretically categorized in a declining scale of priority as: communication, organizational, effective delegation, managing the stakeholders' expectations and planning abilities (PMI, 2008; Phillips, 2009). Katz (1991) suggested that effective administration rests on three basic developable skills: human skill, conceptual skill, and technical skill. These are all closely related and highly critical for every project manager to exercise to grow into an effective leader. That is why, one should anticipate and demand that the project

manager will do the right things right and get things done (Bredillet, Tywoniak&Dwivedula, 2015).

2.4.3 Leadership Style

Organizations judge effective leaders by their action to bring changes to their organization to achieve the goals and vision of the organization (Aga et al., 2016). Leadership includes various components, skills, styles, and attributes. Although there are various leadership styles, it needs certain qualities in order to be effective. Dubrin (2010). state that leaders should be innovative, skill to inspire confidence, have respect for others, be courteous, sensitive, negotiator, technical problem solver, strategic planner and go beyond their ability in order for any organization to be highly effective. The goal of a leader in a project environment is to improve performance of team members by developing the team's own capabilities of displaying leadership, goal settings, etc. Leaders play a major role in establishing organizational culture, and culture is one of the critical elements to project success (Hermano& Martín-Cruz, 2016).

Leaders are shaped and molded by their experiences, knowledge, skills, and backgrounds. Yudelowitz et al. (2002) agree and state that leadership is a skill that is different from other skills, which is more necessary in some situations than in others in order to achieve maximum outputs. There are positive leadership styles and characteristics identified as being critical for successful project delivery. Certain skills that are required to ensure an effective organization listed by different researchers, for instance: communication skills, planning skills, budgeting skills, conflict management skills, negotiation skills, leadership skills and motivating skills (Bussiswe et al.,2013).

Munns and Bjeimi (1996) highlight that the success or failure of project management is highly dependent on the project leaders. With various leadership styles, innovation-championing and methodologies project performance can be achieved (Kissi et al., 2013). Kerzner (2013) describes basic elements, which are important when exercising good project management leadership methodologies, namely effective communication, effective co-operation, effective teamwork, and trust. By studying the mold constructed by Yang (2011), it is learnt that leadership impact the project success through teamwork. So, on the base of literature review it can be concluded that, in a certain project type, appropriate leadership can improve project success directly or indirectly.

2.4.4 Technology in Project Management

In this study, one of the project management effectiveness is identified in technical competency, it includes the effective use of tools and methods used in select project. Every project manager needs to know what is going on in their project and calculate some metrics (milestones, issue, status, etc) to help them make decisions.

According to Liu and Yuan (2015) recognize that the rise of new technology has introduced great benefits for governmental organizations such as increased efficiency in operations, integration of operations and customized service delivery. Research address it can be performing projects effectively through the use of project management tools is on the increase (Besner& Hobbs). Especially the communication technology has led to the emergence of virtual teams as a means of running projects these days. There has also been considerable development in planning tools and both of these changes have the potential to drastically change the way we work in projects (Maylor, 2010). The aim is to decrease the failure rate of projects and increase effectiveness for project management. Effective practices that drive higher returns and product superiority require the integration of technological tools and techniques (Besner& Hobbs, 2008) within the project life cycle.

2.4.5 Project Stakeholders

A stakeholder is any entity that is actively involved in a project and who may be affected positively or negatively by the project deliverable (Wearne, 2008). The coordination among stakeholders in managing a telecom project is one of the most essential aspects of project management. Given the diverse needs of stakeholders at various stages of project life cycle and they should not be neglected at any phase of project life cycle. Sun et al., (2016) state that the knowledge of stakeholder's entrenched interest strategies is helpful for project managers in predicting stakeholders' likely behaviors and managing the stakeholder thoroughly.

In order to increase this coordination, first and foremost stakeholder analysis must be done so that different categories of stakeholders can be identified (for instance in telecom industry the following is the most feasible project stakeholders: sponsors, vendor, contractor, project team member, customers, ECA, and another minister's organization). This will also help in identifying the processes which will in turn help in involving different categories of stakeholders and used to carry out planning process effectively along with identifying the obstacles (Munsaka, 2013).

2.5 LTE Advanced Concept

The mobile broadband services all around the world (Audio/Video streaming, social media services online conferences, and other streaming services such as real time multimedia services, etc.) is the most important issue in the present era. This push mobile network operators, equipment suppliers and researchers in a continued case of working, researching and implement the solution to meet users requirements, improve services quality and good coverage, provides higher data rates and capacity, increase overall cell-site performance and which result in better user experience.

The Third Generation Partnership Project 3GPP introduced LTE based on LTE Release 8 3GPP standard (3GPP, 2006) and LTE-Advanced (LTE-A, Release 10) cellular networks (3GPP, 2012; 3GPP, 2013) to increase system capacity, to cope up with the enormous current and future demands of mobile data traffic, new services, and applications. LTE-Advanced is a name that was given for International Telecommunication Union Radio communication (ITU-R) (3GPP, 2011).

Researchers and standardizing bodies are putting a significant effort on LTE Advanced (LTE-A) to meet that demands (Stefan et al., 2011). Moreover, 3GPP continued its effort through Release (Rel) -11, Rel-12 and Rel-13 (4G Americas, 2014).

2.5.1. Requirements and Feature of LTE-Advanced

LTE-Advanced is based on several technology components includes, MIMO (multiple input multiple output), relaying, carrier aggregation, and HetNet (Heterogeneous networks) [4]. These components will enable the users to take advantage of 4G Cellular networks by guaranteeing quality of service (QoS), reduced latency, low complexity, higher user throughputs, and reduced operational cost.

LTE-A is also known as 4G wireless technology. It guarantees low latency, higher data rates, and all IP based network (S. Parkvall et al., 2008; **3GPP, 2011**). The basic LTE A requirements are summarized in Table 2.1

Table 2.1: LTE Requirements

Technical Items	**LTE-A Requirements**
Downlink peak data rates	1 Gbps
Uplink peak date rate	500 Mbps
Bandwidth	Scalable up to 100 MHz
Uplink peak spectral efficiency	15 bps/Hz
Modulation	64QAM
Downlink peak spectral efficiency	30 bps/Hz

LTE A have different key feature. Some of the system requirements and Key features of LTE Advanced are (ITU-R, 2008):

- Fully backward compatible with LTE, UMTS and GSM
- High spectral efficiency and system capacity
- LTE–A have 4 major components: Carrier aggregation, MIMO mode, Heterogeneous network, and relaying.
- Increased number of simultaneously active subscribers
- Worldwide roaming

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter describes the methodology used to do this study. Research methodology refers to the method adopted in carrying out a research. According to Kothari (2004), it is a systematic way applied to solve a research problem and it help to align the study objectives. The methodology for this study was treated under the following subheadings: research design, research methods, data collection, and data analysis techniques

3.1Research Design

Research Design "A research design provides a framework for the collection and analysis of data" (Bryman & Bell, 2015, p. 49). Various research design options are available to scholar such as action research, case study, experimental, longitudinal, and cross-sectional (Wilson, 2010). Several researchers explained that case studies are bound by circumstances and specific situations and can be selecting cases from different levels of the phenomenon under study, such as unusual cases, problematic cases or good (extreme), maximum variation, critical or paradigmatic cases (Yin, 2009). Each case should be carefully selected for conducting any type of research, as it describes the research paradigm and methodology employed by a study. It helps researchers to partition the research project into a set of clearly defined steps (Runeson et al. (2012).

In this study, our single case is a wireless communication project called LTE-Advanced which provides broadband data service. The case companies (ethio-telecom) use different-technology base service and conduct many projects in various domains such as, wireless, IP, fixed network, etc. Since the purpose of this study is to investigate and describe therelationship between project management effectiveness and project success, the study was structured and seeks for detailed information regarding the chosen topic; hence. descriptivecorrelational research is suitable for the purpose of the study (Churchill and Iacobucci , 2002; Ghauri&Grønhaug, 2005).

3.2 Population and Sampling Design

A population refers to all the cases; while a researcher is usually unable to reach the whole population within the time frame. Sampling problems may derive from different reasons: the definition of the population; the size of the sample member; and the representativeness of the sample. In the case of a survey, as long as a reliable database is used, the sample will represent the target population have similar characteristics to the population, making it possible to generalize the results and outcome of study (Bryman and Bell, 2007; Creswell, 2009).

3.2.1 Sampling Design

According to Bryman and Bell (2007), sampling is taking a little group from a large group to represent a population in an investigation or a research. A sample is "a smaller set of cases a researcher selects from a larger pool and generalizes to the population" (Neuman 2006, p.219). A sampling is a "process of selecting a sufficient number of elements from the population so that by studying the sample and understand the properties or characteristics of the sample subjects, it would then be possible to generalize the properties or characteristics to the population elements" (Sekaran 2000, p.268). According to Sekaran, (1992, p. 226). "Sampling is the process of selecting a sufficient number of elements from the population so that by studying the sample, and understanding the properties or the characteristics of the sample subjects, it will be able to generalize the properties or characteristics to the population elements"

Basically, there are two types of sampling, namely probability and non-probability sampling. For this study, a nonrandom purposive sampling technique is appropriate. The reason for using a non-probability sample was the explorative nature of the study where the aim has been to identify phenomena rather than statistically confirm their existence to some certain degree. The only criteria for the respondents or companies have been to identify (i) person who had served as project leaders, project team member, and have patriate the selected projects (ii) one of the large national company.

3.2.2 Sample Size

Several approaches are available for sample size determination and include a census for a small population; use of a similar sample size for a similar study; use of published tables or through a statistical approach by computing the sample size based on statistical formulas.

The study used Yamane (1967) formula to calculate sample sizes at 95% confidence level (e)

$$n = \frac{N}{1 + N(e)^2} \boldsymbol{n = \frac{255}{1 + 255(0.05)^2}} = 156$$

Here, n is the sample size; whereas N is the population size and e is the level of precision.

For the purpose of answering the research questions, the targeted population in this study was project manager, project team member and a person who participated the selected project. The total number of this population is twohundred fifty-five (255). Hence, by applying the above formula and total population we found the sample size of this study is one hundred fifty six (156).

3.3 Types of Data to be Collected and Used

Data sources can be broadly classified into primary data and secondary data (Ghauri&Grønhaug, 2005), with a different purpose of the research project one, but that are linked to the research topic and might be useful to the researcher to answer partially or fully to its research questions. Secondary data are data that have been collected previously, while primary data can be collected from experiments, interviews, focus groups, surveys etc. (Saunders *et Al*., 2007).

In this study, both primary data and secondary data are considered for data collection. Secondary data are collected for the usage of different project related report in ethio-telecom. With the foundation of these data, it will help find out the research gap and thus formulate the interview and questions to gather primary data afterwards. Primary data collection will be used to get deep understanding about how project management effectiveness impacts the project success.

3.4 Methods of Data Collection

In order to complete a successful research, a questionnaire (Kumar, 2005) was used as the main tool to collect the data for especially quantitative studies. The questionnaire was built based on literature review and related to an existing practical business problem which requires conceptual clarity in order to develop a theory (Kumar, 2005; Saunders et al, 2007). Moreover, the questions of the survey were validated by Five project management professionals working in the Project Management department in the ethio-telecom company and also considered some adopted from the other researcher work.

The questionnaire is composed from three parts as follows (see Appendix A, Appendix B and Appendix C): The first part was mainly on the background information. This was to enable the researcher to get an indication of the nature of the responder, while the second part was independent variables (Project manager's effectiveness) which includes five sub-variables (Organizational Culture, Leadership ability, Project manager performance, Project team and Technology for project management). Third, dependent variable (Project Success) includes three dimensions (Cost, Time, and Quality).

In addition, the final part of questionnaire contains an open-ended question aimed at gathering respondents' opinions about important topics or to provide feedback on the survey.

For this study, survey questionnaires are administered in two approaches: self-administered questionnaire survey and mail surveys. The self-administered questionnaire survey was administered through a drop and pick later approach for the project management and participant staff of the ethio-telecom. The mail survey method used for very busy management and expert groups. In addition, a research permit from ethio-telecom was used to facilitate data collection to give an assurance to the respondents that the research had been authorized by relevant company authority (see Appendix D). Secondary data on project data were obtained from monthly, and annual reports obtained from different department in ethio-telecom. The targeted respondents were senior, middle, and low project management and participant staff.

3.5 Data Analysis Methods

To prepare data for analysis, completed questionnaires were checked for consistency, coded to reorganize them into a form suitable for computers database. Data for this study was both quantitative and qualitative hence both descriptive and content analysis techniques were

considered. The quantitative data was obtained from the survey responses. Since the unit of analysis was project, multiple responses for a given single case project were consolidated through computation of mean rating for each of the Likert scale items. The Likert scale used to analyze the data, which helped in determining the effectiveness of project management on the success of the project in ethio-telecom. The variables in the study are as follows:

Table 3.1: Variables in the Study

Variable Group	Variables of the study	Short Name of Variables
Project Effectiveness	Project Need Assessment	PNA
	Project Management Practice	PMA
	Decision Making Effectiveness	EPDM
	Goal Definition Effectiveness	EDG
	Organizational Culture Effectiveness	EOC
	Leadership effectiveness	EL
	Project Manager Effectiveness	EPM
	Effectiveness of Technology Competency	ETC
Project Success	Success in Project Outcome	SOPD
	Success in Cost of Project	SFC
	Success in Project Quality	SFQ
	Success in Project Time	SFT

Source: Own Survey (2020)

The main variables in the study was Project Effectiveness (PMEffectiveness) and Project Success (ProjectSuccess) that were computed by averaging their respective measuring variables.

Descriptive statistics such as means, and standard deviations were applied to analyses the data and describe the facts about the LTE project. The data analysis used one-sample t-tests to describe and evaluate the existing practice, effectiveness, and success of the project. Whereas correlation analyses were employed to describe and evaluate the relationships existed between project success and project effectiveness. The data analysis employed in this research was one-sample t-test and correlation analysis techniques.

Generally, the questionnaire analysis has two parts. In the first part, the questionnaire was analyzed using frequency distributions and percentages to determine the profile of respondents. The second part was analyzed using inferential statistical tools such as one-sample t-test and

correlation tests. The one-sample t-test was used to evaluate the status of LTE project practice and its success as well as effectiveness. The mean scores and standard deviations along the 95% CI provided the evaluation of the LTE project with respect to each variable under study. The correlation analysis was used to evaluate the significance of relationship between project management effectiveness with LTE project success.

All quantitative data were analyzed using Statistical Package for Social Sciences (SPSS) software package (version 20).

3.6 Validity

According to Saunders *et al.* (2012) validity is the extent to which data collection method or methods accurately measure what it is supposed to measure; it is the ability of scale or instrument to measure what it is required to measure and the integrity in which constructs are generated (Bryman 2004). Moreover, validation is a process of how conclusions are drawn, assumptions are identified, or suggestions are proposed Adams et al (2007).

Validity was improved by matching the questions in the instrument with the research objectives and research questions.

Validity is performed in this study through selection of interviewees. A group of 5 individuals (managers, experts, etc) from the target population of the staff working in the ethio-telecom in LTE-Advanced projected selected for semi-structured interview. This is to ensure that the most appropriate candidates in terms of knowledge and experienced about project management assessment. This approach allows for pre-testing of the research instrument.

3.7 Reliability

The reliability of empirical measurement is indicated by the internal consistency, which can be estimated by using a reliability coefficient such as Cronbach's alpha (Sekaran, 2003). According to Nunally (1978), normally a reliability coefficient of 0.7 or higher is considered to be acceptable. The higher the coefficient alpha value the better the measurement instrument, thus the higher the degree of reliability.

In this research study, the reliability was established by literature review, constructs conceptualizations and measurements, survey questionnaire design with multiple items, questionnaire pre-testing. Then the next step validity is using statistics to calculate correlations

between different variables in order to find the relations and measure the strength of that (i.e., we consider coefficient alpha). The reliability coefficients for the measures in this survey instrument was computed and presented in the Table 3.1 below.

Table 3.2: Reliability of the Measurements in the Survey Questionnaire

Variable Group	Variables of the study	Short Name of Variables	Cronbach's Alpha	N of Items
Project Effectiveness	Project Need Assessment	PNA	.785	10
	Project Management Practice	PMA	.755	10
	Decision Making Effectiveness	EPDM	.701	7
	Goal Definition Effectiveness	EDG	.721	5
	Organizational Culture Effectiveness	EOC	.706	6
	Leadership effectiveness	EL	.709	6
	Project Manager Effectiveness	EPM	.718	7
	Effectiveness of Technology Competency	ETC	.816	10
Project Success	Success in Project Outcome	SOPD	.795	14
	Success in Cost of Project	SFC	.706	4
	Success in Project Quality	SFQ	.740	4
	Success in Project Time	SFT	.710	4

Source: Own Survey (2020)

As indicated in the reliability statistics that Cronbach's Alpha values were all above 0.7; and hence the survey instrument was accepted and used to collect data.

3.8 Ethical Considerations

Five factors covering in research ethical aspect include voluntarily participation, confidentiality, anonymity, and clear purpose of the researcher and interpretation of data would be addressed by the researcher (Saunders et al., 2009).

For this study all the respondents were made aware of their liberty to participate in the survey or study, beside that all participants of the survey have been briefly informed about the purpose of the research, taking part has been on a voluntary basis. The respondents were asked to answer all inquiries for their most as of recent completed project such as LTE Advanced Project in Addis Ababa. I have developed and presented the data without disclosure of the respondent's identity. Finally, data would be punched carefully in SPSS and further without any change on it.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

This research was conducted to assess the relationship between project successes with project effectiveness focusing on Ethio-Telecom's LTE project. This chapter presented the data analysis results conducted to address the objectives of this research and answer the research questions. The main source of the data analysis was primary data collected through survey instrument. The sample size determined for this research was 156 respondents where about 93% response rate was obtained from 145 respondents. This section presented statistical techniques, such as one sample t-test and correlation analysis, along with the discussion of the data analysis results. The one sample t-test was used due to one group of respondents in the study. Their average rating was compared against the moderate level agreement, which is the test-value (i.e 3). The one sample t-test result with p-value > 0.05 indicated lack of agreement or disagreement to the statement; while p-value < 0.05 indicated clear disagreement or agreement to the statement depending on t-value below zero or above zero, respectively. The correlation analysis was conducted with the assumptions of linear relationship between project success and project effectiveness.

4.1 Respondents' Background

The sample size in this research was composed of 145 respondents, who ar employees of Ethio Telecom and participated in the LTE project at different capacity.

Most of the respondents 74(51%) were project team members, while 11.7% and 37.2% of the sample assumed manager and director positions in their company, respectively. The responses from such composition of employees would give relevant information about the research topic as they had closer involvement in the project.

The gender composition was mostly (85%) male respondents compared with nearly 15% of females participated in the sample. According to the age category of the respondents, the majority 106 (73%) were within the age group of 36-45. Whereas 21.4% and 5.5% of the respondents represent age groups of 26-35 and 46-55, respectively.

Table 4.1: Respondents Characteristics

Respondents' Characteristics		Frequency	Percent	Valid Percent
Gender	Male	123	84.8	85.4
	Female	21	14.5	14.6
	Total	144	99.3	100.0
	No Response	1	.7	
Age Category	26-35	31	21.4	21.4
	36-45	106	73.1	73.1
	46-55	8	5.5	5.5
Education Level	Bachelor's degree	70	48.3	49.3
	Master's Degree	72	49.7	50.7
	Total	142	97.9	100.0
	No Response	3	2.1	
Years of Experience	6-10	30	20.7	20.7
	11-15	78	53.8	53.8
	16-20	36	24.8	24.8
	above 20	1	.7	.7
Job Title	Director	17	11.7	11.7
	Manager	54	37.2	37.2
	Project Team	74	51.0	51.0
Total		145	100.0	100.0

Source: Own Survey (2020)

Education level of respondents was either bachelor's degree of master's degree represented by 48.3% and 49.7% of the respondents. So, the informants were capable of understanding the research objective and provide their valuable opinion to the survey questions. It is, therefore, logical to think the sample composition will provide knowledgeable and valuable information to the research. Moreover, the respondents had good number of years of service in the organization under study.

The sample composition reveals that 53.8% of the respondents had served the telecom company for 11-15 years. The number of respondents serving the company for more than 15 years were 25.5% in the sample. Still there are good number of respondents, 30 (20.7%), who had 6-10 years of service. The composition of the sample reveals that respondents had a good number of service and experience at EthioTelecome that would greatly help this research.

4.2 LTE Project Need Assessment

The implementation of projects requires identifying and availing all the resources required in the project execution. The importance and identification of the resources for the LTE project was

assessed in this research. Respondents had rated for ten likert type statements regarding the LTE project needs assessments prior to the execution of the project.

Table 4.2: Project Need Identification

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
Content needs – project scope, budget, expenditure, resources, quality, and schedule	145	4.86	0.35	64.80	144	.000	1.86	1.81	1.92
Relationship needs – how project team relate or cooperate with themselves and other stakeholders	145	4.51	0.50	36.26	144	.000	1.51	1.43	1.59
Effective coordination of project activities	145	4.65	0.55	36.30	144	.000	1.65	1.56	1.74
Organizational cultural needs – cultural differences, cultural awareness, values, customs and beliefs	145	4.52	0.50	36.44	144	.000	1.52	1.43	1.60
Technical competency- Clearly defined Technical Task	145	4.63	0.55	35.50	144	.000	1.63	1.54	1.72
Leadership ability- Providing direction and motivating others in their role or task to achieve the defined project's objectives	145	4.66	0.47	42.17	144	.000	1.66	1.58	1.74
Management Skills- Effectively administers the project through deployment and use of human, financial, material, intellectual, technology and intangible resources.	145	4.73	0.44	46.85	144	.000	1.73	1.66	1.80
Project organization structure	145	4.77	0.50	42.50	144	.000	1.77	1.68	1.85
Vendors was important to the success of this project	145	4.77	0.43	50.01	144	.000	1.77	1.70	1.84
Effectiveness- Produces desired results by using appropriate resources, tools, leadership capability and techniques in all project management activities.	145	4.84	0.37	60.49	144	.000	1.84	1.78	1.90
PNA	145	4.69	0.28	73.57	144	.000	1.69	1.64	1.73

Source: Own Survey (2020)

The 1st need was content needs that defined the project scope, budget and other contents that framed the project. The importance and identification of such needs in the LTE project was evaluated, by the respondents, with M=4.68 that these needs were adequately considered in the project. The result revealed that, ethio-telecom had adequately set time, budget and scope

constraints that delimited the LTE project; and avail all the necessary content needs that enabled to pursue the project.

Relationship needs were also considered to a very great extent as indicated with M=4.51 average rating. This entailed the relationships among project stakeholders were priory identified to the project. Similarly, effective coordination of project activities was identified valuable to the project, which was agreed with M=4.65.

Organizational culture needs were also adequately identified, M=4.52, in the project. The project greatly considered cultures, values and beliefs required in the LTE project implementation. Technical competency needs that clearly defined Technical Task was also greatly considered as indicated by M=4.63 average rating.

The implementation of LTE project, moreover, required competent leadership. Thus, ensuring leadership role in the project execution was mandatory. The average rating that ensured the availability of adequate leadership need for the project was M=4.66. The respondents agreement justified that the company had great concern for the importance of project leaders.

The need for management skill was undeniable in the project. To this effect, the project management skill needs was greatly considered as indicated by the M=4.73 respondents' average rating. Moreover, the project depicted project organization structure, rated with M=4.77, that clearly depicted the horizontal and vertical communication among project implementers. The need for appropriate vendor for LTE project was also addressed in the project need definition. Effectiveness needs and measures that depicted the desired results was also greatly addressed, as testified by M=4.84 respondents' average rating.

The overall project need identification was computed with M=4.69, which was within the 955 CI of 4.64-4.73. The result indicated that the company was aware of and identified and considered all the required LTE project needs. Moreover, the company assured these needs while conducting the LTE project. The overall results, therefore, justified that all the project needs were identified at project startup.

4.3 LTE Project Management

The project management approach in the practice of LTE project was assessed and presented in the table below. The approach depicted the expected practices in projects. The assessment in the

table below showed how LTE project was managed in accordance with the standard project management practice in terms of the processes, methodology, operational culture, and its compliance with the company policies and regularities.

Table 4.3: LTE Project Management Approach

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
Project management (PM) processes are well documented and controlled	145	4.82	0.38	56.95	144	.000	1.82	1.76	1.88
Project management processes are revised to selected project features and measured in terms of quality	145	4.57	0.50	37.90	144	.000	1.57	1.48	1.65
Project managers are requested to adapt the project management methodology to individual project features and environmental conditions	145	4.54	0.50	37.02	144	.000	1.54	1.46	1.62
Project plan and documents are updated frequently (whenever necessary) as projects progress	145	4.55	0.56	33.11	144	.000	1.55	1.46	1.64
Organizational culture, structure and processes influence the project management plan or/and activities.	145	4.77	0.42	50.73	144	.000	1.77	1.70	1.84
Project managers and project team are requested to follow organizational processes and procedures such as standardized guidelines, templates, etc.	145	4.86	0.35	63.26	144	.000	1.86	1.80	1.91
Project managers have to ensure compliance with company's policies and regulatory requirements	145	4.93	0.25	91.45	144	.000	1.93	1.89	1.97
Company's top managements have an active role when defining projects' success criteria	145	4.88	0.33	68.27	144	.000	1.88	1.82	1.93
Company's top management are frequently informed about the progress of projects	145	4.76	0.50	42.03	144	.000	1.76	1.68	1.84
Project manager and project team use necessary tools for project planning or/and monitoring	145	4.72	0.45	45.76	144	.000	1.72	1.64	1.79
PMA	145	4.74	0.24	86.05	144	.000	1.74	1.70	1.78

Source: Own Survey (2020)

The practice of documenting and controlling Project management (PM) processes was evaluated with M=4.82 average rating that ensured the adherence of good management practice in the LTE project. Respondents were also highly agreed, M=4.57, that project management processes were

aligned to selected project features and measured in terms of the expected quality of the project that there existed proper project monitoring practice during the LTE project implementation..

The statement that "Project managers are requested to adapt the project management methodology to individual project features and environmental conditions" was rated with M=4.54; which ensured the LTE project adopted acceptable project management practice during the project execution. Project plan and documents were updated frequently (whenever necessary) as projects progress. This practice was also adhered as indicated by significantly high-level agreement with M=4.55. This indicated that project monitoring and evaluation activities were adequately practiced in the project that justifiably improved the project execution plan depending on the realistic situations.

The statement that, "Organizational culture, structure and processes influence the project management plan or/and activities" was evaluated with M=4.77; which again ensured and justified appropriateness of management practice in the LTE project. This explained that the project undertaking was performed under the organization working culture. The project management practice, of the LTE project, was also evaluated with high level practice, M=4.86, that project managers and project team members adhered to organizational processes and procedures as outlined in standardized guidelines, templates, etc. It was also agreed with M=4.93 that Project managers were performing their job in compliance with company's policies and regulatory requirements. Hence, besides considering project management practices, the project implementers were found to have put significant effort in considering the organization culture, policy, and procedures as guidance to their activities.

The active role of Company's top managements defining projects' success criteria, rated with M=4.88, and frequently informed Company's top management about the progress of projects, rated with M=4.76. Such closely watching the project progress indicated the support of top management in the project implementation; nd hence indicated good project management practice in the LTE project. This practice was an indication of high-level support of top-managers, which otherwise may led the project failure.

Moreover, an average rating of M=4.72 to the statement "Project manager and project team use necessary tools for project planning or/and monitoring" also indicated high level management practice. As a result of the use of standard project management tools, the LTE project achieved

eased project progress review, facilitated horizontal and vertical communications, and enhanced the project documentations.

The overall project management approach was assessed by aggregating the above responses and was evaluated with significantly high-level agreement (M=4.74) that was in the range of 4.70-4.78 interval of 95% confidence. The result, thus, indicated that the project management processes, tools, communication and documentations were in accordance with the project management practice. Having performed the LTE project with the use of acceptable practices, would have significant contribution to the successful ending of the project; that also enhanced the capability of the organization and project members to handle similar projects effectively.

4.4 Effectiveness of LTE project

The effectiveness of LTE project was assessed using six dimensions; and the assessment results are presented in the subsequent tables of one sample t-test results. Each of the effectiveness dimension was measured using relevant criteria statements. The overall project effectiveness was assessed by aggregating the average rating of the six dimensions.

4.4.1 Effectiveness of Project Decision Making

Table 4.4: Project Decision Making Effectiveness

	One-Sample Statistics			**Test Value = 3**					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
Project estimates and planning are as far as possible done on factual and reliable information	145	4.79	0.41	52.28	144	.000	1.79	1.72	1.85
It is customary to have formal reviews to learn from project failures and/or success	145	4.60	0.49	39.19	144	.000	1.60	1.52	1.68
There is an emphasis on upfront project exercise and feasibility studies	145	4.79	0.49	44.02	144	.000	1.79	1.71	1.87
Projects are frequently reviewed to reevaluate their viability and potential success	141	4.50	0.50	35.41	140	.000	1.50	1.41	1.58
Care is taken to ensure that there is market or customer support for the proposed project	145	4.61	0.49	39.48	144	.000	1.61	1.53	1.69
Projects are not subject to impractical deadlines and targets	145	4.56	0.50	37.67	144	.000	1.56	1.48	1.64

Project priorities do not change too frequently	145	4.63	0.55	35.76	144	.000	1.63	1.54	1.72
EPDM	145	4.64	0.25	78.51	144	.000	1.64	1.60	1.68

Source: Own Survey (2020)

During the project execution, decisions regarding various resources and process were required to be made while tracking project progress. The decisions were required to be in accordance with factual information, market analysis, customer demand and feasibility studies. The case of LTE project was evaluated to the effectiveness of such decisions exercised during the project life cycle. The analysis result that was based on respondents rating, is presented in the table below

The project decision making dimension was assessed by seven criterion statements as in the table 4.4. These statements were all agreed from the least, M=4.50, to the highest, M=4.79, The respective t-tests (with p-values < 0.05) found that each statement was significantly and highly agreed by the respondents. This indicated that the decision making was found effective by each of the measurement criterion mentioned in the table above. As a result, the project was found effective in developing project plan and passing decisions based on factual and reliable information, which had taken lessons from similar projects failure and success scenarios, and that the project implementation was based on market analysis and feasibility study.

The overall project decision making dimension was agreed with M=4.64 average agreement level; and within 4.60-4.68 range of 95% CI. The t-test result with p-value=0.000< 0.05 indicated significantly agreement high level agreement in the effectiveness of decisions made during the project lifetime. Hence, the project was found highly effective with respect to decisions made during the project life cycle. That is, the project was found to have experienced rational decision-making practice, which contributed to the effectiveness of the project.

4.4.2 Effectiveness of Project Goal Definition

The Goal definition dimension, assessed with four criterion statements, was presented in the t-test result below.

The goal definition criteria were evaluated from 4.68 to 4.83 average levels of agreements. The t-test results also asserted that each of the criterion was significantly agreed for being highly effective (i.e. p-values < 0.05).

Table 4.5: Project goal Definition Effectiveness

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
Project goals are clearly defined	145	4.83	0.38	58.06	144	.000	1.83	1.77	1.89
Project goals are made clear to all contributors	145	4.70	0.46	44.28	144	.000	1.70	1.62	1.77
Project participants are committed to the achievement of project goals	145	4.68	0.47	42.97	144	.000	1.68	1.60	1.75
Project team members takes ownership of project goals	145	4.81	0.40	54.93	144	.000	1.81	1.74	1.87
Team members actively participate in decision-making regarding the success of project goals	141	4.81	0.39	54.38	140	.000	1.81	1.74	1.87
EDG	145	4.76	0.25	85.88	144	.000	1.76	1.72	1.80

Source: Own Survey (2020)

The overall goal effectiveness was evaluated with M=4.76 average level agreement that falls within the 95% CI range of 4.72-4.80. The result indicated that the goal definition dimension of the project was highly effective; that clearly defined project goals, bye-in of the goals by project members and their commitment to achieve the goals, as well as active participation of team members in the decision-making process of goal definition that were highly ascertained in this particular LTE project. This effectiveness in setting project goals shall have great contribution to the overall effectiveness of the project.

4.4.3 Effectiveness of Organizational Culture

As to the organizational dimension, six criterion statements were used to assess LTE project effectiveness.

Table 4.6: Project Organizational Culture Effectiveness

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
Culture (e.g. traditions, values, customs, and beliefs) is the one of significant constraint in effective project management	145	4.90	0.31	74.73	144	.000	1.90	1.85	1.95
Project managers and project team being sensitive to cultural diversity and having a strongcommitment towards cultural issues	145	4.48	0.57	31.39	144	.000	1.48	1.38	1.57
Formal awareness of cultural diversity by the project team improves morale and effectiveness of team members	145	4.55	0.50	37.44	144	.000	1.55	1.47	1.63
My organization has a training program for project managers to effectively manage multi-cultural teams	145	4.50	0.50	35.92	144	.000	1.50	1.41	1.58
The organizational culture i.e., “the way we do things” in my organization influences project success	145	4.77	0.50	42.99	144	.000	1.77	1.69	1.85
Business ethics and honesty matters most compared to meeting the customer’s requirements	145	4.83	0.37	59.23	144	.000	1.83	1.77	1.90
EOC	145	4.67	0.26	76.38	144	.000	1.67	1.63	1.71

Source: Own Survey (2020)

The criteria were evaluated with average agreement of at least M=4.48 level. The most rated criterion was evaluated with M=4.90. Each criterion was significantly agreed for their effectiveness. The awareness, sensitivity, proper management towards cultural diversity exhibited in the LTE project was an indication of culture of effective practices that created an enabling working environment and encouraged team cohesiveness.

The overall effectiveness of organizational culture for LTE project implementation was rated with M=4.67 average level agreement that ranges in 4.63-4.71 interval of 95% confidence. The result indicated that the organizational culture was highly conducive, and hence effective, to the implementation of the LTE project.

4.4.4 Effectiveness of Leadership

The leadership in the project implementation was assessed as one of the dimensions for project implementation effectiveness.

Table 4.7: Project Leadership Effectiveness

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
Project decisions is exclusively a management function	145	4.90	0.30	77.34	144	.000	1.90	1.85	1.95
Accountability for project success or failure is shared by project team members rather than a single individual	145	4.69	0.46	43.83	144	.000	1.69	1.61	1.77
Managers and supervisors do encourage feedback regarding project issues from team members	145	4.72	0.45	45.76	144	.000	1.72	1.64	1.79
Project implementation is a top priority of ethio-telecom	145	4.72	0.45	45.76	144	.000	1.72	1.64	1.79
Top management shared responsibility with the project team for ensuring the project's success	145	4.69	0.46	43.83	144	.000	1.69	1.61	1.77
Top management was responsive to our requests for additional resource when the need arose	143	4.80	0.40	53.26	142	.000	1.80	1.73	1.86
EL	145	4.75	0.24	86.31	144	.000	1.75	1.71	1.79

Source: Own Survey (2020)

The six criterion statements under Leadership dimension were evaluated from the least,4.69 to the highest, 4.90 level of agreement. Respondents rating to the six statements were found as significantly high-level agreement, which entails that the leadership was accredited for its effectiveness with regard to each of the criterion statements in table 4.7.

In the LTE project, the high-level support of top-management was highly visible in availing the required resources, taking responsibility for the project success/failure, their responsiveness and encouragement to collect feedbacks from project participants, and taking appropriate decisions. As a result, the leadership was found to have exercised their duties and responsibilities to contribute for the effectiveness of the LTE project. This is justified in the one-sample t-test analysis results. The overall leadership effectiveness was evaluated with M=4.75 and with the 95% CI range of 4.71-4.79. This result indicated the high level of agreement that the project leadership was effective, which undoubtedly contributed to the overall effectiveness of the LTE project.

4.4.5 Effectiveness of Project Manager

Project managers, and their effectiveness, were evaluated as in the statements depicted in the one-sample t-tests result table below.

Table 4.8: Project Managers Effectiveness

	One-Sample Statistics			**Test Value = 3**					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
Project Manager ‘s commitment to meet quality, cost and time requirements	145	4.83	0.37	59.23	144	.000	1.83	1.77	1.90
Project Manager ‘s commitment to meet organization value (benefit)	145	4.73	0.44	46.85	144	.000	1.73	1.66	1.80
Project Manager ‘s commitment to meet customer satisfaction	145	4.89	0.31	72.37	144	.000	1.89	1.84	1.94
During the project execution, the project manager talked enthusiastically about the project future	145	4.68	0.47	43.39	144	.000	1.68	1.61	1.76
Project manager organizes all resources and coordinates them efficiently and effectively.	145	4.63	0.49	40.40	144	.000	1.63	1.55	1.71
The project manager sets objectives based on the overall strategic plan.	145	4.62	0.55	35.25	144	.000	1.62	1.53	1.71
The project manager has a clear vision and imagination for the future direction of the organization	145	4.77	0.43	50.01	144	.000	1.77	1.70	1.84
EPM	145	4.74	0.25	83.84	144	.000	1.74	1.70	1.78

Source: Own Survey (2020)

The evaluation to the seven criterion statements ranged in 4.63-4.89 average levels of agreement that were significantly and positively (p-values < 0.05) rated by the respondents. That is, all the seven criteria were found to have been significantly practiced during the LTE project implementation.

The project manager has a clear vision and imagination for the future direction of the organization; and set objectives based on the overall strategic plan They were found committed to meet cost, quality, time dimensions as well as the value and benefits to their organization. Project managers were also found to have played significant roles in organizing all resources and coordinating them efficiently and effectively. This entailed that project managers had effectively discharged their responsibilities.

The project managers effectiveness, aggregating the seven criterions, was evaluated with M=4.74 average agreement level that ranged in the 95% CI of 4.70-4.78. This significant level of agreement ascertained that project managers were found effective in the implementation of LTE project. This indicated that the competency and enthusiasm of the project managers was very high and resulted in the effectiveness of the project.

4.4.6 Effectiveness of Technology Competency

The effectiveness of technology compliance to the LTE project implementation was assessed using ten criterion statements as in the table below.

Table 4.9: Technology Competency Effectiveness

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
Technology Readiness	144	4.65	0.48	41.51	143	.000	1.65	1.57	1.73
Project Manager ‘s Competence	144	4.19	0.52	27.60	143	.000	1.19	1.11	1.28
Technical Capability of Project Manager	141	4.33	0.60	26.09	140	.000	1.33	1.23	1.43
Leadership Skills of Project Manager	144	4.49	0.57	31.59	143	.000	1.49	1.40	1.59
Design Team technical skill and Experience	144	4.55	0.50	37.21	143	.000	1.55	1.47	1.63
The technology that was being used to support the project worked well	144	4.40	0.62	27.15	143	.000	1.40	1.29	1.50
Project design complexity	144	4.46	0.57	30.94	143	.000	1.46	1.37	1.55
Adequacy tools for plans and monitoring	145	4.63	0.48	40.73	144	.000	1.63	1.56	1.71
Knowledge of appropriate wireless network technology.	145	4.46	0.50	35.07	144	.000	1.46	1.37	1.54
Knowledge of appropriate cost saving techniques for wireless network project.	145	4.39	0.49	34.23	144	.000	1.39	1.31	1.47
ETC	145	4.46	0.32	54.24	144	.000	1.46	1.40	1.51

Source: Own Survey (2020)

Each of the criterion statements was significantly and highly agreed by the respondents, ranging from 4.33 to 4.65 average agreement levels. Overall agreement to the technology competency was computed with M=4.46 and the 95% CI of 4.40-4.51. Hence, it was found that the technology dimension was highly adequate to the LTE project implementation. This effectiveness was achieved through technology readiness of the company, the capability and

competency of project managers coupled with the technical skills and knowledge of team members in the design of wireless network technology, and the use of project monitoring tools.

4.5 Evaluation of LTE project success factors

The LTE project success was assessed using four factors. These factors were project outcome, project cost, and project quality and project time. Each of these factors was studied using appropriate criteria statements rated by the respondents. The overall project success was also computed by aggregating the factors. The significance of each factor and respective criterion statements was evaluated using one-sample t-test. The test was conducted to assess how each of the criterions was addressed or met during the project lifetime; hence the result provides the success of the project.

4.5.1 Success in Project Outcome

The success of the project in terms of its outcome was evaluated with fourteen (14) criterion statements as in the table below. These statements were evaluated with agreement levels ranging from M=4.81 (the least) to the highest with M=5.00. The t-test results in each of the criterion statement was tested significant as indicated with p-values < 0.05. That is, each of the criterion (expected specific project outcome) was adequately achieved.

The overall project outcome was evaluated with M=4.93, by aggregating the averages of the fourteen outcome criteria. The t-test result found that the overall expected project outcome was achieved significantly as indicated with in the 95% interval estimate ranging in 4.91-4.94. The test result indicated that, the LTE project was highly successful in achieving the expected project outcomes. These successes were indicated by the high-level agreement that the organizations achieved profitability; and the performance of the project was found to have accepted by the customers; and also met the expectations of various stakeholders. The project was also believed , by the respondents, to have brought successes that developed better managerial capabilities to contribute to future project endeavors.

Table 4.10: Success of Project outcome

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
The project enhances the organization's profitability	145	4.93	0.25	91.45	144	.000	1.93	1.89	1.97
Overall, our customers are happy with the performance of our projects.	145	4.92	0.27	87.20	144	.000	1.92	1.88	1.97
The delivering of the project will benefit the organization and the business as a whole	145	4.91	0.29	80.24	144	.000	1.91	1.86	1.96
Effective scope, schedule quality and cost practices management on all project sites.	145	4.81	0.39	55.91	144	.000	1.81	1.75	1.88
Project results benefit to various stakeholders' expectations.	145	4.95	0.22	109.26	144	.000	1.95	1.92	1.99
Project results support for technology transfer	145	4.92	0.28	83.50	144	.000	1.92	1.87	1.96
Being aggressive towards achieving project objectives.	145	4.90	0.30	77.34	144	.000	1.90	1.85	1.95
This project enhanced strategic potential	140	4.95	0.22	105.49	139	.000	1.95	1.91	1.99
Project results contribute to enhance our ability (to innovate in our area)	145	5.00	.000[a]						
The quality of the network was improved because of this project	145	4.91	0.29	80.24	144	.000	1.91	1.86	1.96
As a result of executing this project, the organization will be able to better support the users of this system in the future	145	4.86	0.35	63.26	144	.000	1.86	1.80	1.91
Projects meet their technical and other performance goals	145	4.93	0.25	91.45	144	.000	1.93	1.89	1.97
The project developed better managerial capabilities	145	4.98	0.14	166.86	144	.000	1.98	1.96	2.00
The project outcome will contribute to future project	145	5.00	.000[a]						
SOPO	145	4.93	0.10	226.21	144	.000	1.93	1.91	1.94

Source: Own Survey (2020)

4.5.2 Success in Project Cost

The cost factor of project success was assessed as in the four statements under the table below. Each of the four statements was evaluated with higher agreement level (p-values=0.000<0.05) compared to the moderate level agreement. This indicates that the project has adequately met the criterion of project cost. Respondents agreed, with M=4.76, that there were no major change requests during the project to incur additional costs beyond the planed project cost.

Table 4.11: Project Cost success Factor

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
There were no major change requests during the project	143	4.76	0.43	48.65	142	.000	1.76	1.68	1.83
The project reduced the cost of some activities with no effect on quality.	143	4.26	0.44	34.25	142	.000	1.26	1.19	1.33
Project managers and project team experience helped to eliminate unnecessary resource	143	4.54	0.50	36.77	142	.000	1.54	1.46	1.62
The project was completed within or below budget	143	4.60	0.49	38.98	142	.000	1.60	1.52	1.68
SFC	143	4.54	0.29	62.54	142	.000	1.54	1.49	1.59

Source: Own Survey (2020)

Respondents also agreed, with M=4.26, that the reduction of costs in some activates hadn't compromised the quality of the project. During the execution of the project unwanted resources were eliminated that entails against exaggerated project cost. This was asserted by the agreement level of M=4.54 in the third criterion statement. Moreover, respondent's agreement with M=4.60 that the project was completed within or below budget. This indicates that the LTE project achieved high level of success with respect to the efficient use of time resource.

Overall, the project success cost factor was found to have been adequately met as indicated in the aggregated average, M=4.54, was found significantly agreed (p-value=0.000<0.05) within the 95% CI range of 4.49-4.59. Hence, the time constraint was properly addressed during the project execution; which would have contributed to the overall success of the LTE project.

4.5.3 Success in Project Quality

The quality factor also assessed with the criteria statements in the table below. The one-sample t-test results with p-values < 0.05 and t-values > 0 indicated that each of the quality criterion was properly ensured in the project execution. Respondents agreement, with M=4.82, ascertained that the project was conducted according to the standards set by the company. The project deliverables were found to have adequately fulfill the customer requirements, which was agreed with M=4.46. Similarly, the project was ascertained, with M=4.46, for meetings company's

business defined objectives. Setting alternative plans has reduced the possibility of unexpected risks (M=4.76) that the project quality was not compromised.

Table 4.12: Project Quality success Factor

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
The Project was done upon the company's overall standards	145	4.82	0.38	56.95	144	.000	1.82	1.76	1.88
The project deliverables fulfill the customer requirements	145	4.46	0.50	35.07	144	.000	1.46	1.37	1.54
The project meets its business defined objectives	145	4.46	0.55	31.83	144	.000	1.46	1.37	1.55
Setting alternative plans has reduced the unexpected risks possibility	145	4.76	0.43	49.32	144	.000	1.76	1.69	1.83
SFQ	145	4.62	0.31	62.41	144	.000	1.62	1.57	1.68

Source: Own Survey (2020)

The overall agreement to the project quality success was evaluated with M= 4.62 level of agreement, which was found significant (p-value=0.000<0.05) level of expected project quality assessed within the 95% CI range of.4.57-4.68 This generally indicated that the project was highly successful in terms of achieved project quality.

4.5. Success in Project Time

Table 4.13: Project Time success Factor

	One-Sample Statistics			Test Value = 3					
				t-value	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
The project met most of the scheduled milestones	145	4.91	0.29	80.24	144	.000	1.91	1.86	1.96
The Project boosts the employees' abilities by helping to save time	145	4.52	0.50	36.62	144	.000	1.52	1.44	1.61
The critical tasks and delivery dates were not slipping	145	4.68	0.47	42.97	144	.000	1.68	1.60	1.75
The project was completed on time or earlier	145	4.68	0.47	43.39	144	.000	1.68	1.61	1.76
SFT	145	4.70	0.25	81.86	144	.000	1.70	1.66	1.74

Source: Own Survey (2020)

With respect to time factor, the project success was evaluated as in the table above. It was highly agreed with M=4.91 that the project met most of the scheduled milestones in time. This was also ascertained by M=4.68 level of agreement that critical tasks and delivery dates were not slipping. Respondents further believed, with M=4.68, that the project was completed under the scheduled time plan. The overall, the time factor of the project execution and completion was found to have been adequately met. This was rated with M= 4.70 that falls in the 95% CI range of 4.66-4.74.

4.6 Overall LTE Project Success and Project Effectiveness

In the previous section LTE project needs and project management practices was evaluated. Further, project success and Project effectiveness dimensions/factors of the LTE project was evaluated with high level achievement.

Table 4.14: Overall Project Effectiveness and Success

	One-Sample Statistics			**Test Value = 3**					
				t-value	Df	p-value	Mean Difference	95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation					Lower	Upper
PMEffectiveness	145	4.67	0.18	114.52	144	.000	1.67	1.64	1.70
ProjectSuccess	145	4.70	0.16	131.51	144	.000	1.70	1.67	1.72

Source: Own Survey (2020)

The overall project success, M=4.70, and project effectiveness, M=4.67, was a high-level achievement of the LTE project with respective 95% CIs was computed in the ranges of 4.67-4.72 and 4.64-4.70. The results indicated that the LTE project was both effective and successful. That is, as discussed in the previous section, the LTE project had adequately met the effectiveness aspects and the success factor of a project.

4.7 Relationships between Project Success and Project Effectiveness

In this section, the relationship between these variables, as well as their components was analyzed using correlation analysis. The purpose of the correlation analysis was to study how significantly related are project effectiveness and project success. The correlation analyses depicted in this section revealed the extent of the relationship that this research meant to answer.

Table 4.15: Correlation Analysis between Project Success and Effectiveness

		ProjectSuccess	SOPO	SFC	SFQ	SFT
EPDM	Pearson Correlation	.368**	-.235**	.392**	.280**	.203*
	p-value	.000	.004	.000	.001	.014
	N	145	145	143	145	145
EDG	Pearson Correlation	.404**	.016	.262**	.058	.620**
	p-value	.000	.853	.002	.489	.000
	N	145	145	143	145	145
EOC	Pearson Correlation	.397**	.060	.325**	.400**	.083
	p-value	.000	.477	.000	.000	.322
	N	145	145	143	145	145
EL	Pearson Correlation	.629**	.018	.549**	.483**	.310**
	p-value	.000	.826	.000	.000	.000
	N	145	145	143	145	145
EPM	Pearson Correlation	.559**	.030	.358**	.334**	.544**
	p-value	.000	.722	.000	.000	.000
	N	145	145	143	145	145
ETC	Pearson Correlation	.358**	-.076	.310**	.112	.420**
	p-value	.000	.366	.000	.182	.000
	N	145	145	143	145	145
PMEffectiveness	Pearson Correlation	.670**	-.050	.546**	.406**3	.544**
	p-value	.000	.554	.000	.000	.000
	N	145	145	143	145	145

**. Correlation is significant at the 0.01 level (2-tailed).*. Correlation is significant at the 0.05 level (2-tailed).

Source: Own Survey (2020)

The correlation analysis result above described the relationship between overall project success to overall project effectiveness. These to variables were found to have significant and direct relationship expressed with correlation, r=0.670. This indicated that the success of LTE project was significantly related to the effectiveness of its project management. Hence, the improvement in project effectiveness will have an implication to improved project success, and vice-versa. By computing the coefficient of determination, $r^2=0.449$, it was revealed that 44.9% of the LTE project success was due to the effectiveness of LTE project management. Therefore, in the LTE project, the success of the project was significantly related and considerably accounted to its effectiveness in the project management.

In the table above, it was also revealed that all the six dimensions of project effectiveness were significantly and directly related to project success. The relatively strongest relation was with

leadership dimension expressed with a correlation, r=0.629. The second most related to project success was project managers effectiveness as expressed with correlation, r= 559.

Considering the relationship of each success factor with overall project effectiveness, the project cost and project time were found to have strongly related to project effectiveness with , respective, significant correlations of r=0.546 and r=0.544. The project quality and the project overall effectiveness was also had strong relationship expressed as r=0.406. That is, effectiveness in the project management will have certain contribution to the successful ending of LTE project in terms of project quality, cost and time. However, the overall project outcome was not significantly related to overall project success (r=-0.05, p-value=0.544>0.05). That is, the outcome factor was not affected the overall LTE project effectiveness.

Table 4.16: Correlation Analysis between Project Effectiveness and Success Factors

		EPDM	EDG	EOC	EL	EPM	ETC
PMEffectiveness	Pearson Correlation	.760**	.495**	.620**	.714**	.763**	.655**
	p-value	.000	.000	.000	.000	.000	.000
	N	145	145	145	145	145	145

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Own Survey (2020)

The table above analyzed the correlation of overall project effectiveness with its six dimensions. This analysis was conducted to determine the extent of each dimension's effect in determining the project effectiveness. As revealed in the analysis result, all the dimensions had strong relationship with project effectiveness. Relatively, the most correlated to effectiveness was the project Manager Dimension expressed with correlation, r=0.763. This indicates that, keeping the effect of other dimensions, the project managers would have the potential to determine r^2=58.2% of the overall project effectiveness.

Effective decision making and leadership effectiveness dimension were also strongly related to effectiveness of the LTE project with respective correlations of r=0.760 and 0.714. These results indicated that decision making, and leadership dimensions had influenced 57.8% and 51% of the overall project effectiveness.

Technology competency dimension had also 43% effect on project effectiveness, as the two variables were correlated with r=0.655. Organizational factor was related to project effectiveness expressed with correlation, r=0.620, and had a considerable (38.44%) effect. The relatively least related dimension was project goal definition, which was correlated, r=0.495, to overall project effectiveness with an effect of 24.5% determining power.

Table 4.17: Correlation Analysis between Project Success and Effectiveness Dimensions

		ProjectSuccess	SOPO	SFC	SFQ	SFT
ProjectSuccess	Pearson Correlation	1	.056	.784**	.733**	.636**
	Sig. (2-tailed)		.507	.000	.000	.000
	N	145	145	143	145	145

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Own Survey (2020)

The relationship of project success to its factors was conducted to reveal the relative significance of each factor. As can be seen in the table below, the project outcome was not significantly related to overall project success (r=0.05, p-value=0.507>0.05). Whereas the three factors (cost, quality, and time) were significantly related to project success as expressed in the respective correlation estimates of r=0.784, r=0.733, and r=0.636. This explains that the project cost was the most determining to project success with r^2=61.5% of power to explain success. Similarly, the quality factor and the time factor were capable of determining 53.7% and 40.4% of the project success. In other words, the overall success of the LTE project was achieved as the project was completed with the expected quality standards and completed within the project time and budget limits.

CHAPTER FIVE
CONCLUSIONS AND RECOMENDATIONS

This research was conducted to study the practice, effectiveness and success of LTE project and aimed at evaluating the relationship of project success with project effectiveness (and its specific dimensions). The study also aimed at analyzing the effect of specific project effectiveness on the overall success of the project.

To address these objectives the data analysis was conducted in the previous chapter. This chapter highlights the main findings, draw conclusions, and suggest recommendations.

5.1 Summary of Findings

- In the LTE project, several need identifications were adequately made while Ethio-Telecom plans for the project. The overall need identification for the project was made to the great extent, which was rated with M=4.695 respondents' agreement.
- The LTE project management approach was found to have followed acceptable practices. The project management approach was ascertained by the respondents with strong agreement level of M=4.74.
- The LTE project effectiveness was rated highly with mean, M=4.67. All the effectiveness dimensions were found to have achieved significantly. The Decision-Making effectiveness was rated with M=4.64, Effectiveness of Project Goal Definition was acknowledged to the level of M=4.76. Effectiveness of Organizational Culture was highly conducive with the rating of M= 4.67. The effectiveness of Leadership, M=4.75,was as high as the effectiveness of Project Managers rated M= 4.74. The effectiveness of Technology Competency to the deployment of LTE project was M=4.46.
- Evaluation of LTE overall project success was rated to the level M=4.70. The four success factors were also highly achieved: Project outcome (M=4.93), Cost Efficiency (M= 4.54), project Quality (M=4.62) and Timely completion of the project (M= 4.70).
- The correlation between project success and project effectiveness was estimated with correlation, r=0.670. This leads to 44.9% influence of the overall effectiveness on the success of the project.

- Similarly, each of the six dimension of project effectiveness was found to have significantly and directly related to project success. The relatively strongest relation was with the leadership dimension, r=0.629 and r^2=39.6%. The second most related to project success was project managers effectiveness as expressed with correlation, r=.559 and with an impact level of r^2=31.2%.
- Considering the relationship of each success factor with overall project effectiveness, the project cost and project time were found to have strongly related to project effectiveness with, respective, significant correlations of r=0.546 and r=0.544. The project quality and the project overall effectiveness had also strong relationship expressed as r=0.406.
- Relatively, the most correlated to effectiveness was the project Manager dimension expressed with correlation, r=0.763. This indicates that, keeping the effect of other dimensions, the project managers would have the potential to determine r^2=58.2% of the overall project effectiveness.
- Effective decision making and leadership effectiveness dimension were also strongly related to effectiveness of the LTE project with respective correlations of r=0.760 and 0.714. These results indicated that decision making, and leadership dimensions had influenced 57.8% and 51% of the overall project effectiveness.
- Technology competency dimension had also 43% effect on project effectiveness, as the two variables were correlated with r=0.655. Organizational factor was related to project effectiveness expressed with correlation, r=0.620, and had a considerable (38.44%) effect. The relatively least related dimension was project goal definition, which was correlated, r=0.495, to overall project effectiveness with an effect of 24.5% determining power.
- The project outcome was not significantly related to overall project success (r=0.05). cost, quality, and time success factors were significantly related to project success as expressed in the respective correlation estimates of r=0.784, r=0.733, and r=0.636

5.2 Conclusions

The main objective of this study was to assess the relationship of effectiveness and success of the LTE project implemented by Ethio-Telecom. Hence, the research questions and research objectives are addressed as presented below.

From the findings above, the LTE project was conducted with acceptable project management practice that has deployed all the necessary resources and required capabilities prior to the project startup. The project had properly set the scope, budget, expenditure, resources needs, time, and quality standards. Overall, the project was commenced based on suitable need assessment interims of Technical competency; Management Skills, setup of Project organization structure and vendors selection were ensured at the start of the project; that in turn justified the organization readiness to implement LTE project. Moreover, the project execution was conducted by adopting, revising, and regularly monitoring the project progress using appropriate tools. The overall project activities, therefore, were conducted according to acceptable project management practices.

Overall, the project was found highly effective. The overall effectiveness was backed by the organizations effectiveness in setting the anticipated goals of the organization, which entails that identification of project needs would contribute the project effectiveness. There was also effectiveness in the decision made during the project lifetime that was one of the components of project effectiveness. In addition, the project effectiveness was attained through its conducive organizational culture and technological competency of Ethio-Telecom. The top management leadership and the project managers competency and dedications were highly effective. Hence, the LTE project effectiveness was backed by the effectiveness of the organization's interims of clear and achievable goal definition, the leadership, technological and manpower competency, and the organizational culture.

Overall, the project was found highly successful. The project was also highly successful in terms of its project outcomes, controlled budget, assured quality and performed within the project time. The LTE project was found to have satisfied customers and other stakeholders' expectations; besides the project had achieved in efficient utilization of time and budget resources.

The LTE project exhibited considerably high-level relationships existed between project effectiveness and efficiency. This study empirically investigated the relationship of project effectiveness and project success. The success of the project was found to have been significantly related to the project effectiveness measures. In this particular project, the overall effectiveness had measured about 45% of the overall project success. That is, the high-level effectiveness in the LTE project was found to have contributed to the project's overall success.

Each of the project effectiveness dimensions was also found highly related and significantly contributed to the overall project success. That is, each of the six dimensions of project effectiveness was found to have significantly and directly related to project success. The relatively strongest relation was with the leadership dimension, which had accounted r^2=39.6% of the overall LTE project success. The second most related to project success was project managers effectiveness as expressed with level of r^2=31.2% impact to the LTE project success. Hence, the LTE project success would not be attained without having effective leadership, project managers, technological readiness, and suitable working culture.

It is also concluded that the success of the LTE project to its timely completion, was amounted to the overall project effectiveness that had 29.8% impact. The success in quality of LTE project was impacted by the project effectiveness to about 29.6%. The LTE project effectiveness had also 16.5% contribution to complete the project within the budget allotted to the project. However, the project outcome was not significantly related to the overall project effectiveness.

This study produced findings that reinforce the argument that project management effectiveness and project success are directly related to one another. Hence, the success of the LTE project was highly related and influenced by the achieved project effectiveness. In general, therefore, the ability to effectively manage projects will play a decisive role in improving the success of projects.

5.3 Recommendations

In addition to general contribution to the field of project management, the study identified specific recommendations out of the overall research work.

For the effectiveness of projects, stakeholders need to ensure the presence of suitable organizational and working culture as it had significant effect on the successful completion of projects delivered on time, within budget, with a level of deliverables that are satisfactory to the client. Moreover, organizations need to ensure the capacity and commitment of leadership and project managers, as well as technology competency that are highly essential to the overall effectiveness of projects, which in turn have impact on project success.

The positive correlation between project management effectiveness and project success, required organizations to integrate their project management effectiveness practices into their daily management of projects in an effort to increase their project success.

Although the empirical component of this research was limited to LTE project of Ethio-Telecom, it will be very interesting to see whether there are similarities in the project management practices applied in other project-driven organizations. These results also demonstrate that practitioners in the field of project management cannot ignore project effectiveness goals if they want to maximize overall project success.

The study revealed that effectiveness had great impact on project success; however, project success was not fully explained by project effectiveness. So, other factors that may contribute to the effect of project success must be studied. Further, researchers may explore any moderators or contingency factors in the relationship between project effectiveness and project success.

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APPENDICES

APPENDIX A: INTRODUCTORY LETTERS FOR THE QUESTIONNAIRE

St. Mary's University

School of Graduate Studies

Master Program in Project Management

Dear Sir or Madam:

Subject: Survey

I am presently preparing a thesis on **The Correlation between Project Management Effectiveness and Project Success for LTE Advanced Project in ethio-telecom** as part of my Master's degree course in Project Management.

An important element of the thesis is to carry out a field survey to assess the project management effectiveness in telecom sector in Ethiopia.

Enclosed please find a questionnaire and based on your experience as a professional in the field of project management, I kindly request you to spare part of your valuable time to filling the attached questionnaire. The collected data will be statistically analyzed, and a conclusion will be finalized.

Be assured that the information provided by you will be treated with utmost confidentiality and will only be used for academic purposes.

Thank you for your cooperation.

Yours faithfully,

WondwossenMerine

APPENDICES B: INTRODUCTORY RESEARCH QUESTIONNAIRE

This Survey intends to collect data on your recent completed project namely LTE Advanced in Addis Ababa. According to this study, the correlation between project management effectiveness and project success addressed.

The scoping phase is thus structured as follows

A. Profile of the Respondent
B. Project Need
C. Project management
D. Project management effectiveness

    1. Project Decision making
    2. Defining Goal
    3. Organizational culture
    4. Leadership ability
    5. Project manager
    6. Technology competency

E. Project Success
F. Project Success Factor

SECTION A: GENERAL INFORMATION (DEMOGRAPHIC PROFILE)

Please respond to the following questions by indicating a √ on the box □ that represents the most appropriate response that is reflective of you in respect with the following questions.
Each question should have only **ONE** answer.

1. What is your gender?
   - □ Male
   - □ Female
2. What is your age?
   - □ 18 – 25years old
   - □ 26 – 35 years old
   - □ 36 – 45years old
   - □ 46 – 55 years old
   - □ >55 Years
3. What is your highest level of education?
   - □ High School
   - □ Bachelor ‘s Degree
   - □ Master ‘s Degree
   - □ PhD & Above
4. Experience Years
   - □ 1- 5
   - □ 6-10
   - □ 11-15
   - □ 16-20
   - □≥ 21`
5. Job Title:
   - □ Director
   - □ Manager
   - □ Project team
   - □ Other

SECTION B: PROJECT NEED

Please rate the importance of paying attention to the following project needs from "Not at all" to "To a very great extent".

To what extent has your project.

No	**PROJECT NEED**	Not at all	To a little extent	Not sure	To a great extent	To a very great extent
1	Content needs – project scope, budget, expenditure, resources, quality, and schedule	1	2	3	4	5
2	Relationship needs – how project team relate or cooperate with themselves and other stakeholders	1	2	3	4	5
3	Effective coordination of project activities	1	2	3	4	5
4	Organizational cultural needs – cultural differences, cultural awareness, values, customs, and beliefs	1	2	3	4	5
5	Technical competency- Clearly defined Technical Task	1	2	3	4	5
6	Leadership ability- Providing direction and motivating others in their role or task to achieve the defined project's objectives	1	2	3	4	5
7	Management Skills- Effectively administers the project through deployment and use of human, financial, material, intellectual, technology and intangible resources.	1	2	3	4	5
8	Project organization structure	1	2	3	4	5
9	Vendors was important to the success of this project	1	2	3	4	5
10	Effectiveness- Produces desired results by using appropriate resources, tools, leadership capability and techniques in all project management activities.	1	2	3	4	5

SECTION C: PROJECT MANAGEMENT

Kindly indicate the extent to which you agree or disagree with the following statements. *Please circle appropriately* the number that represents your opinion or perception regarding each of the statements which are shown below and relate to project management in the selected project. In your response, please circle "1" if you Strongly Disagree, "2" if you Disagree, "3" if you are Neutral, "4" if you Agree and "5" if you Strongly Agree. *Only one response is required per statement*

No	**Project Management Approach**	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Project management (PM) processes are well documented and controlled	1	2	3	4	5
2	Project management processes are revised to selected project features and measured in terms of quality	1	2	3	4	5
3	Project managers are requested to adapt the project management methodology to individual project features and environmental conditions	1	2	3	4	5
4	Project plan and documents are updated frequently (whenever necessary) as projects progress	1	2	3	4	5
5	Organizational culture, structure and processes influence the project management plan or/and activities.	1	2	3	4	5
6	Project managers and project team are requested to follow organizational processes and procedures such as standardized guidelines, templates, etc.	1	2	3	4	5
7	Project managers have to	1	2	3	4	5

	ensure compliance with company's policies and regulatory requirements					
8	Company's top managements have an active role when defining projects' success criteria	1	2	3	4	5
9	Company's top management are frequently informed about the progress of projects	1	2	3	4	5
10	Project manager and project team use necessary tools for project planning or/and monitoring	1	2	3	4	5

SECTION D: PROJECT MANAGEMENT EFFECTIVENESS

How would you rate the importance of the following effectiveness criteria for determining the success of LTE Advanced Projects in Ethiopia? Please answer the following questions from "Strongly disagree" to "Strongly agree"

To what extent do you agree with the following statements regarding management effectiveness? In your response, please circle "1" if you Strongly Disagree, "2" if you Disagree, "3" if you are Neutral, "4" if you Agree and "5" if you Strongly Agree. *Only one response is required per statement.*

Dimension 1: Project Decision Making

No	Effectiveness factor (or criterion)	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Project estimates and planning are as far as possible done on factual and reliable information	1	2	3	4	5
2	It is customary to have formal reviews to learn from project failures and/or success	1	2	3	4	5

3	There is an emphasis on upfront project exercise and feasibility studies	1	2	3	4	5
4	Projects are frequently reviewed to reevaluate their viability and potential success	1	2	3	4	5
5	Care is taken to ensure that there is market or customer support for the proposed project	1	2	3	4	5
6	Projects are not subject to impractical deadlines and targets	1	2	3	4	5
7	Project priorities do not change too frequently	1	2	3	4	5

Dimension 2: Defining Goal

No	Effectiveness factor or criterion	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Project goals are clearly defined	1	2	3	4	5
2	Project goals are made clear to all contributors	1	2	3	4	5
3	Project participants are committed to the achievement of project goals	1	2	3	4	5
4	Project team members takes ownership of project goals	1	2	3	4	5
5	Team members actively participate in decision-making regarding the success of project goals	1	2	3	4	5

Dimension 3: Organization Culture

No	Effectiveness factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Culture (e.g., traditions, values, customs, and beliefs) is the one of significant constraint in effective project management	1	2	3	4	5
2	Project managers and project team being sensitive to cultural diversity and having a strong commitment towards cultural issues	1	2	3	4	5
3	Formal awareness of cultural diversity by the project team improves morale and effectiveness of team members	1	2	3	4	5
4	My organization has a training program for project managers to effectively manage multi-cultural teams	1	2	3	4	5
5	The organizational culture i.e. "the way we do things" in my organization influences project success	1	2	3	4	5
6	Business ethics and honesty matters most compared to meeting the customer's requirements	1	2	3	4	5

Dimension 4: Leadership

No	Effectiveness factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Project decisions is exclusively a management function	1	2	3	4	5
2	Accountability for project success or failure is shared by project team members rather than a single individual	1	2	3	4	5
3	Managers and supervisors do encourage feedback regarding project issues from team members	1	2	3	4	5
4	Project implementation is a top priority of ethio-telecom	1	2	3	4	5
5	Top management shared responsibility with the project team for ensuring the project's success	1	2	3	4	5
6	Top management was responsive to our requests for additional resource when the need arose	1	2	3	4	5

Dimension 5: Project Manager

No	Effectiveness factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Project Manager 's commitment to meet quality, cost and time requirements	1	2	3	4	5
2	Project Manager 's commitment to meet organization value (benefit)	1	2	3	4	5
3	Project Manager 's commitment to meet customer satisfaction	1	2	3	4	5

4	During the project execution, the project manager talked enthusiastically about the project future	1	2	3	4	5
5	Project manager organizes all resources and coordinates them efficiently and effectively.	1	2	3	4	5
6	The project manager sets objectives based on the overall strategic plan.	1	2	3	4	5
7	The project manager has a clear vision and imagination for the future direction of the organization	1	2	3	4	5

Dimension 6: Technology Competency

No	**Project Success Factors – Technology competency**	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Technology Readiness	1	2	3	4	5
2	Project Manager 's Competence	1	2	3	4	5
3	Technical Capability of Project Manager	1	2	3	4	5
4	Leadership Skills of Project Manager	1	2	3	4	5
5	Design Team technical skill and Experience	1	2	3	4	5
6	The technology that was being used to support the project worked well	1	2	3	4	5
7	Project design complexity	1	2	3	4	5
8	Adequacy tools for plans and monitoring	1	2	3	4	5
9	Knowledge of appropriate wireless network technology.	1	2	3	4	5
10	Knowledge of appropriate cost saving techniques for wireless network project.	1	2	3	4	5

SECTION E: PROJECT SUCCESS

How would you rate the importance of the following performance criteria for determining the success of LTE Advanced Projects in Ethiopia? Please answer the following questions from "Strongly disagree" to "Strongly agree"

Dimension 1: Overall Project Outcome

No	**STATEMENT**	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The project enhances the organization's profitability	1	2	3	4	5
2	Overall, our customers are happy with the performance of our projects.	1	2	3	4	5
3	The delivering of the project will benefit the organization and the business as a whole	1	2	3	4	5
4	Effective scope, schedule quality and cost practices management on all project sites.	1	2	3	4	5
5	Project results benefit to various stakeholders' expectations.	1	2	3	4	5
6	Project results support for technology transfer	1	2	3	4	5
7	Being aggressive towards achieving project objectives.	1	2	3	4	5
8	This project enhanced strategic potential	1	2	3	4	5
9	Project results contribute to enhance our ability (to innovate in our area)	1	2	3	4	5
10	The quality of the network was improved because of this project	1	2	3	4	5
11	As a result of executing this project, the organization will be able to better support the users of this system in the future	1	2	3	4	5
12	Projects meet their technical and	1	2	3	4	5

	other performance goals					
13	The project developed better managerial capabilities	1	2	3	4	5
14	The project outcome will contribute to future project	1	2	3	4	5

SECTION F: PROJECT SUCCESS FACTOR

Please answer the following questions from "Strongly disagree" to "Strongly agree"

No	**Cost**	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	There were no major change requests during the project	1	2	3	4	5
2	The project reduced the cost of some activities with no effect on quality.	1	2	3	4	5
3	Project managers and project team experience helped to eliminate unnecessary resource	1	2	3	4	5
4	The project was completed within or below budget	1	2	3	4	5
o	Quality	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The Project was done upon the company's overall standards	1	2	3	4	5
2	The project deliverables fulfill the customer requirements	1	2	3	4	5
3	The project meets its business defined objectives	1	2	3	4	5
4	Setting alternative plans has reduced the unexpected risks possibility	1	2	3	4	5

No	Time	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The project met most of the scheduled milestones	1	2	3	4	5
2	The Project boosts the employees' abilities by helping to save time	1	2	3	4	5
3	The critical tasks and delivery dates were not slipping	1	2	3	4	5
4	The project was completed on time or earlier	1	2	3	4	5

Please elaborate on any of your above answer or identify actions or conditions that contribute to the project management effectiveness for project success.

Thank you for participating in this research. Your time and answer are greatly appreciated. The data will be carefully analyzed and is anonymous for the outside word.

APPENDIX C: QUESTIONS TO INTERVIEWEE

Open-ended questions are asked to let the interviewees freely give opinions about their background, working problems and their variety of solutions. Interviewees are often the owners of the project, and better to be involved in project activities (such as initiation, planning, executing, monitoring, and closing).

Time and framework of the interview: 30 to 45 minutes – Open discussion, with specific themes and guiding questions. The permission from the interviewee for using auto-recording devices shall be obtained. The list of interview questions is provided in this section.

In following Tables C.1, and C.2, there are summarized lists of questions divided into the separate categories as defined in the research.

Table C.1: List of questions for the category: Project and Project Management Effectiveness

1. *Do you have any technological tools that you perceive is easing using LTE Advanced project conducted in Addis Ababa? In what way?*
2. *Do you think that technology will get a bigger role in your future project work? In what way? Which areas are most practical?*
3. *What is your understanding relationship between project management effectiveness and project success?*
4. *Is there a formal project management system that monitors project activities and the effectiveness of the actions?*
5. *What is your opinion on leadership ability for project success?*
6. *What is your opinion on organization culture for project success?*

Table C.2: List of questions for the category: Project Success

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1. *What are the key strengths of this project? What makes it successful?*
2. *What is the benefit of this project for the organization and the customer?*

What obstacles has the project management effectiveness encountered relating to project success?

Declaration

I, hereby, declare that this thesis entitled the correlation between project management effectiveness and project success for LTE advanced project in case of ethio-telecom: Ethio telecom, is my original work, prepared under the guidance of Tiruneh Legesse (Assistant Professor) and has not been presented for a degree in any other university. All source of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

_____ _____

Name Signature

Endorsement

This is to certify that WondwossenMerine has completed his thesis entitled the correlation between project management effectiveness and project success for LTE advanced project in case of ethio-telecom: as I have evaluated, his thesis, it is appropriate to be submitted as a partial fulfillment required for the award of Master of Business Administration in Project Management.

_____ _____

Advisor Signature