ቅድስት ማርያም ዩኒቨርሲቲ
St. Mary's University

Assessment of Factors Affecting ICT Project Performance at Ethio Telecom

By

Tsehaye G/Hiwot

St. Mary's University

School Of Graduate Studies

DEPARTMENT OF PROJECT MANAGEMENT

APRIL, 2017

Addis Ababa, Ethiopia

ቅድስት ማርያም ዩኒቨርሲቲ
St. Mary's University

Assessment of Factors Affecting ICT Project Performance at Ethio Telecom

By: Tsehaye G/Hiwot

A Project Submitted to the School of Graduate Studies St. Mary's University in Partial Fulfillment of the Requirements for the Degree of Master of Art in Project Management

APRIL 2017

Addis Ababa, Ethiopia

St. Mary's University
School of Graduate Studies
MA Program

"Assessment of Factors Affecting ICT Project Performance at Ethio Telecom"

By: Tsehaye G/Hiwot

Approved by Board of Examiners

_____	_____
Chairman, Department	***Signature***
_____	_____
Advisor	***Signature***
_____	_____
Examiner	***Signature***

Endorsement

This is to certify that Tsehaye Gebrehiwot carried out his project on the topic entitled "**Assessment of Factors Affecting ICT Project Performance at Ethio Telecom**". This work is original in nature and is suitable for submission for the award of Master Art in Project Management.

_____

Dr. Worku Mekonnen

Declaration

I, Tsehaye Gebrehiwot, declare that this research entitled Assessment of Factors Affecting ICT Project Performance at Ethio Telecom, is the outcome of my own effort and study and that all sources of materials used for the study have been duly acknowledged. I have produced it independently except for the guidance and suggestion of the Research Advisor.

This study has not been submitted for any degree in this University or any other University. It is offered for the partial fulfillment of the degree of MA in Project Management.

By: Tsehaye Gebrehiwot

Signature_____

Date_____

Table of Contents

List of Figures

List of Tables

Acknowledgement

My special thanks go to my Mom Brihan Gebre not only for this study, but also for the motivation and commitment in my entire life. I would also like to thank my dear wife, Bezawit Hagos, for her endless patience, understanding and support throughout my graduate studies and this project. Mon frere Hintsa, My sister Desta and Dear father Abebe Kenea also have big stake in this project.

I would also like to express my sincere gratitude and appreciation to my advisor Dr. Worku Mekonnen for his invaluable, constructive comments and professional advice in the preparation of the thesis. I acknowledge with gratitude Management and staff of Ethio Telecom Information System Division.

I am highly indebted to all my friends, who have constantly been encouraging and supporting me throughout my Academic career especially my greatest thanks must go to Lely, Sabita, Kinfe, Siru, Kass, Bini, Mimi, Gech, Buke, Faa, Abrish, Nebu, Beck, Yimex, Seme, HI U, Solomon, Hailay, Hiwi, Metsi and Assistance Professor Mearg Tesfaye.

Finally, I want to thank all people who share me their idea and provided me moral and valuable information related to the research project.

Acronyms

ACWP	*Actual Cost for Work Performed*
ANOVA	*Analysis of Variances*
ARPU	*Average Revenue per Users*
BCWS	*Budgeted Cost for Work Scheduled*
CIO	*Chief Information Officer*
CCTV	*Closed-Circuit Television*
CPM	*Critical Path Method*
EVM	*Earned value management*
FAC	*Final Acceptance Certificate*
GTP	*Growth and Transformation Plan*
ICT	*Information Communication Technology*
ITU	*International Telecom Union*
MCIT	*Ministry of Communication and Information Technology*
MMS	*Multimedia Messaging Service*
PERT	*Program Evaluation and Review Technique*
PMBOK	*Project Management Body of Knowledge*
PMI	*Project Management Institute*
SPI	*Schedule Performance Index*
SV	*Schedule Variance*
SPSS	*Statistical Package for Social Sciences*
TEP	*Telecom Expansion Program*
UK	*United Kingdom*
US	*United State*
ZTE	*Zhongxing Telecom Corporation*

Abstracts

Project management practice has been improved on the past decades due to the publication of different literatures in the area of the study. Companies all over the world persuade project management practices to reduce cost, increase customer satisfaction and to better utilized the organization resources. The general objective of the study was to investigate the factors that influence the performance of ICT projects in Ethio telecom. The study adopted quantitative method and the descriptive as well as correlational research design. For the proper accomplishment of the study, the primary data were collected using Likert scale type questionnaire by distributing to and collecting from the ICT project implementers in ethio telecom. The collected questionnaires were cleansed and analyzed using SPSS Version 20 and Microsoft excel. The analysis include descriptive, correlation, regression and ANOVA. The major finding of the study indicated that project practice i.e. top management support, user involvement and project monitoring has significantly affect the performance of ICT projects in ethio telecom. However, user involvement on requirement specification and testing are poorly practiced on the company. Hence, to proactively avoid the challenges of poorly practiced project management variables, the researcher recommends to follow project life cycle, use project management tools and techniques, provide a good communication channel and support, involve user throughout the project implementation and use a good project follow up and monitoring methods

Key Words: *Project management, ICT, Project Performance, Ethiotelecom, Ethiopia*

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

The IT industry has struggled with performance in the last 10 years. Tools, processes, and techniques have been developed in attempts to improve performance. Information technology and communication has had a significant impact on organizations over the past three decades. They are viewed as means of providing competitive edge and hence, they are becoming part of the organization strategy. Information systems have reduced transaction costs, altered nature of operations in organizations, enabled firms to develop closer relationships with their clients and created new opportunities for organizations. Recent generations of information systems in public sector support electronic delivery of public services to the citizens and business enterprises by enabling them to make most of their transactions with the government through electronic channels such as the Internet (Bellamy et al 1998, Bekkers et al 1999).

Today the world has turned into a global village (Gholami et al, 2008) as a result of numerous ICT projects that have since been implemented. According to a 2014 annual report by International Telecommunications Union (ITU), about 3 billion people (40% of the world's population) are using the internet and the number of mobile-broadband subscriptions have reached 2.3 billion with 55% of them in developing countries.

Recently the project management discipline has matured through the publication of several standards best practices research articles and significant growth in its community of professional. (Pollack & England, 2007).

A study in the UK by a special interest group associated with organizational aspects of IT indicates that IT project success rate was around 20-30% at best, with 70% of IT projects failing is some respect. Over 61% of projects were believed to have failed. More than three quarters went over their schedules by 30% or more; more than half exceeded their budgets by a substantial margin. (KPMG Canada Survey, 1997)

The ICT sector in Ethiopia has seen substantial growth over the last decade. Mobile telecommunications grew from a mere 1.2 million subscribers in 2007 to around 23.7 million subscribers in 2013 (MCIT 2016). The voice communication geographic coverage has reached 64%, a progress by all standards considering Ethiopia's start from a very lower base in 2005. The use of mobile for Internet is growing. A Research ICT Africa Network survey shows that the proportion of mobile Internet users was 1.2% in 2012 driven by increasing use of social networks such as Facebook. Ethiopia reached the million Facebook users level in 2013 with an increase in the users by 20% between 2012 and 2013. The demand for mobile services and Internet access continues to grow exponentially. The government has continued to invest in the communications infrastructure to meet this growing demand. The second phase of a vendor credit project between the Ethio Telecom and two Chinese companies - Huawei Technologies and Zhongxing Telecom Corporation (ZTE) in the amount of US$1.6 billion was approved in 2013. This follows the completion of a first round of vendor credit in the amount of US$1.5 billion that was signed in 2007. (MCIT 2016)

A sound infrastructure in the telecommunication (telecom) sector is vital for sustainable economic growth of a country. In the era of improved Internet communication technology, vast amount of changes are generated in facilitating communication and the transfer of information from business to business, business to customers, employers to employees among others.

Currently, Ethio telecom has implementing the TEP (Telecom expansion program) to become a world class operator, to expand and improve the network coverage in both rural and urban areas, the quality of service provided, to increase the number of mobile and data users and to enhance customer satisfaction.

From this immense country level project the ICT program is the core and the leading one to increase the ICT expansion and availability & accessibility of the service.

Appreciating the attempt of Ethio Telecom upgrading its infrastructure and telecom service provision to world class standard, the assessment of factor affecting the ICT project performance is important. Therefore this research will gain better understanding of which affects the project performance of ICT in Ethio Telecom.

1.2. Statement of the Problem

ICT projects have been noted by a number of researchers to be facing several performance challenges including failure in US, Europe, Australia and other parts of the globe. Previous study from the year 2014 states 80% new products fail, 70% of software projects fail due to poor requirements (Randell, et al, 2014). In 2009 the worldwide cost of failed IT projects was estimated to be as high as Six Trillion USD, using calculations by Roger Seasons. (Gene Kim and Mike Orzen, 2012) relook at the numbers and make an estimate of the impact of IT failure on the global economy. The two experts calculated the global impact of IT failure as being $3 trillion annually, in their calculations Kim and Orzen take a conservative 20% failure figure.

In 2011, a report released by Oxford University in the UK found that large ICT projects were twenty times more likely to run out of control than other large infrastructure projects. According to Flyvbjerg and Budzier (2011), one in six projects reported an average cost overrun of 200% and a schedule overrun of almost 70%. Notably some of the biggest challenges of ICT projects are cost overruns and schedule overruns placing ICT projects failure rate at 70% (Mueller-Jacobs & Tuckwell, 2012; Kyunguti & Makau, 2014).

Ethio Telecom faces similar performance challenges, despite the remarkable growth of ICT sector providing direct contribution to meet the GTP goal and increase in ARPU and feature opportunities to enhance development and create new market and of course, the telecommunications sector is one of the strategic pillars in the government's Growth and Transformation Plan (GTP II) of 2015, in which the state set an ambitious plan to increase telephony penetration 100m by 2020. Performance of ICT projects has still remained a challenge experienced with projects being run by Ethio Telecom.

According to research ICT Africa.net (Dr. Lishan Adam, 2012), while Ethiopia has moved one step forward in expanding access to communication services through vendor credit from the

Export-Import Bank of China; the scheme has brought the country two steps backwards in terms of innovation and competitiveness. And also the lack of competitiveness and innovation is evident in the absence of skills in planning, designing, implementation, and maintenance of communication networks, mobile applications, distributed databases, and IT-enabled services.

Based on the preliminary investigation that has been carried out by the researcher, the ICT projects at Ethio-Telecom suffers from problems such as delay. For example, ITSM-IT Service management was delayed for three years from the due date, it was expected to be finalized within one year period of time /August 2011-July 2012/ after it has been delayed, it was even delivered partially and the project is not yet operational since some modules like incident management, change management, release and deployment and more modules are not fully provided yet and that is why the vendor couldn't get the FAC- Final Acceptance Certificate) , over budget is another problem i.e., Ethio-Telecom has been forced to pay additional cost due to so many reasons for instance, it has been required to pay double of its original cost for revenue assurance system for infrastructure expansion before implementing the solution, this is all because of specific problems related to project scope definition, requirement gathering and stakeholder analysis, which results in the end user refusal to accept the solution.

There are even cases such as even if the project was finalized on time, the deliverables(solutions) have not been used (for example, E-Bill, Dealer Management, Zsmart Self-service, MMS – Multimedia Messaging Service) for instance, MMS is not used because of problems related to the objective and definition of requirement and above all, technology dynamism led to the service to compete with free applications like; VIBER, WhatsApp, Messenger and others), lack of proper project management practice is another problem (most of Ethio telecom's projects do not follow sound project management process; ERP system is one of them, the solution couldn't handover to the users as planned, the operation and support cost increased by additional 40% of the project cost and vendor dependency extended for three years), miss management (failing to manage the project as planned and monitoring problem are the biggest problems in the company, we can take ETOP-UP solution as an example which has faced additional integration cost and compatibility problem with existing systems). (Source: Telecom Magazine, 2008)

Almost 80 percent of Ethio telecom's ICT product forced to swap with new one and to handle the project with GTP 1. Even this project was challenged by the above problem and transferred to GTP 2 by incorporating it with the new plan and expansions. Therefore, this study will investigate the factors which affect ICT project performance in Ethio Telecom. (Source: Big Jump review magazine: A comprehensive growth and transformation plan 1, 2015)

This implies additional time to complete, as well as additional costs, as resources are not released in time to participate in other projects. There is empirical evidence that organizations are confronted with many information system management problems and issues such as little integration or coordination between information systems (Menon et al, 2012) and poor quality of information products including lack of consistency (Yang and Papazoglou, 2012), duplication (Basili and Caldiera, 2010), and out-of-date information systems (Bernstein et al., 2009).

As to the researcher's search, even though there are a lot of empirical evidences internationally their findings are differ from company to companies and there is a gap in the literature as no such research has been conducted on Telecom in Ethiopia. Thus this study is the first of its kind in Telecommunication Industry in the country.

1.3. Objective of the Study

The general objective of the study is to assess factors affecting Information Communication Technology project performance.

Specifically the study has the following objectives:

- To describe how project management practices affects performance of ICT projects
- To examine how management support affects performance of ICT projects
- To find out how user involvement affects performance of ICT projects
- To determine how project monitoring affects performance of ICT projects

1.4. Research Questions

i. What are the effects of project management practice towards the performance of ICT project at Ethio Telecom?

ii. How does the management support affect the performance of ICT project at Ethio Telecom?

iii. How user involvement does affect the performance of ICT project at Ethio Telecom?

iv. How does project monitoring affects the performance of ICT project at Ethio Telecom?

1.5. Delimitation and limitation of the Study

The study has limited itself on assessing only factor affecting ICT project performance in Ethio Telecom But; Ethio Telecom is affected by different project performance like Network projects. The lack of previous study and experience in the area of ICT in Ethiopia hinders the comparison of the results with those studies and other operator's experience. The possible limitations of the study are inability to incorporate all projects implemented in ethio telecom. The study focused on Information Communication Technology projects only due to time constraint and other resource limitations. Therefore, it is difficult to generalize the findings and results to the whole implemented project in Ethio Telecom.

1.6. Significance of the Study

Findings of this study will benefit different stakeholders, such as, ethio telecom, the government, other organizations and further researchers. Therefore, the study's outcomes will benefit ethio telecom to improve and to evaluate its project management performance; the concerned government body will know how the project performance is in line with the targeted mission and objectives of the government on the sector. Future more, researchers can use this research's out come as a base to investigate more about the company's project management.

1.7. Organization of the Study

This study is divided in five chapters. The first chapter contains the introduction part. The second chapter will present related theories and previous studies related to the topic (literature review). The third chapter contains research methodology and design used in this study. In chapter four the data collected during the data collection process will be presented that is it contains an analysis of the empirical data. Finally chapter five will present the summary of findings, conclusion and recommendations, and limitation and implications for further research.

CHAPTER TWO

2. REVIEW OF RELATED LITRATURE

2.1. Introduction

A project is a one-time, multitask job with a definite starting point, definite ending point, a clearly defined scope of work, a budget, and usually a temporary team. A project is defines as 'A unique set of co-ordinated activities, with definite starting and finishing points, undertaken by an individual or organization to meet specific objectives within defined schedule, cost and performance parameters.' It is "A temporary endeavour undertaken to create a unique product or service" (PMBOK; Project Management Institute, 2004, p. 5).

The PMBOK definition of project management is ". Application of knowledge, skills, tools and techniques to project activities to achieve project requirements. Project management is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing" (PMBOK 2004, p. 8).

Project management is a set of principles, methods, and techniques that people use to effectively plan and control project work. It establishes a sound basis for effective planning, scheduling, resourcing, decision-making, controlling, and re-planning. Project management principles and techniques help complete projects on schedule, within budget, and in full accordance with project specifications. At the same time, they help achieve the other goals of the organization, such as productivity, quality, and cost effectiveness. The objective of project management is to optimize project cost, time, and quality.

The application of modern management techniques and systems to the execution of a project from start to finish, to achieve predetermined objectives of scope, quality, time and cost, to the equal satisfaction of those involved. Essentially, project management is a set of skills and tools that will help you get the project right in every way.

Information and communication technology (ICT) plays an essential part in our life and what we react with the external environment. Information systems are one of the ICT elements which shape our daily tasks by introducing value and quality to our daily activities.

Technologies are emerging field and are rapidly changing and the changes are moving around the globe in developed and developing countries. Information systems are the core of today's emerging businesses. Billions of dollars are exchanged on daily basis based on automated systems and information technology. It is essential that information system projects are properly scoped and implemented successfully. Despite best practice and defined procedures and methodology applied in project management, as well as the development and the advancement in the project management field the world is still experiencing failures in implementing information system based projects. The gravity of information systems is increasing day by day around the globe but at the same time the failure rate of information systems projects is still high. (Awatif Amin Qassim, 2006)

There is an overwhelming awareness that there are great potentials in the availability and use of information and communication technologies. The use of ICT promotes development and improves services in any organization. It brings changes in today's business environment.

2.2. Theoretical Review

2.2.1. Human Capital Theory

Human capital theorists insist on the importance of investment in education and the imparting of value to the future worker (Livingstone, 1999). Skills and knowledge gained through education is importance to employees when they are performing their tasks as it improves their performance. There is a large and growing body of evidence that demonstrates a positive linkage between the development of human capital and organizational performance.

Human capital is 'generally understood to consist of the individual's capabilities, knowledge, skills and experience of the company's employees and managers, as they are relevant to the task at hand, as well as the capacity to add to this reservoir of knowledge, skills, and experience through individual learning' (Dess & Picken, 2000: 8).

Management teams require technical skills to run the projects successfully. These skills could be gained from technical institutions, formal education or on job training. This theory has been put in application in several occasions. According to Ngugi (2013) human capital theory emphasizes the value addition that people contribute to an organization. Ngugi also added that the theory regards people as assets and stresses that investments in people generate worthwhile returns for gaining competitive advantage key among them improvements in performance, productivity, flexibility and the capacity to innovate. The theory shows the need for the management team to have skills and experience in project management cycle and use of project management tools and techniques when running the projects.

2.2.2. Project management model and practice

Project Management is the application of a collection of tools and techniques like CPM or network analysis, PERT and soon, to direct the use of diverse resources toward the accomplishment of a unique, complex, one-time task within time, cost and quality constraints. Each task requires a particular mix of these tools and techniques structured to the task environment and life cycle (from conception to completion) of the task (Turner & Muller, 2005). Projects are successful if they are completed on time, within budget, and to performance requirements. In order to bring the many components of a large project into control there is a large toolkit of techniques, methodologies, and tools. These techniques provide the tools for managing different components involved in a project: planning and scheduling, developing a product, managing financial and capital resources, and monitoring progress. Project management processes and techniques are used to coordinate resources to achieve predictable results. All projects may need some level of project management.

The classic six-stage project management model, which helps us to identify the key stages and to integrate them through the processes of the project. This model also consists of stages, but, unlike the sequential flow of the project life-cycle, the six-stage model assumes that some stages are carried out simultaneously. In particular, the model assumes that communications will take place throughout the project. It also assumes that team building, leading and motivation will take place once the project has been defined and continue until it ends.

Classic six-phase project management models are: Define: The project is discussed fully with all the stakeholders and the key objectives are identified. The costs and timescales are also established at this stage and there is often a feasibility study as well. This stage is complete when the project brief has been written and agreed. Plan: An initial *plan* is developed. Planning is an ongoing activity because the plan is the basis for reviews and revision when necessary, depending on how the project progresses. Team: The team members are usually involved in developing the plan and are often able to contribute specialist knowledge and expertise. The building of this team and its motivation and leadership also continue until the project is finished. Communications: should take place continuously, both within the project team and between the project team and stakeholders in the project, including anyone who contributes to achievement of the outcomes. Some communications will be through formal reporting procedures but many will be informal. Control: Implementation takes place during the *control* stage (stage 4 in the model). During this stage, the tasks and activities of the team will be monitored against the plan to assess the actual progress of the project against the planned progress. Control is essential to ensure that the objectives are met within the scheduled timescales, budgeted costs and quality. Regular reviews are usually held to enable the plan to be revised and for any difficulties that emerge to be resolved. Review and exit: The review is held to evaluate whether all the intended outcomes of the project have been met. It is also important because it enables information to be gathered about the processes used in carrying out the project from which lessons can be learned for the future. The exit from the project has to be managed to ensure that:

- Any outstanding tasks are completed;
- All activities that were associated with the project are discontinued;
- All resources are accounted for, including any that remains at the end and have to be transferred or sold to someone else.

Many projects evolve through a series of loops of planning, acting, reviewing and re-planning. It is important to think of planning as a continuous activity rather than something that can be completed once and used without change for the duration of the project. Expect change and allow scope to change or modify the plan.

2.2.3. Complexity Theory and Project Management

Current management practices require adherence to rigid, global responses unsuitable for addressing the changing needs of most projects. Complexity Theory and Project Management shifts this paradigm to create opportunities for expanding the decision-making process in ways that promote flexibility—and increase effectiveness. It informs readers on the managerial challenges of juggling project requirements, and offers them a clear roadmap on how to revise perspectives and reassess priorities to excel despite having an unpredictable workflow (Wanda et al, 2010)

Complexity theory helps understand the social behaviors of teams and the networks of people involved in and around a project. The ideas apply equally to small in-house projects as to large complicated programs. In this regard, 'complexity' is not a synonym for 'complicated' or 'large'. Whilst the ideas of 'complexity theory' are applicable to all projects, size does have an impact. From a complexity theory perspective, every project is complex, the project team are working together to deliver their project and in the process have to deal with issues and tensions within the project and issues and tensions (if not outright conflict) with stakeholders external to the project. The actions and influences of these external stakeholders trigger the need for the project team to adapt to its environment and engage proactively with the external stakeholders for the project as a whole to survive and deliver a successful outcome. And importantly the behavior of the team cannot be predicted from the behavior of any one person.

There are three dimensions of complexity, which are algorithmic, deterministic and aggregate complexity (Mason, 2001). This study focuses more on aggregate complexity, which is concerned with how the interaction between individual elements in a system propagates complex behavior. The key attributes of aggregate complexity include relationships between a system's internal structure and the surrounding environment, the resultant learning and emergent behavior, and the different means by which complex systems change and grow (Hazy and Uhl-Bien, 2013).

A system is defined more by the nature of relationships than its constituent parts (Curlee and Gordon, 2011). Therefore, the capacity of a system is greater than the sum total of its constituent subsystems and elements. This implies that a system can have emergent qualities that cannot be easily traceable by analyzing its constituent elements (Curlee and Gordon, 2011).
Relationships define, and are influenced by a system's internal structure. Well-connected components form subsystems either sustain or destabilize the system's structure (Curlee and Gordon, 2011; Saywisch, 2010).

It was further distilled that complex systems also owe their existence to how they interact with their external environment (Curlee and Gordon, 2011). They achieve this by actively anticipating change and reacting to it, as well as shaping their environments through learning, referring to history and utilizing existing relationships and subsystems (Curlee and Gordon,
2011). Therefore, systems are not static but constantly evolve through self-organization to better interact with their environments. They also dissipate when they struggle to cope with pressures from the internal and external environmental forces (Hazy and Uhl-Bien, 2013).

Complexity Theory refutes the fundamental project management premise which prescribes rational approaches to simplify phenomena as well as finding "best" linear procedures in solving project challenges (Hazy and Uhl-Bien, 2013).

Projects by nature operate as complex open systems (Curlee and Gordon, 2011). Consequently, a system can be construed as: "an object which in a given environment aims at reaching some objectives (teleological aspect) by doing an activity (functional aspect) while its internal structure (ontological aspect) evolves through time (genetic aspect) without losing its own identity" (Vidal and Marle, 2008 pp. 1095). It then follows that projects as complex systems are defined by these key systematic characteristics (Vidal and Marle, 2008). This underscores the need for project managers to possess leadership competences that enable them to better understand complex systems so as to effectively and successfully deliver on infrastructure projects (Azim et al, 2010).

Project complexity levels lie on a continuum from control, complicated, complex to chaotic (Remington, 2011). The least complex projects are those where the project manager is in control most of the project processes and inter-relationships, while the most complex are those where there is complete chaos (Remington, 2011).

Eisenhardt and Tabrizi (1995), studying the launching of a product, warn about the need for cycles of iterations, which should include designs and tests. Such iterations are very important in environments that require short time to launch products on the market.

Curlee and Gordon (2011) comment on how to apply the complexity in the linear phase of a project: 1) the 'goals setting' phase remains essentially the same as the traditional approach: it is about establishing high-level goals of the project, 2) the 'review the situation' phase should be accomplished quickly in order to develop a flexible plan, 3) the 'development plan' phase should contain the required milestones, but should also offer only general guidelines for performing the tasks. Spending too much time detailing every step of the process is usually a waste of time, because they change once the project begins. Curlee and Gordon (2011) also warn of the importance of fluid communication of stakeholders from the beginning of the project, so that response times are fast and the project can be adapted to new conditions.

In the more structured approaches, the inclusion of complexity follows a three-step itinerary: 1) classification of projects and the intensity of the complexity; 2) adaptive practices specific to each type of project; 3) definition of criteria for success to be used.

2.2.4. Information Systems Success Model

The importance of investing in new information systems (IS) architectures and infrastructures has become a topical issue within organizations. This is predominantly motivated by the need to deliver better value products and service through robust and responsive supply chains. With this in mind, business managers are seeking to use appropriate methods and techniques to appraise and justify the financial contribution of IS at strategic, operational and tactical levels. Yet,

managers often express concern regarding their ability to appraise IS investments prior to committing financial and emotional resources (Irani, 2008).

Information systems success is considered critical to the field of information systems (Sab-Herwal et al, 2006) a review of literature reveals that a lot of research has been undertaken to measure the success of information system. The concept of IS success is widely accepted in IS research as the principal criterion for evaluating information systems (Rai et al., 2002)

Information systems quality is an important measure of IS success. A stream of research has been conducted to identify IS success measures. DeLone and McLean (D & M) introduced a comprehensive taxonomy to organize this diverse research.

Based on a review of 180 empirical studies, they developed a model of ‘‘temporal and causal” interdependencies between six categories of IS success (DeLone and McLean, 1992). Seddon (1997) presented and justified a re-specified and extended version of the D & M model of IS success by splitting the D & M model into two variance submodules (of use and success) and eliminating the process model interpretation. Although the model has been tested only partially, it has provided a solid theoretical framework toward consolidating previous research on IS success.

Pitt et al. (1995) argued that existing IS success measures seemed strongly product focused and that the IS department was not just a provider of products but also of services. With an increasing percentage of IS budgets being devoted to IS services, more emphasis is being given to the service dimension of IS (Kettinger and Lee, 1997; Pitt et al., 1995; Watson et al.

1998). The SERVQUAL instrument has been validated and used in the IS context (Pitt et al., 1995; Watson et al., 1998). Though there has been criticism (Van Dyke et al., 1997) regarding the use of a gap measure for service quality or preference for a direct measure with SERVPERF (Cronin and Taylor, 1994), the relevance of SERVQUAL attributes to the measurement of

IS success appears to have been generally accepted (Kettinger and Lee, 1997). Parasuraman et al. (1994) proposed and tested the SERVQUAL + instrument, which has 21 items, in three alternative formats. Kettinger and Lee (2005) validated this instrument with direct measures for applicability in the IS context. Pitt et al. (1995) developed an augmented IS success model incorporating service quality as an additional element in the D & M model (1992). An ‘‘updated”

IS success model was proposed in 2003 by DeLone and McLean, which includes IS service quality.

As IT impacts not only immediate users, but also work groups, organizations, industries, consumers, and society, DeLone and McLean (2003) replaced the individual impact and organizational impact constructs of their original IS success model with ‘‘net benefits” constructs in their ‘‘updated” model; the authors argue that their revised IS success model can be applied at multiple levels of analysis depending on the task at hand.

Information systems success theory proposes that system quality and information quality affect users' usage of and satisfaction with information systems, further determining project performance (DeLone and McLean, 2004). Service quality was later incorporated into the model. The new model argues that system quality, information quality and service quality affect usage and user satisfaction, further affecting net benefits such as increased knowledge sharing and lower costs (DeLone and McLean, 2004).

Since its inception information systems success theory has been widely applied and empirically validated in the contexts of traditional information systems and electronic commerce. Wixom and Todd (2005) noted that information quality and system quality affect data warehousing software users' satisfaction, perceived usefulness, and perceived ease of use and usage behavior. Zhang (2010) proposed that both system quality and information quality affect social networking users' satisfaction and sense of community. Song and Zahedi (2007) reported that system quality and information quality affect users' trust in health infomediaries. Lin (2008) noted that system quality and information quality affect virtual community user satisfaction. The information system success theory was used in this study to find out how user involvement affects performance of ICT projects a case of ethiotelecom.

2.2.5. Change and Project Monitoring

Theory of Change (ToC) is a specific type of methodology for planning, participation, and evaluation that is used in the philanthropy, not-for-profit and government sectors to promote social change. Theory of Change defines long-term goals and then maps backward to identify necessary preconditions. Theory of Change explains the process of change by outlining causal linkages in an initiative, i.e., its shorter-term, intermediate, and longer-term outcomes.

The identified changes are mapped –as the "outcomes pathway" – showing each outcome in logical relationship to all the others, as well as chronological flow. The links between outcomes are explained by —"rationales" or statements of why one outcome is thought to be a prerequisite for another.

Theory of change is both a process and a product. It should be seen as an on-going process of discussion-based analysis and learning that produces powerful insights to support program design, strategy, implementation, evaluation and impact assessment, communicated through diagrams and narratives which are updated at regular intervals.

The quality of a theory of change process rests on 'making assumptions explicit' and making strategic thinking realistic and transparent.
Practical experience highlights that this is not straightforward to do, as these tap into deeper beliefs, values, worldviews, operational 'rules of thumb' and analytical lenses that all individuals in development bring to their work. It takes time and dialogue to be able to challenge assumptions. Power relations, both in the program's context and within organizations, limit the ability to challenge established ways of working.

The idea of the Theory of change approach seems to have first emerged in the United States in the 1990s, in the context of improving evaluation theory and practice in the field of community initiatives. (Weiss, 1995).
Yet the "current evolution draws on two streams of development and social programme practice: evaluation and informed social practice." (Vogel, pp. 310, 2012).
From the evaluation perspective, Theory of change is part of broader program analysis or program theory. In the development field, it also grew out of the tradition of logic planning models such as the logical framework approach developed from the 1970s onwards. The notion of developing informed social practice has a long history; practitioners have often sought (and used) tools to attempt to consciously reflect on the underlying theories for development practice.

Since their use in the field of community development, Theory of change approaches have increasingly become mainstream. This is largely due to the demands of key funders, whose focus on Theory of changes has strengthened in the last few years.

some may view Theory of change as simply a 'buzzword', it does appear that it also represents an increased desire for organizations to be able to explore and represent change in a way that reflects a complex and systemic understanding of development. (James 2011).
This desire stems at least in part from the 'results agenda': Theory of change is seen as a way to plausibly demonstrate impact in fragile and conflict-affected regions of the world.

In its early conceptualization in 1995, Weiss described a Theory of change as "a theory of how and why an initiative works." (Weiss 1995). More fully articulated, this can be understood as a way to describe the set of assumptions that explain both the mini-steps that lead to a long term goal and the connections between these activities and the outcomes of an intervention or programme. (Anderson 2004).

Theory of change has been called a number of other things: "a roadmap, a blueprint, an engine of change, a theory of action and more." (Riesman et al 2007).

A Theory of Change can be developed retrospectively by reading program documents, talking to stakeholders and using monitoring and evaluation data. This is often done during evaluations reflecting what has worked or not in order to understand the past and plan for the future. The Theory of change and Project Monitoring was used in this study to determine how project monitoring affects performance of ICT projects a case of Ethiotelecom.

2.2.6. Project Cost performance

Project Management Body of Knowledge guide (PMBOK) defines cost estimates as a developed approximation of the monetary resources needed to complete project activities. The accuracy of cost estimates starting from the planning phase of a project through to the tender estimate can affect the success or failure of an ICT project. The process of determining the project budget involves aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline (PMI, 2008).

The project budget that results from the planning cycle must be reasonable, attainable, and based on contractually negotiated costs and the statement of work. The basis for the budget is historical cost, best estimates, or industrial engineering standards.
The budget must identify planned manpower requirements, contract-allocated funds, and management reserve Performance results standards are quantitative measurements and include such items as quality of work, quantity of work, cost of work, and time-to-complete (Kerzner, 2009).

Earned value is a management technique that relates resource planning to schedules and technical performance requirements. Earned value management (EVM) is a systematic process that uses earned value as the primary tool for integrating cost, schedule, technical performance management, and risk management. A variance is defined as any schedule, technical performance, or cost deviation from a specific plan.

The cost variance compares deviations only from the budget and does not provide a measure of comparison between work scheduled and work accomplished. In order to calculate variances, we must define the three basic variances for budgeting and actual costs for work scheduled and performed (Archibald, 1976).

The first variable is the budgeted cost for work scheduled (BCWS) which is the budgeted amount of cost for work scheduled to be accomplished plus the amount or level of effort or apportioned effort scheduled to be accomplished in a given time period. The second variable is the budget cost for work performed (BCWP) which is the budgeted amount of cost for completed work, plus budgeted for level of effort or apportioned effort activity completed within a given time period. This is sometimes referred to as "earned value." The third variable is the actual cost for work performed (ACWP) is the amount reported as actually expended in completing the work accomplished within a given time period.

BCWS represents the time-phased budget plan against which performance is measured. For the total contract, BCWS is normally the negotiated contract plus the estimated cost of authorized but unpriced work (less any management reserve). For any given time period, BCWS is determined at the final cost account level by totaling budgets for all work packages, plus the budget for the portion of in-process work (open work packages), plus the budget for level of effort and apportioned effort (Kerzner, 2009).

2.2.6. Project Time performance

The project time schedule includes a planned start date and a planned finish date for each activity. A project schedule may be presented in a summary form referred to as a master schedule or milestone schedule or may be presented in detail. Often, the project schedule is presented graphically using milestone charts, bar charts, and project schedule network diagrams. The schedule baseline is developed from the schedule network analysis and is accepted and approved by the project management team as the baseline with baseline start dates and baseline finish dates. The baseline is a key element in schedule control and time management.

Project time performance is established by measuring, comparing and analyzing schedule performance such as actual start and finish dates, percent complete, and, remaining duration of work in progress. The performance is assessed by the use of techniques such as earned value management (EVM), schedule variance (SV), schedule performance index (SPI). These techniques help to assess the magnitude of schedule variances. The critical chain method compares the amount of buffer remaining to the amount of buffer needed to protect the delivery date and thus can help determine the schedule status (PMI, 2008).

The total float variance is an essential planning component to evaluate project performance. Project management software for scheduling such as MS Project and Task provides the ability to track planned date versus actual dates and to forecast the effects of changes to the project schedule.

2.3. Empirical Review

2.3.1. Top Management Support

(Imtiaz et al, 2013) carried out a study on critical success factors of information technology projects. The goal of this study was to review past critical success factors research relevant to IT project. This was done by searching the full-text of articles within Google Scholar, Science Direct, IEEE Explorer, ACM and Emerald databases published within 1999 to 2012. The study enlisted 15 factors that were believed to be critical for the success of IT projects based on strong evidence given in their corresponding studies.

In the list was Top management support, selecting a project manager with the required technical expertise management experience and interpersonal skills to successfully manage the project, provide adequate resources for the project and provide incentives to the team members. The findings of the study pointed out that Top management support strongly affects the success of IT projects, Top Management is required to conduct regular review meetings to ensure and monitor the progress of the project, follow up with customers to determine general customer satisfaction and finally to recognize and reward the project team members upon the successful completion of the project.

Top management support ensures the availability of resources and employee commitment towards the project. Based on the study it is determined that top management support is essential for the success of an IT Project.

2.3.2. Project management practice

A case study by (Oluigbo et al 2014) impact assessment of factors affecting information technology projects in rivers state, Nigeria concentrated on project management practices put in place. The work studies the impact assessment of factors affecting Information Technology (IT) projects in River State. In order to stop the failure of IT projects in River State, three IT projects were examined using some critical success factors to create a check list for a successful IT project. A sample of 85 respondents was drawn from a study population of 100.

The respondent draws were carried out using the stratified random sampling technique in the analysis of variances (ANOVA) as used to analyze the data collected by use of a research administered questionnaire. The finding from the analysis indicated that the three main Information and Communication Technology (ICT) projects used in this research which includes ICT Agriculture, ICT for all (Primary and Secondary School) and Closed-Circuit Television (CCTV) Camera show that many of the respondents strongly agreed to ICT for all (Primary and Secondary School) while in ICT Agriculture and Closed-Circuit Television (CCTV) Camera, very few respondents agreed to the ICT project in River state.

This study recommends that the authorities should encourage the use, upgrade of existing and introduction of more ICT projects which must comply with the necessary quality assurance tests; such as, if the project meets time, if the project meets Cost, if the project meets scope goals, if the project satisfied the user's needs and if the result of the project meet its objectives. This study has provided an empirical basis for problem solving on the Impact Assessment of Factors Affecting Information Technology Projects in Rivers State.

2.3.3. Communication

Gharashe (2009) concluded in his study on analysis of factors influencing projects in Kenya that the quality of project management, operating environment, worker motivation, communication, inadequate resources and organization of the project team as factors affecting project implementation. Mwadali (2006) found that inexperienced project managers, poor communication, poor monitoring and control systems negatively affect project management efficiency. Effective communication in project implementation creates a common perception, changing behaviors and acquiring information (Brown 2011). A failure in communication can negatively impact the project (Ruuska, 2007). Project communication is an informative tool, which communicates to all relative groups what is happening in the project. The importance of communication in the success of a project is immense. Careful communication planning and setting the right expectations with all the project stakeholders is therefore extremely important.

2.3.4. Project Monitoring

According to Chua et al (2009), project success is not determined exclusively by the project manager, monitoring and control efforts. Similarly, Chen et al (2007) studied critical success factors for projects in Taiwan and concluded that project owners, team members, vendors and other related stakeholders who are directly or indirectly involved in the work all significantly influence the success of the projects. Chan et al (2004) examined 3 case studies of key performance indicators for measuring project implementation success in Hong Kong. He concluded that cost, time and quality were still three most important indicators of success in projects. Other measures such as safety, functionality and satisfaction are attracting increasing attention.

Pheng et al (2007) on the other hand carried out a study on how environmental factors affect the performance of the project manager. He identified 13 factors which would affect performance: job related factors were salary, job satisfaction, job security, availability of information; project related factors were, project environment, project size, time availability, complexity of project, team relationship, materials and supplies and duration of project, while organization-related factors were, level of authority and type of client.

Nguyen (2004) and Pheng et al (2007) studied project success factors and identified: competent project manager, adequate funding, competent project team, commitment and availability of information. Mansfield et al (2006) found poor contract management, financing and payment arrangements, resource shortages, inaccurate estimates and overall price escalation as the major factors causing project delays.

Karani (2007) carried a study focusing on factors impacting delivery reliability of projects. He identified the critical factors as cash flow problems, delayed payment to vendors, under estimation of project duration, unqualified staff on the project team, inadequate supervision of work and increase in scope of works. He concluded that these inputs and transformational process factors are attributable to the core stakeholders in any project

2.3.5. Project Management performance

Nowadays, more and more organizations change their organizational culture towards project orientation. There is a big challenge for each organization to continually improve its project management processes to increase quality of outputs and satisfaction of customers. Measuring project management implementation maturity can assist in this effort by providing a valuable framework for performance improvement. In the study by Andrej Miklosik (2015) Improving project management performance through capability maturity measurement aims to provide results of the research performed in the ICT sector in Slovakia using a standardized methodology. Results of the research show that typically, ICT companies in Slovakia have a standardized project management methodology in place and try to improve their project management processes. However there is quite a big space for improving their attitude towards continual improvement. In the study, factors of insufficient performance in several areas are being analyzed and solutions are being proposed to minimize their impact on project and company outputs.

Over the past few years, many organizations have adopted a project-oriented approach both for external delivery processes and internal control processes. This decision has positive impacts on the organization, as it systemizes the work being delivered. Continuously, more and more activities are classified as projects to deliver project outputs. In this sense, a project can be defined as a temporary organization, containing sources (people, budget, tools, etc.), existing over a specific time period with the objective to deliver project outputs. There are many potential advantages for both organization and its customers, if work is being organized this way. However, there are many potential risks and problems that can occur if projects are not systematically managed with the use of a project management framework. The aim of the study is to introduce possible measures for improving project management performance of companies in the ICT sector. This will be achieved by determining the level of maturity of project management processes within these organizations and by identifying determinants affecting the performance. To measure the maturity, the capability maturity model (CMM) is applied. Primary data is collected using the in-depth interviews with top managers or board members of 25 selected ICT companies operating in the Slovak market.

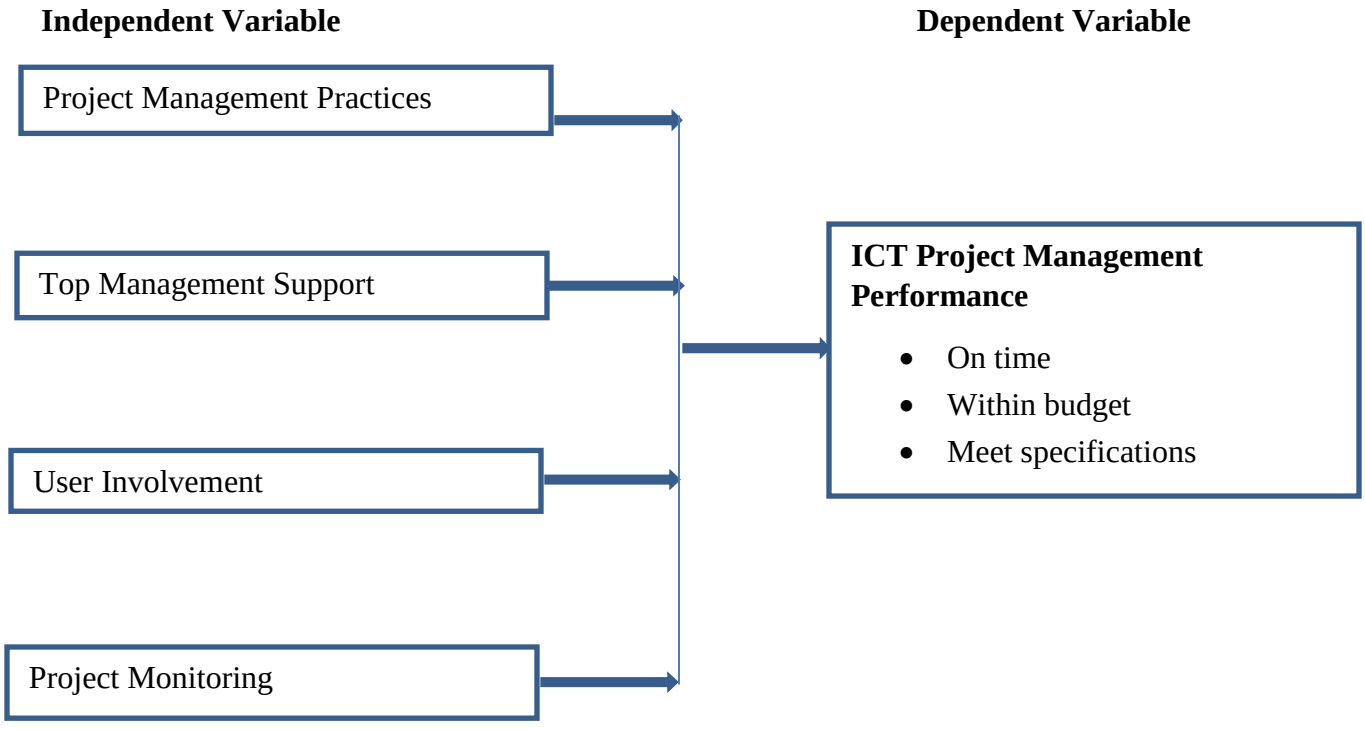
Finally, the research proven that companies are aware of the importance of a systematic approach to project management. Typically, ICT companies in Slovakia have a standardized project management methodology in place and try to improve their project management processes.

2.4. Conceptual Framework

Conceptual framework is a hypothesized model identifying the concepts under the study and their relationships. Mugenda (2008) defines conceptual framework as a concise description of phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study. According to Young (2009), conceptual framework is a diagrammatical representation that shows the relationship between dependent variable and independent variables.

In this context the dependent variable is ICT project management performance, while project management practices, top management support user involvement and project monitoring are independent variables. (See figure below)

Figure 2.1: Conceptual Framework



Conceptual Framework of the study, adopted from Stephen Omwaka, (2016) p.857 modified by the researcher

CHAPTER THREE

3. METHODOLOGY OF THE STUDY

3.1 Research Approach

Creswell (2005) asserted that quantitative research is a type of educational research in which the researcher decides what to study, asks specific, narrow questions, collects numeric (numbered) data from participants, analyzes these numbers using statistics, and conducts the inquiry in an unbiased, objective manner. Thus, in terms of methods, this research employed quantitative method while conducting the study i.e. to collect, to organize and to analyses the data. For data collection, the close ended Likert type questionnaires was distributed to and collected from the selected employees of ethio telecom and then it is summarized and analyze in order to describe and to make inference on the population.

3.2. Research Design

The researcher applied descriptive research, correlational design and linear regression. Descriptive research design is preferred for describing the existing descriptive characteristics of the variables. Correlation design have been applied to empirically investigate the association of variables and the regression is to show the cause and effect relationship between the independent variables; project management practice, top management support, user involvement, project monitoring, information communication technology and dependent variable; project management performance.

3.3. Source of Data

The study used both primary and secondary data. The primary data was collected from Ethiotelecom employees through questionnaires to investigating the effect of project management practice, top management support, user involvement and project monitoring on ICT project implementation performance from project owner point of view. The secondary data was collected from books, research journals and articles conducted on project management and other related titles, unpublished materials of Ethio Telecom and ethio telecom portal and/or internet.

3.4. The population of the Study

The population of the study was the Ethiotelecom employee in Information System division. Information system division in Ethio telecom is segmented in to six categories by the nature of work these are: IT Service Design, IT Service Transition, IT Service Strategy and Program Management, IT Operation, IT Security and Automation.

Among the Six categories the target population of this study was IT Service Design, IT Service Transition and IT Service Strategy and Program Management which include about 101 (one hundred one) employees by December 2016.

3.5. Research Participants

The focus of study was on employees and management members of Information system division in Ethio telecom who are responsible for project implementation. The total number of employees of the three departments who are responsible for project implementation in Information system division at Ethio Telecom as of December 2016 was 101.

There is no sampling mechanism to be used because the study takes all the population that can increase the generalizability of the finding to the company. Therefore the subjects were all the 101 employees of three departments (IT Service Design, IT Service Transition and IT Service Strategy and Program Management) including CIO under information system division.

To pretest the questionnaire it has been distributed to 10 pilot respondents, it has been also given to academicians for their comment, then based on the feedback and lessons learned it has been reproduced and distributed to a sample of 91 respondents; by excluding those who have participated on the pilot test.

From the total distributed questionnaires 66 (72.5% response rate) have been filled in and returned back by the respondents. Mugenda and Mugenda (2008) reveal that 60% response rate is good for such a study. Therefore, it can be inferred that such response rate was adequate. IT Service Design, IT Service Transition and IT Service Strategy and Program Management department are selected for this study because these teams are the one who has the overall responsibility for the successful initiation, planning, design, execution, monitoring, controlling and closure of an ICT project of the Ethio telecom.

The study targets these employees because they are very relevant for the research. The employees are further classified into the following sector which includes top managers, middle managers and general staff.

3.6. Instruments/ Measurement

A questionnaire survey instrument was employed. The structured questionnaire was employed the typical form of fixed-response alternative questions that require the respondent to select from a predetermined set of answers to every question.

The study used a five point Likert Scale from (1) strongly disagree to (5) strongly agree. It is a widely used rating scale which requires the respondents to indicate a degree of agreement or disagreement with each of a series of statements or questions (Albaum, 1997 as cited in Samuel, 2006). This rating scale is easy to construct and administer and respondents readily understand how to use the scale (Malhotra & Birks, 2003, as cited in Samuel, 2006).

The items in the questionnaire were designed to be scored on a five point Likert type scale, 1 (strongly disagree) and 5 (strongly agree) and extremely dissatisfied (1) to extremely satisfied (5) for performance factors of ICT project Implementation. Respondents were asked to choose any of the numbers to show their level of agreement with each statement. The questionnaire also included some questions about educational background of respondents, employment level of the respondents, experience in the current position and the company

3.7. Pilot Study

In survey based research it is important to validate the scales used for reliability and validity. Even if the measurement variables and scale questionnaires are adopted from highly validated instruments, checking it whether they can be applied in Ethiopian context is important. Gleam & Rosemary (2003) explained that oftentimes information gathered in the social sciences, marketing, medicine, and business, relative to attitudes, emotions, opinions, personalities, and descriptions of people's environment involves the use of Likert-type scales p.82. As individuals attempt to quantify constructs which are not directly measurable they oftentimes use multiple-item scales and summated ratings to quantify the construct(s) of interest. The present study validated the measurements using Internal Consistency and Predictive Validity.

3.7.1. Cronbach's Alpha

Cronbach's alpha is a coefficient (a number between 0 and 1) that is used to rate the internal consistency (homogeneity) or the correlation of the items in a test. A good test is one that assesses different aspects of the trait being studied. Cronbach's alpha will generally increase as the inter correlations among test items increase, and is thus known as an internal consistency estimate of reliability of test scores. Because inter correlations among test items are maximized when all items measure the same construct, Cronbach's alpha is widely believed to indirectly indicate the degree to which a set of items measures a single construct (Gleam & Rosemary , 2003). George and Mallery (2003) provide the following rules of thumb: — > .9 Excellent, > .8 – Good, > .7 Acceptable, > .6 Questionable, _ > .5 Poor, and < .5 Unacceptable p.231 (as cited in Gleam & Rosemary, 2003). If correlations between items are too low, it is likely that they are measuring different traits and therefore should not all be included in a test that is supposed to measure one trait.

Cronbach's alpha for each value was established by the SPSS application and gauged against each other at a cut off value of 0.7 which is acceptable according to Cooper and Schindler (2008). The values were project management practices (0.924), top management support (0.944), user involvement (0.951) and project monitoring (0.901). All the values were above 0.7 which concludes that the data collection instrument is reliable.

Table 3.1: Cronbach's Alpha

Measurement	**No of Items**	**Cronbach's Alpha**
project management practices	7	0.924
Top Management support	8	0.944
User Involvement	10	0.951
Project Monitoring	8	0.901
Project Performance	7	0.758

Source: Survey data, 2017

3.7.2. Correlation

Validity is the extent to which a score on a scale or test predicts scores on some criterion measure (Cronbach & Meehl, 1955; as cited in Gleam & Rosemary, 2003)

Table 3.2:Validity – Correlation Matrix

Variables		Project Management Practice	Top Management Support	User Involvement	Project Monitoring	Project Performance
Project Performance	Pearson Correlation	.851**	.778**	.808**	.876**	1
	Sig. (2-tailed)	.002	.008	.005	.001	
	N	10	10	10	10	10

Note: All correlation coefficients are significant at 1%.
The full result for is presented in Appendix -1B
Source: Survey data, 2017

The validity of the instrument was tested using correlation analysis. The Pearson correlation coefficient between the project performance and independent variables of the instrument are shown in table 2. The table shows that all coefficients are significant at the 0.01 level. The present research employed two-tailed correlation to test the predictive validity of the variables. This method tries to see the correlation between all independent variables and the dependent validity.

As can be inferred from the above table, all independent variables were found to be significantly correlated with the dependent variables of project performance.

3.8. Data collection and analysis procedures

To collect and analyze the data the following procedures are used: First the briefing on the questionnaires was given for the IT project implementers. Then the questionnaires were distributed to IT project implementers who are respondents of this study to be filled by them. The questions were collected from the respondents after a week in order to give them sufficient time. A reminder was made for the non- responding IT project implementers. The remaining questionnaires were collected, coded and analyzed for usability. Thus the data was interred in to SPSS version to analysis of the data by using different statistics on SPSS. Finally the final paper was written.

3.9. Method of Data Analysis

Before analyzing the quantitative data, the questionnaires were cross checked for completeness and consistency. And then it was analyzed with the help of SPSS version 20.

The information was displayed by use of bar charts, graphs and pie charts. Correlation analysis was used to establish the relationship between the independent and dependent variables. The purpose of doing correlation was to allow the study to make a prediction on how a variable deviates from the normal.

Simple descriptive statistics (frequency distribution and mean) were used to show preliminary figures. Moreover; independent sample T-Test and One way ANOVA was used to investigate the difference between demographic variables (education, employee level, experience and department) and project performance. In order to assess the influence of independent variables on dependent variable multiple linear regression is applied. The model applied to show this influence is presented as follows;

$$\mathbf{Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \varepsilon}$$

Where:

Y = Dependent Variable (Project Performance)

$\beta 0$ = Intercept (value of Y when X= 0)

$\beta 1$ = Slope

X1= Project management Practices

X2= Top Management support

X3= User Involvement

X4= Project monitoring

ε = the error

CHAPTER FOUR

4. DATA ANALYSIS AND PRESENTATION

4.1. Descriptive *Analysis*

4.1.1 Background characteristics

Since the general characteristics of the respondents are vital to get insights to the overall study we shall start by seeing the demographic nature of the respondents. It is believed in many extant Literatures that demographic variables like educational level, Job position and experience do have an impact on project performance. Thus, the profile of project implementer' working in Ethio Telecom Information System Division (ISD) are summarized by the following table.

Table 4..1: Project implementers Profile

Variables	Catagory	Frequency	Percentage
Educational Qualification	Certificate/ Diploma	0	0%
	Bachelor Degree	47	71.2%
	Post Graduates Degree	19	28.8%
	Doctorate Degree	0	0%
Job Position	Staff	47	71.2%
	Manager	15	22.7%
	Officer	3	4.5%
	Chief Officer	1	1.5%
Service Year	0-3 Years	5	7.6%
	4-6 Years	19	28.8%
	7-10 Years	24	36.4%
	Above 10 Years	18	27.3%
Department	IT Service and Program Management	11	34.8%
	IT Service Design	23	35.4%
	IT Service Transition	31	47.0%

Note: The full result is presented in Appendix -1C
Source: Survey data,2017

It is important to note that the majority of project implementers are concentrated in one group in terms of Educational qualification and employee Level. Education is paramount in enabling the respondents to conceptualize issues related to resource utilization. It was established from the study that 71.2% of the respondents have bachelor and the remaining 28.8% have post graduate degree.

Apparently from the table 4.1 finding it shows that majority of respondents working in Ethio Telecom have bachelor degree qualifications. This implies that they are capable of conceptualizing and respond authoritatively on issues and practices.

This finding was in line with Katz (1992) finding that those with higher education are more successful as they have more knowledge and have modern managerial skills making them more conscious of the reality of the business work. And the majority of the respondents (95%) have more than 3 years' experience.

4.1.2. Descriptive statistics of the Variables

To come up with the scores of the variable, items under each dimension are aggregated to one. As indicated in the table 4.2, all independent variables mean score is less than the midpoint of the scale which is 3. Of the four independent variables top management support is the highest (2.27), while user involvement is the lowest (2.12). But the mean value of the dependent variable (project management performance) is above 3. From the variables the highest range is project management performance and the lowest is of top management support 2.29 and 0.87 respectively.

Table 4.2: Descriptive Characteristics of the Variables

Variables	Minimum	Maximum	Mean	Std. Deviation
Project Management Practice	1.43	3.57	2.24	0.52
Top Management Support	1.88	2.75	2.27	0.33
User Involvement	1.60	3.00	2.12	0.50
Project Monitoring	1.75	3.00	2.22	0.39
Project Management Performance	1.71	4.00	3.01	0.48

Note: The full result for all is presented in Appendix -1D
Source: Survey data

Project Management Practices

The study sought to find whether project management practices significantly improved the performance of ICT projects in the firm. From the findings the study revealed that majority (42%) of the respondents neither agreed nor disagreed, 30% of the respondents agreed and 5% of the respondents strongly agreed that project management practices significantly improved the performance of ICT projects in the firm while 19% of the respondents were not for the opinion that project management practices significantly improved the performance of ICT projects in the firm. The study also sought to find out project life cycle is used implementation. From the findings 51.5% of the respondents disagreed that project cycle used in Ethio telecom during project execution while 7.6% of the respondents agreed and the remaining 41% of the respondents neither agreed nor disagreed.

The study sought to find out the project management tools that the respondents were being used in Ethio Telecom. The majority (76%) of the respondents strongly disagreed that project charter is easily available in Ethio Telecom and 7.6% of the respondents agreed while the remaining 16.7% of the respondents neither agreed nor disagreed. For work breakdown structure the majority (83.3%) responded as project works are not decomposed in to manageable deliverables while 16.7 of the respondents neither agreed nor disagreed, the majority (79%) of the respondents disagreed and strongly disagreed that there is a clear project evaluation and review techniques are practiced in Ethio Telecom while the remaining responded as neither agreed nor disagreed.

During project execution Gantt charts techniques are not used effectively to follow projects in Ethio Telecom as per 92.4% of the respondents while the remaining 7.6% of the respondents neither agreed nor disagreed, 92% of the respondents responded as SWOT analysis is not used to evaluate the project in Ethio telecom while 7.6% responded as neither agreed nor disagreed.

Table 4.3: Frequency Table for Project Management Practice Statements

No.	**Project Management practice Statements**	**Strongly Disagree**	**Disagree**	**Neither agree nor Disagree**	**Agree**	**Strongly agree**
1	project management practices significantly improved the performance of ICT projects in ethio telecom	0%	19.7%	42.4%	30.3%	7.6%
2	Project management life cycle (Initiation, planning, execution, monitoring and closure) is used during IT project implementation	0%	51%	40.9%	7.6%	0%
3	Project charter is easily available/ accessible in ethio telecom.	0%	75.8%	16.7%	7.6%	0%
4	Project works are broken down to manageable deliverables in your organization.	10.6%	72.7%	16.7%	0%	0%
5	Clear Project evaluation and review techniques are practiced in ethio telecom.	10.6%	68.2%	21.2%	0%	0%
6	A Gantt chart is effectively used to follow up projects in ethio telecom.	42.4%	50%	7.6%	0%	0%
7	SWOT analysis is used to evaluate the projects in ethio telecom.	33.3%	59.1%	6.6%	0%	0%

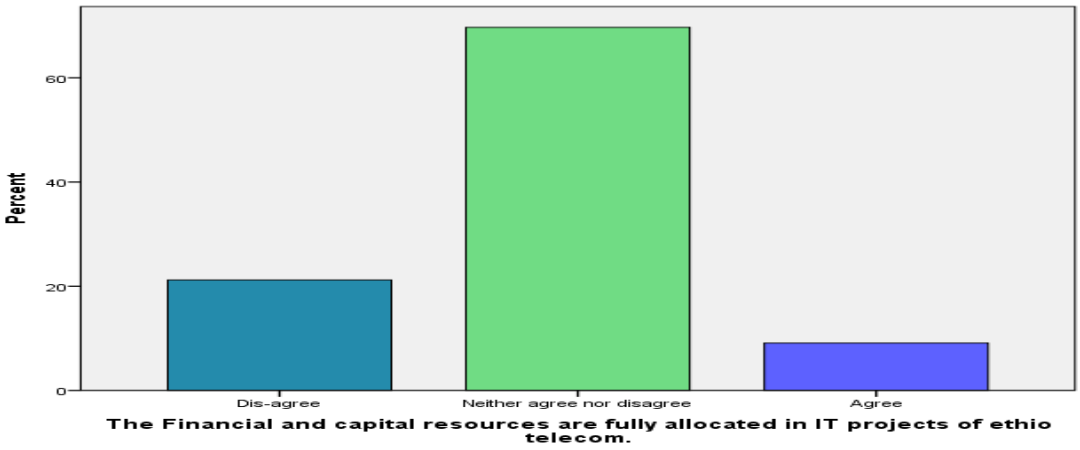
Note: The full result for is presented in Appendix -1G

Source: Survey data, 2017

Top Management Support

The study sought to investigate the influence of top management support on the performance of ICT projects in Ethio Telecom. Specifically, the study focused on allocation of financial capital resources, allocation of human capital resources, allocation of physical capital resources, the competence development, Incentives, Recognition and reward.

Figure 4.1: Financial Capital Resource.



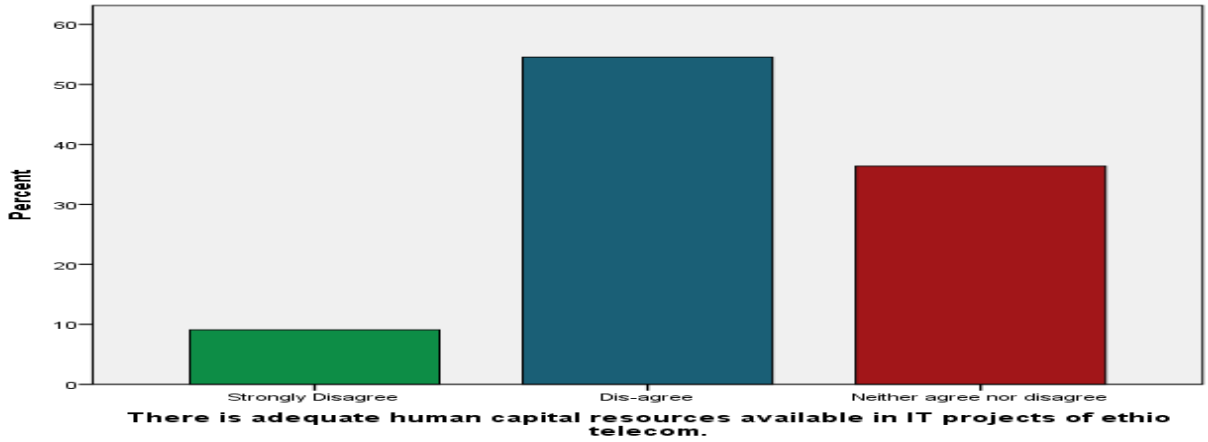
Source: Survey data, 2017

The study sought to find out whether financial capital resources are fully allocated in ICT projects of Ethio Telecom. From figure 4.3, 21.2 % of the respondents disagreed that financial capital resources are fully allocated in ICT projects of Ethio telecom, 69.7 of the respondents neither agreed nor disagreed that financial capital resources are fully allocated in ICT projects of Ethio telecom. While 9.1% of the respondents agreed that financial capital resources are fully allocated in ICT projects of Ethio telecom. Therefore, it can be inferred that financial capital resources is not fully allocated to ICT projects of Ethio telecom. The finding vary with the studies such as Wiklund and Shephere, (2005) and Zhou and Chen, (2008) identify that there is need for financial capabilities to obtain physical resources in order to take advantage of business opportunities. The study sought to know the availability adequate human capital resources in ICT projects of Ethio Telecom.

Figure 4.4 shows that 9.1% of the respondents indicated that there is adequate human capital resources in ICT projects of Ethio telecom as strongly disagreed, the majority (54.5%) of the respondents indicated that there is adequate human capital resources in ICT projects of Ethio telecom as dis agreed while (36.4%) of the respondents indicated that there is adequate human capital resources in ICT projects of Ethio telecom as neither agreed nor disagreed.

The findings contrast with those of Viedma (2001) who observed that human capital is considered as the potential source of innovation and generation of ideas for the firm, thus providing added value of unquestionable importance. Human capital is recognized as the organization‘s most important intangible resource (Johanson, 2005) by playing a fundamental role in firms in this knowledge-based economy (Sveiby, 2000).

Figure 4.2: Human Capital Resource

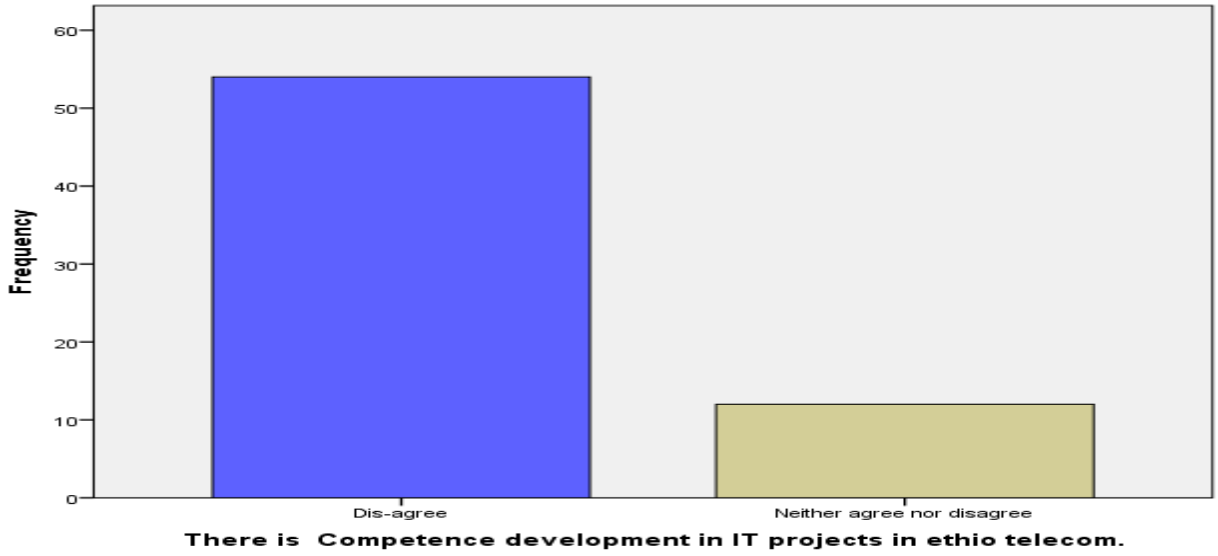


Source: Survey data, 2017

The study sought to evaluate if there is a Competence development in ICT projects of Ethio Telecom. Figure 4.5 shows that the majority (81.8%) of the respondents indicated that there is Competence development in ICT projects of Ethio telecom as dis agreed and the rest (18.2%) of the respondents indicated that there is Competence development in ICT projects of Ethio telecom as neither agreed nor disagreed. This finding contrast with findings of study by Samson and Lema (2005) who found that competence development enhances quality and productivity performance of construction projects.

The study concludes that there is no competence development in ICT projects in Ethio Telecom as depicted by the statistics above even though the researchers stated Competency development enables vertical alignment by aligning organizational, team and individual goals (Cardy & Selvarajan, 2006; Fleury & Fleury, 2005). The competency framework implicates the development of a mutual language throughout the organization, making it possible to translate an organization’s strategy into individual goals and competencies for every employee (Audenaert et al, 2009; Fleury & Fleury, 2005).

Figure 4.3: Competence Development.



Source: Survey data, 2017

User Involvement

The study sought to find out if the users are involved during ICT projects in different stage of the projects at Ethio Telecom. According to Ivana Zuber (2014), when we talk about failed software projects, lack of user involvement is one of the top reasons for software project failures (Viskovic, 2008). It is not enough to finish the project on time and in budget, our end goal is to have the developed software accepted by the users who the software is being developed for. In order to make sure our product will be accepted by end users, we must include them in the development and testing phase.

According to the findings in Requirement stage, the majority (52%) indicated that users are involved during user requirements specification stage of ICT projects as dis agreed, For design stage, the majority (72.7%) indicated that users are involved during design stage of ICT projects as strongly dis agreed and dis agreed, For development stage 95.5% indicated that users are involved during development stage of ICT projects as strongly dis agreed and dis agreed, and For testing stage majority 60.6% reported as disagreed that users are involved at the testing stage of ICT projects for respective questions.

But different findings suggest the opposite. Every software project must begin with a user requirements specification Ivana Zuber (2014). This is a list that contains all the features and specifics of the software that must be included in the end product. Secondly, during development, it is good practice to iteratively deliver numerous software versions to the stakeholders for their review. This way we make sure we are on the right track, we have the users test our product and report any issues or further requirements. Each new software version will contain additional features which will then be tested by stakeholders in the upcoming iteration. Agile methodologies, as explained by Wysocki (2012), support and encourage this kind of development – software is developed in iterations with numerous software versions, and each software version is tested and reviewed by stakeholders. The risk of rejecting the developed software at the end of the development cycle is largely reduced this way.

Table 4.3: Respondents level of Agreement with Statements about the User Involvements

Statement	N	Mean	Std. Deviation
There is an end users Involvement during IT project.	66	2.62	0.67
There is an end users Involvement during requirement specifications stage of IT projects.	66	2.58	0.66
There is an end users Involvement during Design stage of IT projects.	66	2.09	0.67
There is an end users Involvement during development stage of IT projects.	66	1.67	0.56
There is an end users Involvement during testing stage of IT projects.	66	2.48	0.66
Users are communicated about the project status in all project stages.	66	2.30	0.46
The project managers always update the users and he/she manages their expectations throughout the project.	66	1.94	0.63
There is adequate exchange of information among stakeholders.	66	1.92	0.79
There are timely feedbacks to/from project team and to/from users.	66	1.76	0.72
The project managers are concretely plan the communications that allow the project team to share information, actively work to identify issues, conflicts, and interact creatively to resolve these issues.	66	1.82	0.63
Grand Mean		**2.19**	

Source: Survey data, 2017

Findings in Table 4.8 show that Users are communicated about the project status in all project stages in ICT projects of Ethio Telecom to a moderately disagree with mean of 2.30. The standard deviation is .46 implying that majority of the respondents were in dis agreement.

There is adequate exchange of information among stakeholders in ICT projects of Ethio Telecom with a mean of 1.94. The findings are differs with those of Brown (2011) who reported that the goals of effective communication include creating a common perception, changing behaviors and acquiring information. There is timely feedback to/from project team to/from users with a mean of 3.36 was strongly dis agreed upon.

The project managers are concretely plan the communications that allow the project team to share information, actively work to identify issues, conflicts, and interact creatively to resolve these issues is with mean of 1.82.

The findings imply that a failure in communication can negatively impact on the project. Therefore, establishing team communication norms is very important. The project manager must concretely plan the communications that allow the project team to share information, actively work to identify issues, conflicts, and interact creatively to resolve these issues.

Project Monitoring

Table 4.4: Monitoring statement

Statement	N	Mean	Std. Deviation
Top Managements conducts regular review meetings to ensure and monitor the progress of the project.	66	2.94	0.63
The project sponsor evaluation is considered as one of the important component of monitoring during IT projects.	66	2.7	0.83
User assessments are conducted to evaluate the outcome/product during IT projects.	66	1.82	0.55
Corrective actions are always identified to address the issues in IT projects.	66	1.71	0.46
The project managers are involved in monitoring the project variables in IT projects.	66	2.03	0.39
Project managers/ management teams are involved in measuring the ongoing project activities in IT projects.	66	1.73	0.60
Project managers/ management teams involve in measuring the ongoing project activities in IT projects.	66	1.73	0.60
The IT projects always meet project objectives and user descriptions.	66	3.09	0.65
Grand Mean		**2.22**	

Source: Survey data, 2017

Due to corrective actions are always identified to address the issues in IT projects not achieved project performance is affected at Ethio Telecom as shown by a mean of 1.71, The standard deviation is .46 implying that majority of the respondents were in dis agreement.

The project sponsor evaluation is considered as one of the important component of monitoring during IT projects and Project managers/ management teams are involved in measuring the ongoing project activities in IT projects are is very closely linked with project performance affecting factors at Ethio telecom as shown by a mean of 1.7.

User assessments are conducted to evaluate the outcome/product during IT projects with mean of 1.82. The project managers are involved in monitoring the project variables in IT projects with mean of 2.03, The standard deviation is .39 implying that majority of the respondents were in dis agreement. Moreover, some researchers state that more extensive management skills are needed at the buyer‘s side to understand suppliers‘potential to respond to demand signals for project performance (Schapper et al 2006).

4.2. Regression Analysis

In addition, the researcher conducted a linear multiple regression analysis so as to test the relationship among independent variables and dependent variable. The researcher applied the statistical package for social sciences (SPSS) to code, enter and compute the measurements of the multiple regressions for the study.

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.903[a]	0.815	.803	0.2072

Note: The full result for is presented in Appendix -1G

Source: Survey data, 2017

The adjusted R^2 is the coefficient of determination. This value explains how project performance practices varied with project management practices, top management support, user involvement and project monitoring. The four independent variables that were studied, explain 81.5% of the factor affecting ICT projects performance as represented by the R^2. Therefore, a further research should be conducted to investigate the other factors (18.5%) that affects ICT projects performance in Ethio Telecom.

Table 4.6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.556	4	2.889	67.274	.000[b]
	Residual	2.620	61	.043		
	Total	14.176	65			

Source: Survey data, 2017

According to Mugenda & Mugenda, 2003, ANOVA is a data analysis procedure that is used to determine whether there are significant differences between two or more groups or samples at a selected probability level. `An independent variable is said to be a significant predictor of the dependent variable if the absolute t-value of the regression coefficient associated with that independent variable is greater than the absolute critical t-value. In this study, the significance value is .000 which is less than 0.05 thus the model is statistically significant in predicting Project Management Practices, Top Management Support, User Involvement and Project Monitoring.

Table 4.7: Coefficients

Model		Unstandardized Coefficients	t	Sig.
		B		
1	(Constant)	.426	2.134	.037
	Project Management Practices	.150	2.095	.040
	Top Management Support	.289	2.713	.009
	User Involvement	.228	2.159	.035
	Project Monitoring	.501	3.567	.001

Source: Survey data, 2017

The researcher conducted a multiple regression analysis so as to determine the relationship between ICT Software Project Management Performance and the four variables. As per the SPSS generated table above, the equation ($\mathbf{Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \varepsilon}$) becomes:

As per the SPSS generated the established regression equation is:

Y = 0.426+ 0. 150 X1 + 0. 289 X2 + 0. 228 X3 + 0. 501 X4+ ε where:

Y = Dependent Variable

β0 = Intercept (value of Y when X= 0)

β1 = Slope

X1= Project management Practices

X2= Top Management support

X3= User Involvement

X4= Project monitoring

ε = the error

According to the regression equation established, taking all factors into account (Project Management Practices, Top Management Support, User Involvement and Project Monitoring) constant at zero, ICT Project Management Performance will be 0.426. The data findings analyzed also show that taking all other independent variables at zero, a unit increase in Project management Practices will lead to a 0.150 increase in ICT Project Management Performance; a unit increase in Top Management support will lead to a 0.289 increase in ICT Project Management Performance, a unit increase in User Involvement will lead to a 0.228 increase in ICT Project Management Performance and a unit increase in Project monitoring will lead to a 0.501 increase in ICT Project Management Performance.

This infers that project monitoring affects the ICT Project Management Performance more followed by the Top Management support.

At 5% level of significance and 95% level of confidence, Project management Practices had a 0.040 level of significance; Top Management support showed a 0.009 level of significant, User Involvement showed a 0.035 level of significant, Project monitoring had a 0.001 level of significant, and hence the most significant factor is Project monitoring.

CHAPTER FIVE

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. Summary of the findings

The main objective of this study was to assess the factors that affect performance of ICT projects in Ethio Telecom. The results arrived at show that the following factors affected the successful implementation of ICT-Projects in Ethio Telecom in order of ranking:

X4= Project monitoring

X2= Top Management support

X3= User Involvement

X1= Project management Practices

The findings of the study showed a high impact of all the four variables to performance of ICT projects in Ethio Telecom. The study found out that there was 81.5% of corresponding change in determining performance of ICT projects in Ethio Telecom for every change in all the four predictor variables jointly. Test of overall significance of all the four variables jointly, Project management Practices, Top Management support, User Involvement and Project monitoring using ANOVA, at .05 level of significance found the model to be significant.

5.2 Conclusion

From the analysis of the data collected, it can be concluded that:

- There is no significant relation between the descriptive variables; different educational qualification, experience level groups, Service Level groups, and Departments in terms of their performance. Being Staff or Manager or stayed short or long in ISD by itself have no statistically significant evidence to affect the performance level of the ICT project in Ethio Telecom.

- And also there is no sufficient statistical evidence to support significant and positive relationship between departments and education level of the project implementers with the project performance.
- Project monitoring and project performance are significantly and positively related. Furthermore Project monitoring is the highest predictor of factors affecting project performance compared to other factors. So Project monitoring is the main predictor of ICT project performance in Ethio Telecom.
- Top Management support is the second highest predictor of project performance. Thus the data analysis reveals that the project implementers receive very low top management support that should have been received in the form of allocation of financial capital resources, allocation of human capital resources, and allocation of physical capital resources, the competence development, Incentives, Recognition and reward.
- The finding indicates that one of the factors that affect performance in ICT project of Ethio Telecom is User Involvement. Except limited end user involvement during requirement specification and testing stages there is no end user involvement in all stages of project implementation. And it is shown that there is a problem of channels in communication and exchange of information between the project implementer and the end user/stakeholders.
- The finding also indicates that there is positive and statistically significant relationship between Project management Practices and performance. This result shows that Project management Practices is one of the factors affecting project performance in ICT project of Ethio telecom.

5.3. Recommendation

The following recommendations can be drawn from the analysis and conclusions made. It is presented in the reference to factors affecting ICT project of Ethio Telecom.

Project management practice:

- Ethio Telecom should work to improve the project management practice during the project implementation. Project implementer's should follow the project life cycle for the application of appropriate knowledge, processes, skills, tools, and techniques which can have a significant impact on project success of ICT projects.

- Ethio Telecom Project managers should adopt project management practices in their work. They need to get acquainted with project management tools and techniques, know which phase their projects are, plan, monitor and evaluate their projects regularly. This will ensure their projects perform better and when they don't, they can make changes that will yield positive results to the projects.

- Ethio Telecom should have sufficient special technical and project management knowledge and openness to new and effective methods when initiating ICT projects. Staff should be equipped with the specific skills and competencies needed to design and develop software using the appropriate software development process.

Top Management support:

- The finding indicate that projects which have failed were poorly supported and understood by top management, the progress was halted mid-way due to poor interim results. To ensure long-term business vision Ethio Telecom, Top management should support the projects. Beside to this there should be high level interaction among users and IS departments so that to facilitate successful implementation.

- Ethio Telecom top managers should consider project funding, quality of project management, working environment, competency, adequate resources allocation and organization of the project team to enhance the project implementation.

- Training and Development should be conducted for managers, staff and end-users for the success of the IT project.

User Involvement:

- User involvement in different stage is necessary and the lack of it can result in ICT project failure. Many ICT projects fail due to their inability to meet user expectations.

- Effective communication helps stakeholders to understand the objectives and makes them more responsible towards their work. Ethio Telecom should consider that the successful project has a solid communication system between the project sponsors and the project managers and also between project managers and their teams.

- Furthermore, the researcher study recommends that there should be a clear and adequate plan for communication. This will help shorten the time taken to resolve issues or conflicts during project implementation.

Project Monitoring:

- Ethio Telecom should have effective and adequate monitoring mechanism for the quality of the project. Effective control can help in reducing the planned time and ambiguity. Project monitoring should be done on all stages of the project for ICT projects by considering the dynamism of technology. And it should be proactive, i.e. must be used to prevent incidents and provide regular feedback.
- In monitoring projects, sponsor evaluation of the investment should be handled in tandem with outcomes and assessment of the project product.

- In addition, speed in deployment of project resources, adequacy of project scheduling and project stakeholders understanding of project timelines must be seriously considered.

- Policy and practice for project performance should be carefully evaluated and the results of that evaluation feed back into improved approaches. It is important that the evaluation considers the full range of costs and benefits.

- Moreover, project product delivery, budget delivery and time delivery should be placed in line with the project goals and objectives.

- The study recommends that Ethio Telecom ICT projects should address project scope, budgeting and project scheduling to reduce delays in project implementation.

- Project performance initiatives appear to be instrumental for improving organizational performance, by harmonizing purchases, launching co-ordination initiatives, setting standards and building skills. As such, the management of the Ethio Telecom should adopt project performance initiatives. However, the main focus of project performances should be to reduce risk of rejecting the developed software at the end of the development cycle.

5.4. Limitation and Implications for further research

While these results are valuable, the limitation of this study must also be considered. A potential limitation of this research is the possibility that the results are not generalizable due to the particular industry it studied. Since the questionnaire survey instrument was employed through Likert rating scale some of the dependent variable i.e. project performance statements responded according to the respondent's perception. The population considered of ICT project implementers only, but it is feasible the relations among these variables are quite different for project implementers in other environments such us Construction projects, engineering projects, etc.

Therefore, the results have to be interpreted taking this limitation into account. Future studies can examine the proposed relationships by bringing some contextual variables and additional dimensions into the model in order to fill the observed gap.

REFERENCES

Alex Randell, Eric Spellman, William Ulrich, and Jeff Wallk (2014) Leveraging Business Architecture to Improve Business Requirements Analysis. Business Architecture guide.

Awatif Amin Qassim, (2006) why information systems projects fail: Guidelines for Successful Projects. Information Technology Department State Audit Institution – Oman

Bekkers, V., &Zouridis S. (1999). Electronic Service Delivery in Public Administration: some trends and issues. International Review of Administrative Sciences, 65(2): 183-195.

Big Jump, Review Magazine (2015) A comprehensive Growth and transformation Plan 1, Published by Wafa marketing nd promotion p.l.c

Chua, H. F., Gonzalez, R., Taylor, S. F., Welsh, R. C., & Liberzon, I. (2009). Decision-related loss: regret and disappointment. Neuroimage, 47, 2031–2040.

Cooper, D., &, Schind1er, P.S (2008). Business Research Methods. New Delhi, Tata McGraw HillKatz (1992)

Creswell, J. W. (2005). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (2nd ed.). Upper Saddle River, NJ: Pearson Education.

Curlee, W. and Gordon, R. (2010). Complexity theory and project management. Hoboken, NJ: Wiley.

Curlee, W. and Gordon, R. (2011). Complexity Theory and Project Management. John Wiley & Sons, New Jersey, USA

Dess, G. G. and Picken, J. C. (2000). „Changing roles: leadership in the 21st century". Organizational Dynamics.

Dr. Lishan Adam, (2012) What is happening in ICT in Ethiopia, Research ICT Africa.net

Flyvbjerg, B. and Budzier, A. (2011): "Why Your IT Project Might Be Riskier Than You Think", Harvard Business Review, September 2011. (Mueller-Jacobs &Tuckwell, 2012; Kyunguti&Makau, 2014)

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

Gholami, R, Emrouznejad, A & Schmidt, H 2008 'The impact of ICT on productivity of airline industry' Aston Business School research papers, no. RP0809, Aston University, Birmingham (UK). (Pollack & England, 2007).

Harold Kerzner, (2009) A Systems Approach to Planning, Scheduling, and Controlling 10th edition, published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Hazy JK and Uhl-Bien M (2013) changing the rules: The implications of complexity science for leadership research and practice.

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

Kettinger, W. J., and Lee, C. C. "Pragmatic Per-spectives on the Measurement of Information Systems Service Quality," MIS Quarterly (21:2), 1997, pp. 223-240.
KPMG Canada Survey, 1997

Leveraging Business Architecture to Improve Business Requirements Analysis.

Mugenda, O. M. and Mugenda, A. G. (2003). Research Methods: Quantitative and Qualitative Approaches. African Centre for Technology Studies, Nairobi, Kenya.

Mugenda, O.M and Mugenda, A.G (2006) Research Methods, Quantitative & Qualitative Approaches, Acts Press, Nairobi.

Ngugi, J. K. (2013). "Influence of Intellectual Capital on the Growth of Small and Medium Enterprises in Kenya". Unpublished PhD Thesis Jomo Kenyatta University of Agriculture and Technology.

PMI (2008): "A Guide to The Project Management Body of Knowledge -PMBOK (r) Guide – Fourth edition", Project Management Institute, pmi.org, 2008,

Project Management Institute, 2004, p. 5

Reisman, Jane, Anne Gienapp, and Sarah Stachowiak (2007). A Guide to Measuring Advocacy and Policy. Organizational Research Services for the Annie E. Casey Foundation. Baltimore, Maryland (USA).

Robert L. Cardy, T.T. Selvarajan (2006) Competencies: Alternative frameworks for competitive advantage

Samson, M.; Lema, N. M. (2005). Development of construction contractors' performance measurement framework. Department of Construction Technology and Management, University of Dares Salaam, Tanzania.

Schapper, P. R., Malta, J. N. V., & Gilbert, D. L. (2006). An analytical framework for the management and reform of public procurement. Journal of Public Procurement, 6(1&3), 1-26.

Sveiby, K.E. (2000): Measuring intangible assets – an emerging standard, available at: http://www.sveiby.com.au/articles/EmergingStandard.html

Telecom Magazine (2008), Article 3, no. 2, Ethio Telecom quarterly Magazine,

Vidal, L.-A., & Marle, F. (2008). Understanding project complexity: implications on project management.

Viedma, J.M. (2001), "ICBS Intellectual Capital Benchmarking System", Journal of Intellectual Capital, MCB University Press, England.

Viskovic, D, Varga, M, & Curko, K 2008, 'Bad practices in complex IT projects', ITI 2008

Wiklund, J., & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: a configurational approach. Journal of Business Venturing. 20(1), 71-89.

Wysocki, RK 2012, Effective Project Management [Electronic Book] Traditional, Agile, Extreme / Robert K. Wysocki, n.p.

Yang, J. and Papazoglou, M. P. (2012) Interoperation Support for Electronic Business. Communications of the ACM 43(6): 39-47

APPENDIX 1: RESULT OF SPSS

Appendix 1A: Cronbach's Alpha

Reliability

Scale: Project management Practice

Case Processing Summary

		N	%
Cases	Valid	10	100.0
	Excluded[a]	0	.0
	Total	10	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.924	7

Reliability

Scale: Top management Support

Case Processing Summary

		N	%
Cases	Valid	10	100.0
	Excluded[a]	0	.0
	Total	10	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.944	8

Reliability
Scale: User Involvement

Case Processing Summary

		N	%
Cases	Valid	10	100.0
	Excluded[a]	0	.0
	Total	10	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.951	10

Reliability
Scale: Project Monitoring

Case Processing Summary

		N	%
Cases	Valid	10	100.0
	Excluded[a]	0	.0
	Total	10	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.901	8

Reliability

Scale: Project Management Performance

Case Processing Summary

		N	%
Cases	Valid	10	100.0
	Excluded[a]	0	.0
	Total	10	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.758	7

Appendix 1B: Predictive Validity

Correlations

Correlations

		PmPractice	TopMgt	UserInvolve	Pmonitoring	Pmperformance
PmPractice	Pearson Correlation	1	.325**	.675**	.685**	.683**
	Sig. (2-tailed)		.008	.000	.000	.000
	N	66	66	66	66	66
TopMgt	Pearson Correlation	.325**	1	.614**	.633**	.670**
	Sig. (2-tailed)	.008		.000	.000	.000
	N	66	66	66	66	66
UserInvolve	Pearson Correlation	.675**	.614**	1	.855**	.837**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	66	66	66	66	66
Pmonitoring	Pearson Correlation	.685**	.633**	.855**	1	.868**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	66	66	66	66	66
Pmperformance	Pearson Correlation	.683**	.670**	.837**	.868**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	66	66	66	66	66

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

Appendix 1C: Implementers' Profile

Frequency Table

Educational Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor Deg	47	71.2	71.2	71.2
	Post Graduate Degree	19	28.8	28.8	100.0
	Total	66	100.0	100.0	

Employee Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Staff	47	71.2	71.2	71.2
	Manager	15	22.7	22.7	93.9
	Officer	3	4.5	4.5	98.5
	Chief Officer	1	1.5	1.5	100.0
	Total	66	100.0	100.0	

Years stayed at the IS division

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-3	5	7.6	7.6	7.6
	4-6	19	28.8	28.8	36.4
	7-10	24	36.4	36.4	72.7
	Above 10 Yrs	18	27.3	27.3	100.0
	Total	66	100.0	100.0	

Your department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	IT Strategy and Program Management	11	16.7	16.9	16.9
	IT Service Design	23	34.8	35.4	52.3
	IT Service Transition	31	47.0	47.7	100.0
	Total	65	98.5	100.0	
Missing	System	1	1.5		
Total		66	100.0		

Appendix 1D: Descriptive

Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PmPractice	66	1.43	3.57	2.2424	.52322
TopMgt	66	1.88	2.75	2.2689	.32688
UserInvolve	66	1.60	3.00	2.1182	.49828
Pmonitoring	66	1.75	3.00	2.2178	.38873
Pmperformance	66	1.71	4.00	3.0108	.46700
Valid N (listwise)	66				

Appendix 1E: Independent sample T-Tests

T-Test

Group Statistics

	Educational Qualification	N	Mean	Std. Deviation	Std. Error Mean
Pmperformance	Bachelor Deg	47	3.0091	.45993	.06709
	Post Graduate Degree	19	3.0150	.49692	.11400

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pmperformance	Equal variances assumed	.775	.382	-.046	64	.963	-.00592	.12795	-.26152	.24968
	Equal variances not assumed			-.045	31.164	.965	-.00592	.13228	-.27564	.26380

Appendix 1F: ANOVA

One way

Descriptive

Pm performance

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Staff	47	3.0091	.48253	.07038	2.8674	3.1508	1.71	4.00
Manager	15	3.0095	.48133	.12428	2.7430	3.2761	2.29	4.00
Officer	3	3.0952	.29738	.17169	2.3565	3.8340	2.86	3.43
Chief Officer	1	2.8571	.	.	.	.	2.86	2.86
Total	66	3.0108	.46700	.05748	2.8960	3.1256	1.71	4.00

ANOVA

Pm performance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.045	3	.015	.066	.978
Within Groups	14.131	62	.228		
Total	14.176	65			

Descriptive

Pm performance

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
0-3	5	3.0571	.54958	.24578	2.3747	3.7395	2.43	3.71
4-6	19	2.9323	.56818	.13035	2.6585	3.2062	1.71	4.00
7-10	24	2.9702	.42122	.08598	2.7924	3.1481	2.29	3.71
Above 10 Yrs	18	3.1349	.39344	.09273	2.9393	3.3306	2.57	4.00
Total	66	3.0108	.46700	.05748	2.8960	3.1256	1.71	4.00

ANOVA

Pm performance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.445	3	.148	.669	.574
Within Groups	13.731	62	.221		
Total	14.176	65			

Descriptive

Pm performance

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
IT Strategy and Program Management	11	3.1039	.38381	.11572	2.8460	3.3617	2.57	3.71
IT Service Design	23	2.9689	.52570	.10962	2.7416	3.1963	1.71	4.00
IT Service Transition	31	3.0138	.46416	.08337	2.8436	3.1841	2.29	4.00
Total	65	3.0132	.47024	.05833	2.8967	3.1297	1.71	4.00

ANOVA

Pmperformance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.136	2	.068	.300	.742
Within Groups	14.016	62	.226		
Total	14.152	64			

Appendix 1G Frequency Table

Project management Significant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	13	19.7	19.7	19.7
	Neither agree nor disagree	28	42.4	42.4	62.1
	Agree	20	30.3	30.3	92.4
	Strongly Agree	5	7.6	7.6	100.0
	Total	66	100.0	100.0	

Project management life cycle (Initiation, planning, execution, monitoring and closure) is used during IT project implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dis-agree	34	51.5	51.5	51.5
	Neither agree nor disagree	27	40.9	40.9	92.4
	Agree	5	7.6	7.6	100.0
	Total	66	100.0	100.0	

Project charter is easily available/ accessible in Ethio telecom.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dis-agree	50	75.8	75.8	75.8
	Neither agree nor disagree	11	16.7	16.7	92.4
	Agree	5	7.6	7.6	100.0
	Total	66	100.0	100.0	

Project works are broken down to manageable deliverables in your organization.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	7	10.6	10.6	10.6
	Dis-agree	48	72.7	72.7	83.3
	Neither agree nor disagree	11	16.7	16.7	100.0
	Total	66	100.0	100.0	

Clear Project evaluation and review techniques are practiced in ethio telecom.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	7	10.6	10.6	10.6
	Dis-agree	45	68.2	68.2	78.8
	Neither agree nor disagree	14	21.2	21.2	100.0
	Total	66	100.0	100.0	

A Gantt chart is effectively used to follow up projects in ethio telecom.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	28	42.4	42.4	42.4
	Dis-agree	33	50.0	50.0	92.4
	Neither agree nor disagree	5	7.6	7.6	100.0
	Total	66	100.0	100.0	

SWOT analysis is used to evaluate the projects in ethio telecom.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	33.3	33.3	33.3
	Dis-agree	39	59.1	59.1	92.4
	Neither agree nor disagree	5	7.6	7.6	100.0
	Total	66	100.0	100.0	

Appendix 1H Linear Regression Analysis

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Pmonitoring, TopMgt, PmPractice, UserInvolve[b]	.	Enter

a. Dependent Variable: Pmperformance

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.903[a]	.815	.803	.20723

a. Predictors: (Constant), Pmonitoring, TopMgt, PmPractice, UserInvolve

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.556	4	2.889	67.274	.000[b]
	Residual	2.620	61	.043		
	Total	14.176	65			

a. Dependent Variable: Pmperformance

b. Predictors: (Constant), Pmonitoring, TopMgt, PmPractice, UserInvolve

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.426	.200		2.134	.037
	PmPractice	.150	.072	.168	2.095	.040
	TopMgt	.289	.107	.202	2.713	.009
	UserInvolve	.228	.105	.243	2.159	.035
	Pmonitoring	.501	.140	.417	3.567	.001

a. Dependent Variable: Pmperformance

APPENDIX 2: QUESTIONNAIRE ITEMS

St. Mary's University

School of Graduates

Master of Project Management

QUESTIONNAIRE

Dear respondents, the purpose of this questionnaire is to gather data on factor affecting information technology (IT) Project management performance in the case of Ethio telecom. The study is purely for academic purpose and thus not affects you in any case. So, your genuine, frank and timely response is vital for successfulness of the study. Therefore, I kindly request you to respond to each items of the question very carefully.

In order to investigate the performance of projects in ethio telecom, the researcher prepared the following questions with regard to IT development projects, please tick (√) on the appropriate question number to indicate the extent to which you agree or disagree with each statement.

The item have five-point Likert type scales, the scales have the following meaning

1 = strongly disagree, 4 =agree,
2 = disagree, 5 = strongly agree,
3 = neither agree nor disagree,

General Instructions

- There is no need of writing your name
- Where answer options are available please tick (√) in the appropriate box.

Contact Address

If you have any query, please do not hesitate to contact me and I am available as per your convenience at (Mobile: 0911-51-03-96 or e-mail: *'tgsanja@gmail.com'*)

Thank you in advance for scarifying your precious time!

PART I: Demographic Information

1. Educational Qualification:

- Certificate/diplomas
- Bachelor's degree
- Post Graduate degree
- Doctorate degree

2. Employee Level

- Staff
- Manager
- Officer
- Chief officer

3. Years stayed at the IS division:

- 0-3 Years
- 4-6 Years
- 7-10 Years
- Above 10 years

4. Your department:

- IT Strategy and Program Management
- IT Service Design
- IT Service Transition

Part II: Question related to project management

1. Project Management practices		**Strongly Disagree (1)**	**Dis-agree (2)**	**neither agree nor disagree (3)**	**Agree (4)**	**Strongly Agree (5)**
1.1	Project management practices significantly improve performance of IT projects of ethio telecom.					
1.2	Project management life cycle (Initiation, planning, execution, monitoring and closure) is used during IT project implementation					

1.3	Project charter is easily available/ accessible in ethio telecom.					
1.4.	Project works are broken down to manageable deliverables in your organization.					
1.5	Clear Project evaluation and review techniques are practiced in ethio telecom.					
1.6	A Gantt chart is effectively used to follow up projects in ethio telecom.					
1.7	SWOT analysis is used to evaluate the projects in ethio telecom.					
2. Top management Support		**Strongly Disagree (1)**	**Dis-agree (2)**	**neither agree nor disagree (3)**	**Agree (4)**	**Strongly Agree (5)**
2.1	The Financial and capital resources are fully allocated in IT projects of ethio telecom.					
2.2	There is adequate human capital resources available in IT projects of ethio telecom.					
2.3	There is adequate physical capital resources available in IT projects in ethio telecom.					
2.4	There is Competence development in IT projects in ethio telecom					
2.5	The selection of project manager is based on required technical expertise, management experience and interpersonal skills to successfully manage the IT projects of ethio telecom.					
2.6	The TOP management provides incentives to the team members.					
2.7	The Top management of ethio telecom always supported the IT projects by ensuring the availability of resources to increase the employee commitment towards the project.					

2.8	Adequate recognition and reward is given to the project team members upon the successful completion of the project.					
3. User Involvement		**Strongly Disagree (1)**	**Dis-agree (2)**	**neither agree nor disagree (3)**	**Agree (4)**	**Strongly Agree (5)**
3.1	There is an end users Involvement during IT project.					
3.2	There is an end users Involvement during requirement specifications stage of IT projects.					
3.3	There is an end users Involvement during Design stage of IT projects.					
3.4	There is an end users Involvement during development stage of IT projects.					
3.5	There is an end users Involvement during testing stage of IT projects.					
3.6	Users are communicated about the project status in all project stages.					
3.7	The project managers always update the users and he/she manages their expectations throughout the project.					
3.8	There is adequate exchange of information among stakeholders.					
3.9	There are timely feedback to/from project team and to/from users.					
3.10	The project managers are concretely plan the communications that allow the project team to share information, actively work to identify issues, conflicts, and interact creatively to resolve these issues.					

4. **Project Monitoring**		**Strongly Disagree (1)**	**Dis-agree (2)**	**neither agree nor disagree (3)**	**Agree (4)**	**Strongly Agree (5)**
4.1	Top Managements conducts regular review meetings to ensure and monitor the progress of the project.					
4.2	The Top managements follow all projects with the customer, in order to determine general customer satisfactions.					
4.3	The project sponsor evaluation is considered as one of the important component of monitoring during IT projects.					
4.4	User assessments conduct to evaluate the outcome/product during IT projects.					
4.5	Corrective actions are always identified to address the issues in IT projects.					
4.6	The project managers involve in monitoring the project variables in IT projects.					
4.7	Project managers/ management teams involve in measuring the ongoing project activities in IT projects.					
4.8	The IT projects always meet project objectives and user descriptions.					

III. IT Project Management Performance

3. IT Project Management Performance		Strongly Disagree (1)	Dis-agree (2)	neither agree nor disagree (3)	Agree (4)	Strongly Agree (5)
3.1	In ethio telecom, IT Projects meet the expected objectives of the project.					
3.2	In ethio telecom, IT projects are delivered on time.					
3.3	In ethio telecom, IT projects are delivered within budget.					
3.4	In ethio telecom, IT projects meet the required specification.					
3.5	In ethio telecom, IT projects are delivered based on the requirement and based on expected standard.					
3.6	In ethio telecom, IT projects are delivered based on the prepared Scope of work.					
3.7	In ethio telecom, End users of IT projects are always satisfied by the delivery of projects.					