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ASSESMENT OF PROJECT RISK MANAGEMENT PRACTICES

IN ETHIO –TELECOM:

THE CASE OF LTE ADVANCED PROJECT

BY: EYERUS GEZAHEGN

ADVISOR: MULUADAM ALEMU (PHD)

JUNE, 2023

Addis Ababa, Ethiopia

ST. MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF PROJECT MANAGEMENT

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A RESEARCH PROJECT SUBMITTED TO ST. MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN PROJECT MANAGEMENT.

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Statement of Declaration

I hereby declare that **Assesment Of Project Risk Management Practices In Ethio –Telecom: The Case Of LTE Advanced Project** is project which wholly was the work of **Eyerus Gezahegn.** I have carried out the present study independently with the guidance and support of the research advisor, **Dr. Muluadam Alemu.** Any other contributors or sources have either been referenced in the prescribed manner or are listed in the acknowledgements together with the nature and the scope of their contribution. And the study has not been submitted for award of any Degree or Diploma Program in this or any other Institution.

Eyerus Gezahegn

Signature _____

Date _____

Date: June, 2023

Addis Ababa, Ethiopia

APPROVAL

This is to certify that this thesis entitled **— Assesment of Project Risk Management Practices In Ethio – Telecom: The Case Of LTE Advanced Project by Eyerus Gezahegn** submitted in partial fulfillment of the requirement for the award of the Degree of Masters of Arts in Project Management, submitted to St. Mary's University graduate studies department of Project Management under my guidance and supervision.

Name of Advisor_____

Signature _____

Date _____

Date: June, 2023

Addis Ababa, Ethiopia

St. Mary's University School Of Graduate Studies

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ID: SGS/0357/2014A

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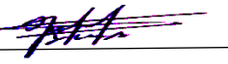
Dean, Graduate Studies	**Signature**
Muluadam Alemu (Phd)	
Advisor	**Signature**
Yilkal Wassie (Asset Prof)	
External examiner	**Signature**
Internal examiner	**Signature**

Date: June, 2023

Addis Ababa, Ethiopia

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ABSTRACT

This study sought to determine the practice of project risk management practices such as risk planning, risk identification, risk analysis, risk response strategies, risk monitoring and control and risk management as knowledge base regarding Ethio – telecom in the project of LTE advanced . Hence, the study was used descriptive designed and mixed approach. Primary data including survey questionnaire and semi structured interview were used for the purpose of the study; and its validity and reliability were then evaluated. The gathered information was analyzed using SPSS version 27.1.0. The questionnaire was distributed to 36 participants and collected for quantitative analysis.. Descriptive statistics in the form of percentages and mean score were used to analyze the quantitative data ; the open ended questionnaire analyzed qualitatively. Findings from the study revealed that risk management practices have been applied moderately in the sample projects. While the study findings encourage project executives to develop knowledge bases for risk management in the sample projects, as well as the corresponding tools. The findings of the practice indicated that risk management plan tools like expert judgment, meetings or others and relevant stakeholders were involved for risk planning. The risk identification process revealed that methods like information gathering and assumption analysis were used to identify project risks. Results in risk analysis process imply that risk characteristics were considered, All the risk response were not exercised moreover, there was not well-developed strategy that considered factors such as budget, schedule and resources and quality while responding to risk. The practice of risk monitoring and controlling was not effective because project performance was not evaluated against risk. There was not transparent communication, periodic review and response audit of the project risk. The overall outcome of the study indicates it was proved that risk planning were effectively applied in the project. risk identification and risk analysis were the moderately risk management practices in the company. whereas risk response and risk monitoring and controlling were considered as the least used practices. Finally, due to the low application of risk management practices as well as there is a gap between the theory of project risk management and the actual practice that is performed in the projects , the study concluded that there should be a need to create more awareness on project risk management practices.

***Key words**: project risk management practice, knowledge management, IT project.*

ACRONYMS

PRM	Project Risk Management
PMBOK	Project Management Body of Knowledge
RM	Risk Management
PRP	Project Risk Planning
PRI	Project Risk Identification
PRA	Project Risk Analysis
PRR	Project Risk Response
PRMC	Project Risk Monitor and Control
RMK	Risk Management as Knowledge Base
IT	Information Technology

CHAPTER ONE

INTRODUCTION

1 Back ground of the study

Information and Communication Technology is believed to play an important role in development. However, the success of Information Technology projects may be affected by multiple factors, inhibiting them from achieving their objectives and bringing the aspired change. One of the factors that affect project success is risk (Alhawariet al.,2012;Bakkeret al.,2010; Bhatia & Kapoor,2011; Boehm,1991).

Successful project management is the desirable outcome of Telecomm operators in carrying out various modernization projects. Information Communication Technology (ICT) project success or failure has long been of interest to researchers over the past 2 decades. High failure rates of ICT projects were attributed to completion beyond budget, behind schedule, and without meeting requirements. The McKinsey Global Institute (MGI) reported that in 2012, on average, large IT projects ran 45 per cent over budget and 7 per cent over time, while delivering 56 per cent less value than predicted. Standish group (2014) reported that only 12% of projects had finished on time and within the budget. According to Taylor & Artman (2012), 70% of software projects fail due to poor requirements with an associated rework spends above $45 billion annually. Jenner (2015) elaborated on depressing project failure rates between 50% and 70%. With these high failure rates, it is not surprising that several studies have been done to understand the factors related to ICT project success. Among several factors, risk management has been identified as one of the important factors that affected project success. Levinson (2010) mentioned that risk management was a key part of project management for any project size.

Indeed, the awareness of project risks and the need to manage them has become one of the areas of interest to researchers and practitioners in the recent past and is one of the main areas of the PMI project management body of knowledge (PMBOK) as well as the body of knowledge of the Association of project management (APM) of the UK (Shenhar & RAZ, 2002). Project risk management includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project, the objectives of which are to increase the likelihood and impact of positive events, and decrease the likelihood and impact of negative events in the project (PMI, 2013). According to Woods (2011), the process of risk management involves five main steps: (1) Identification, (2) Assessment, (3) Treatment or Response, (4) Reporting and (5) Controlling or Monitoring. Risk management provides a framework for organizations to deal with and to react to uncertainty. Whilst it is acknowledged that nothing in life is certain, the modern practice

of risk management is a systematic and comprehensive approach, drawing on transferable tools and techniques (The Institute of Risk Management, 2010). Bakker *et al.* (2012) emphasize the importance of risk identification as the most influential process in terms of numbers as well as in the strength of communications effects, followed by risk reporting, risk registration and risk allocation, risk analysis, and finally risk control. At the same time, the definition of project success is evolving. The traditional measures of scope, time, and cost are no longer sufficient in today's competitive environment (PMI, 2017). The ability of projects to deliver what they set out to do—the expected benefits—is just as important. Therefore, in determining project success, benefits realization maturity is considered as well as the traditional criteria.

This research will address the growing need to develop project risk management in ethio-telecom, which in turn will help in shaping the goals of the current and future. Ethio-telecom is a government organization and project-based telecom sector. Over the years, ethio-telecom have committed a lot of manpower and capital towards expanding network capacity and improving customer Quality of Service (QoS) by ensuring ubiquitous service wherever and whenever the need beckons. This company is growing at a phenomenal rate. On a daily basis, there is a continuous inflow of mobile users and sophisticated devices into the existing mobile network. This has triggered a meteoric rise in mobile traffic; forcing the company to embark on a series of projects to increase the capacity and coverage of mobile networks throughout Ethiopia in line 2 with growing traffic demands and to meet reliable QoS. As a last resort, LTE-Advanced project is one of a critical project in ethio-telcom to provide better quality of service, to provide high data service, to meet the expected revenue and will support for competitive advantage.

Risk management is considered to be an important component of ICT project management. Numerous studies have been conducted on the topic. However, in spite of its importance, literature shows that it is the least practiced (Mnkandla, 2012; Sanchez et al., 2009; Royer, 2000). However, despite the wide research coverage of risk management, much has not been said on risk management practice in LTE advanced network project in Ethiopia.

1.1 Problem statement

Ethio telecom is investing hugely in mobile technologies to provide services to its end-users. However, technologies deployed without detailed investigation and decisions are made deprived of techno-economic analysis. Such traditions contributed to observed system performance and efficiency problems such as interference, reduced capacity and Introduction. Techno-Economic Investigation of LTE-Advanced Deployment for Addis Ababa, Ethiopia under utilization, for example in 3G and LTE networks that affects Quality of Service (QoS), degrade end-user experience, wastage of resources and stimulate ethio telecom from

getting more revenue and causes a high CAPEX and OPEX cost.Furthermore, the impact stemmed from lack of proper assessment ranges from individual to national stage as benefit of mobile broadband stretch from personal development to high contribution to country's Growth Domestic Product (GDP) and affects Ethiopia's Growth and Transformation Plan (GTP), as the telecom sector is part of the development plan, consequently showing importance of reviewing technologies techno-economically.(2023)

Several research results indicate that poor risk management is a likely cause of project problems and failures. Jun, Qiuzhen & Qingguo (2010) investigated the effects of project risk planning on ICT project performance focusing on a case of China vendor firms. The study sought to test the hypothesis; Project risk planning and control makes a greater significant positive contribution to project performance at low levels of inherent uncertainty than at high levels. The study found that there exists a significant positive relationship between project risk planning and project performance.

While focusing of Kenya using IT project, Kinyuaogollah and Mburu (2015) did an appraisal of strategies of managing risk and their implication on performance of the projects. The study registered existence of positive nexus between the strategies of managing risk and performance of the project. In the study of Kuhn and Visser (2014) in 20 mining projects in South Africa. The results indicated that project teams used only a few of the tools and techniques that were available for risk identification, qualitative risk analysis, and quantitative analysis. In addition, uncertainties relating to the project were not well understood or managed.

The study by Eshetu (2017) in the paper compares the road construction risk management practices of Local and International road contractors in Ethiopia and recommends possible ways of improving the practice of road construction risk management. The study investigated that there is limited understanding of road construction risk management practices among the local stakeholders.while focusing risk in IT project in Ethiopia, Gumataw (2019) conducted a study on the effect of project risk management practice and project organization on IT projects success in ethio telecom to examine if the theoretical risk management process is being practiced appropriately and effectively. The researcher found that although the project was very risky, risk management was being practiced very poorly and a huge gap was noticed between what should be theoretically applied and what was being practiced in the projects.

Including the study conducted by Abeselom & Mankandla, (2017) risk management practice on software project in Ethiopia. It also investigates the level of adoption of formal risk management models and which steps are included in the ad-hoc risk management exercise. Finally, it looks into the relationship between risk management practice and project success. They conducted a survey of 45 banks, insurance companies and United Nations agency offices in Addis Ababa, Ethiopia. The finding of a very low rate of application of formal risk management models was observed. And different perception of risk management whereby only watching

projects to see if any risks occur during implementation without performing risk identification and mitigation or response plan was considered as a risk management practice by project managers. It was also found that some project managers were not able to confidently tell whether risk management processes have taken place in the projects they manage.

The reviewed study creates gaps some like Jun, Qiuzhen & Qingguo (2010) were done in other country like China while Kuhn and Visser (2014) conducted their study in South Africa that are relatively advanced as compare to Ethiopian. Other studies were conducted focusing of different projects. Kuhn and Visser (2014) they focused on mining project and Eshetu (2017) who focused on construction project which is away from IT project having a contextual difference. In similar vein, Abeselom & Mankandla (2017) and Gumataw (2019) were conducted research on IT project but in totality not specific to project. So very little is known about the role of risk management practice in IT project in Ethiopia thus the current research conducted to fill issue gap.

1.2 Research question

1. Is risk management recognised as a knowledge base among LTE advanced project experts?
2. How well is risk management practice applied in LTE advanced projects?
3. To what extent is risk management understood by Ethio-telecom?

1.2.1 General objective:

- To assess project risk management practice of Ethio-Telecom for LTE advanced project

1.2.2 Specific objective:

1. To assess risk management as knowledge base among LTE advanced project expert
2. To examine project risk management planning, identification, analysis, response planning, and monitoring and controlling that applied in LTE advanced project.
3. To find out risk management understood by Ethio- telecom for LTE advanced project.

1.3 Significance of the study

The finding of the study will be beneficial to the following: The study benefits the governmental authority and police makers in terms of providing input for policy makers to improve the overall understanding of risk management practices for different projects. Including the contract workers, improve their knowledge about the way of risk management.

It will also benefit Ethio-Telecom for the LTE advanced project: by enhance the way of managing delay, cost overrun, schedule overrun, and less quality of performance by managing risk within the right time using the accepted guideline.

Future researchers: this study adds knowledge to the existed practice of risk management and serves as a very beginning for further study. It will be developed and used as a benchmark for evaluation and improvement.

1.4 Scope and limitation of the study

The scope of the research is delimited to the Ethio-Telecom LTE advanced project that was deployed in their head office, Addis Ababa. This specific project was an ongoing project. This study assess or explain the practice of project risk management such as risk planning, risk identification, risk analysis, risk response, risk monitor and control processes, and knowledge management all with regard to Effective risk management. Had 36 Sample respondents from network division in Ethio-telecom within the project using the descriptive research method. Moreover, the limitation of this study is the methodology of the sampling procedure: census form of sampling.

1.5 Definition of terms

Risk management practice: It is the practice of systematically thinking about all possible outcomes before they happen and defining procedures to accept, avoid, or minimize the impact of risk on the project. IT risk management is the application of risk management methods to manage IT threats.

Risk planning: the process of identifying, prioritizing, and managing risk.

Risk identification : a set of activities that detect, describe and catalog all potential risks to assets and processes that could have negatively impact business outcomes.and it covers the tools and techniques for identifying risks.

Risk analysis : it includes qualitative and quantitative analysis of risks, risk assessment and allocation. An IT risk analysis helps businesses identify, quantify and prioritize potential risks that could negatively affect the organization's operations.

Risk response planning: it involves the avoidance, transfer, mitigation or acceptance of the risk once they have been identified and analyzed.

Risk monitoring and control: it includes risk audit, risk tracking & status corrective course of action and period reporting. In general refers to the process of continuously identifying risks and establishing the best methods of dealing with those risks.

1.6 Organization of the study

Chapter One: Introduction .This chapter contain background of the study, statement of the problem, basic research questions, objectives of the study, significance of the study, and delimitation/scope of the study. Chapter Two: Literature Review: This chapter deals with the literature relevant to study beside the presentation of conceptual framework. Chapter Three: Research design and Methodology Under this chapter, the research methodology are described including the type and design of the research; the subjects/participant of the study; the sources of data; the data collection tools/instruments employed; the procedures of data collection and the methods of data analysis.finding and presentation are detailed in chapter four and a summary discussion, conclusion & recommendation are addressed in the fifth chapter. Finally, Reference and annex also provided in the final part of the paper.

CHAPTER TWO

LITERATURE REVIEW

2 Theoretical Review

2.1.1 Risk management and knowledge management

According to Neef (2005), an organisation cannot effectively manage its project risks if it does not manage its knowledge. For Cooper (2003), knowledge is one of the most powerful tools in managing risks in projects. Such proclamations provide valuable relations between knowledge management and risk management in projects. Several projects were unsuccessful because of the risk of lack of knowledge while the project was progressing or lack of knowledge among the project team (Neef, 2005). Fuller et al. (2008) conclude that project failure can be the consequence of capturing the appropriate knowledge at an inappropriate phase of the project. In fact, without knowledge management tools to communicate project risks among project teams, risk management might suffer from inefficiencies and ineffectiveness (Schwalbe, 2011). Furthermore Fuller et al. (2008) postulate that the application of knowledge management processes to support risk management processes in projects has the potential to mitigate the likelihood of risks iteratively, improving the probability of effective project execution. The point here is that it is important for an organisation to prioritise knowledge infusion of risk management in projects that would require the creation, capturing and sharing of knowledge (knowledge base) related to potential project risks.

2.1.2 Risk management process

Risk management in IT projects is an iterative process involving risk identification, analysis, assessment and risk response planning, monitoring and control, which carries on throughout the project lifecycle (Brandas et al., 2012). In order to manage complex issues associated with IT projects, Kwak and Stoddard (2004) recommend the implementation of a formal risk management process. In addition, Richardson (2010) highlights that this process needs to be proactive throughout the project lifecycle in order to remain effective. Broadly speaking, such aprocess involves the planning, monitoring and control of risks in a project. During project planning, risk management encompasses developing project risk plans, identifying risk, performing qualitative and quantitative risk analysis and determining how to respond to these risks (Project Management Institute (PMI), 2008). Furthermore, Huang and Han (2008) follow a similar approach when they highlight that risks need to be quantified, and that their impact on performance of the project must be evaluated together with the development of strategies of control. Interlinked to this is a view by Hubbard (2009), who highlight that risk management is the identification, assessment and prioritisation of risks followed by effective and efficient

resource application to maximise the realisation of opportunities and reduce, control and monitor the likelihood and/or impact of events.

2.1.3 Risk management in IT projects

What needs to be noted is that the project risk management process is a combination of anticipating and planning for the risks and monitoring activities later in order to minimise them, should they occur (Richardson, 2010). Over and above this, Richardson highlights that the process provides a means of identifying and managing known and unknown project risks throughout the project lifecycle. The following discussion hinges on the steps in the risk management process. Together with earlier discussions, this would form one of the ingredients required to address the objective concerning the application of risk management in IT projects.

2.1.3.1 Risk identification

In their studies of various projects pertaining to actions performed in risk management processes, Bannerman (2008), Raz et al. (2002) and Voetsch et al. (2004) conclude that the sequence of identification, analysis, responses and monitoring is often not pursued. However, Voetsch et al. (2004) posit that risk identification is done in virtually all IT projects. The aforementioned is supported through extensive research which examined the impact of the range of project risk factors in IT projects (Taylor et al., 2008). Richardson (2010) points out that the risk identification process consists of identifying and documenting potential project risk events throughout its lifecycle and is iterative, since new risks might become known as the project progresses. This view is supported by Susser (2012), who highlights that the identification process of project risk entails continuous and repetitive effort in the identification, measurement and documentation of IT project risks. In view of the above, baseline risks should therefore be identified during the project planning process, while other risks should continue to be identified during the lifecycle of the project. Furthermore, the rates of IT project success, according to Koopman (2010), have been shown to improve through comprehensive project risk identification. As such, it is the cornerstone of projects' success if it is done throughout the project lifecycle. On the contrary, identifying risks related to the implementation of projects in IT can be a significant challenge for project managers, as there are various ways to describe and categorise them (Baccarini et al.,2004). In this process, IT project managers are able to point out uncertainties affecting project objectives. In conclusion, it can be argued that the process of risk identification is pivotal during risk management in IT projects. As will be discussed later, this is supported by scholars who advocate the management approach to risk management in projects.

2.1.4 Risk assessment

The follow-up process is risk analysis, which aims at exploring recognised risks to establish the timeframe, impact and likelihood of occurrence (Susser, 2012). It is interesting to note that a qualitative or quantitative approach can be used during the analysis step. It can be argued that while most organisations prefer a qualitative approach, particularity for assessing risks, it is imperative to distinguish between the two, since a quantitative approach does not follow qualitative analysis as a rule (Susser, 2012). However, scholarly evidence shows that in the 17 public sector IT projects Bannerman (2008) explored none used quantitative risk analysis. This reinforces what Besner and Hobbs (2006) had found earlier, that IT project managers overlook quantitative risk analysis as possibly valuable and that its performance is not expected to increase in the near future. Quantitative risk analysis is not considered useful, since risks in IT projects are not based on probability, thus there is not enough information available to take a decision (Besner and Hobbs, 2006). This consequently results in additional information requests or a delay in decision, which could be detrimental to the project. As the process unfolds, during qualitative analysis an impact matrix analysis is used to rank the identified project risks by using a pre-defined rating scale (Susser,2012).In addition, the scoring is based on the probability of the risks occurring and the perceived impact on project objectives, should they occur. Once categorised qualitatively, the follow-up step is quantification in order to decide how to deal with the risks.Richardson (2010) states that among others the following tools and techniques are used during quantification: decision tree analysis, modelling and simulation, sensitivity analysis and earned value management analysis. On the other hand, Voetsch et al. (2004) conclude that risk analysis is rarely done in IT projects. It is this paradox that inspired the study of the application of risk management in IT projects.

2.1.5 Risk response planning

According to the PMI (2008), responding to risk helps project managers to develop procedures and processes to mitigate the defined risks and allows them to keep track of such risks, to identify new risks occurring in the project and to implement risk response plans. Richardson (2010) supports this, as he postulates that response planning involves developing responses to known risks, thus enhancing opportunities and reducing threats to project objectives. The failure of IT project managers to use the output of risk identification processes in subsequent comprehensive risk analysis and response planning attests to their uncertainty as to whether, and to what extent, any specified risk threatens an IT project (Taylor et al.,2008). They further highlight that if it is difficult to anticipate certain threats, or if the size and impact cannot be precisely estimated, it is particularly challenging in terms of the response action to take. It is therefore perhaps not so startling that IT project managers are fond of not carrying out the full risk assessment process at the commencement of their projects. As De Bakker et al. (2009) note, several IT project risks are epistemic (not enough information to make a

decision) rather than probabilistic, and risk mitigation decisions in such situations are dependent upon the availability of sufficient information.

2.1.6 Risk monitoring

This process entails on-going management activities for project risks. Identified risk on the risk plan can be managed easily; however, new risks during the project lifecycle have to be processed. Richardson (2010) highlights that activities related to the monitoring and control process often result in plan changes and updates. If conducted properly, this process improves the likelihood of project success. In practice, the supposition that IT project managers will follow the risk management process has been questioned by many scholars. Empirical evidence demonstrates that IT project managers focus on limited factors while in fact ignoring others (Moynihan, 2007). This strengthens the need to understand the application of risk management in IT projects.

2.1.7 Project risk types

The intention of project risk factor researchers, according to Taylor et al. (2008), has been to establish a comprehensive checklist of risk factors for consideration when managing an IT project. Typical risk factors are now contained in a substantial body of work, with Fowler and Horan (2007, p. 17) concluding that the most common IT project risk factors include "lack of effective management skills/involvement, lack of adequate user involvement, lack of top management commitment to the project, lack of required knowledge/skills in the project personnel, poor/inadequate user training and lack of cooperation from users". In view of the above, many scholars (Akkermans and van Helden, 2002) conclude that if ranking is applied, top management commitment, user commitment and user participation score highest. In spite of this extensive body of research on IT project risk, there is significant evidence that there is no application in practice of research findings and recommendations (Bannerman,2008; De Bakker et al., 2009; Kutsch and Hall, 2005). Both the project risk factor and project risk management directions draw on decision-making models based on likelihood and expected utility (Kutsch and Hall, 2005; Pender, 2001; Ward and Chapman, 2003), which are founded on assumptions that project risks are discrete potential events and their impact and likelihood can be evaluated with a realistic degree of confidence. This will act as a springboard during the study to understand specific focus risks and the applicability of project risk management.

2.1.8 Approaches to risk management

There are numerous project risk management approaches in literature, predominantly the evaluation approach, the management approach and the contingency approach (Didraga, 2013)

2.1.8.1 Evaluation approach

The evaluation approach seeks to answer questions relating to aspects that cause project failure, the three main elements being new risk factors, known risk factors and the process of risk management in projects. The intention of this approach is to set up the structure of future projects while managing their risks by using information pertaining to causes of project failures and risks identified in previous projects (De Bakker et al., 2009). According to the evaluation approach advocates (Han and Huang, 2007; Jiang and Klein, 2000; Procaccino et al., 2002; Wallace et al., 2004), having knowledge of risks means that they can and will be managed. Despite the aforementioned benefits, results show that the evaluation approach focuses on finding project risk factors as opposed to determining how to manage risks, thus its contribution to project success remains unclear (De Bakker et al., 2009). Furthermore, literature points out that knowledge of project risks alone are inadequate to ensure project success. This study is centred on establishing the application of risk management in IT projects, which is one aspect of project success.

2.1.8.2 Management approach

According to De Bakker et al. (2009), the question pertaining to dealing with project risks in order to prevent project failure is dealt with through the management approach.

Comparison between the Evaluation approach and the Management approach

Table 2-1:Comparison between the Evaluation approach and the Management approach

Evaluation Approach	Management Approach
• finding generic IT project risks	finding specific IT project risk
• future projects	current project
• analysis only	achieving direct result
• Creating generally applicable information	various activity and practice

Source: De Bakker et al. (2009)

This is supported by Chapman and Ward (1997), who concludes that by improving the project planning, design and budgeting, risk management in projects, will contribute to their success. The management approach to risk management in IT projects is centred on the premise of rational decision making in which information is

collected and analysed in order to support the particular project's decision-making process (De Bakker et al., 2009). In addition, De Bakker et al. (2009) argue that it focuses on identifying specific events and situations in projects that have a bearing on the original plan and developing measures for keeping the current projects on track. Tools and techniques such as brainstorming and checklists are used during project risk identification in this approach. They conclude that the management approach is direct, considering that the actual risks of the current project are dealt with, resulting in project success. On the contrary, the assumption that all uncertainties and risks can be managed is refuted by scholars, as it is not correct. Uncertainties cannot be managed through the project risk management process (Pich et al., 2002; Pender, 2001). Nonetheless, empirical research on risk management in projects is based on the supposition that there is full mitigation of the risk factors, is correct (Dey et al., 2007; Lassudrie and Gulla-Menez, 2004; Zafiropoulos et al., 2005). However, De Bakker et al. (2009) refute this claim when they conclude that the management approach has yielded no conclusive evidence. They highlight that empirical knowledge is still circumstantial and mostly based on a comparison between how risk management in projects is anticipated to work against how it is used in practice. The effectiveness of risk management in IT projects is consequently not being witnessed, as it is not applied according to basic criteria. The conclusion by De Bakker et al. (2009) that risk management in IT projects is effective in specific situations can be upheld, though more empirical evidence is required. This opens up opportunities in this study of risk management application in current IT projects.

2.1.8.3 Contingency approach

A somewhat more general approach from a contingency perspective discusses project success, project risk management and the relationships between them (Barki et al.,2001; Sauer et al., 2007). The proponents of the contingency approach to risk management in projects consider its success to be reliant on how well the whole project is capable of dealing with uncertainties in the project environment (Jun et al.,2011), since project uncertainty is negatively related to project success (Jiang et al.,2002). Furthermore, in the contingency approach, risk management in IT projects is not considered to be a separate management process, although Jun et al. (2011) highlight that it is embedded in the various procedures and processes of the project. Based on the contingency approach, risk management in projects is not a specific process, as it is entrenched in the different processes and procedures of the project. Rather than relying on planning actions in anticipation of possible project risks, Taylor (2007) established that experienced IT project managers rely greatly on environmental scanning to identify and learn from situational cues that enlighten adaptive responses to problems as they arise. In conclusion, it is imperative to understand if everything that has been discussed is being applied in practice in IT projects, which is the basis of this study.

2.1.9 Is risk management applied in IT projects?

There is minimal empirical evidence that project risk knowledge is in fact used and that the risks in IT are indeed manageable (De Bakker et al., 2009). However, what is more important to note is that analysing the assumptions behind risk management in projects reveals that the risk management instrument may only work under stringent conditions. More in-depth work is consequently required on the risk management process in IT projects. Risk management claims to support project managers to manage risk successfully and minimise the adverse effect of risk on project outcome. On the contrary, Sharma and Gupta (2011) found that IT project managers do not often apply a process to manage risk. Given that evidence is often descriptive and undeveloped, there is variability in the reasons for this. One notable reason, according to Kutsch and Hall (2005), is that IT project managers deny the presence of risk and uncertainty, or delay doing this until circumstances has improved. This is contrary to the rational concept propagated by management approach scholars.According to Kwak and Stoddard (2004), the inconsistency between the theoretical nature of risk management processes and practical challenges in an organisation poses a challenge for its integration. This is supported by Kutsch and Hall (2009), who conclude that minimal research has been done to find out whether IT project managers actually apply risk management and what reasons lie behind their judgements not to do any active management of risk in some cases. Most scholars emphasise what project managers should do, rather than what they did do (reactionary rather than proactively). There is minimal research evidence demonstrating that knowledge of IT project risk factors and risk management in IT projects has really been applied in the workplace (Bannerman, 2008; De Bakker et al., 2009). The quoted researchers posit that one of the main challenges in IT projects is to translate risk management and research understanding of IT risks into practical, usable tools that can be implemented with ease and effectiveness. This is in agreement with what Taylor et al. (2008) put forward when they conclude that prescriptions arising from risk management research appear to be very difficult to apply in IT projects. Based on the foregoing, it can be argued that as long as there is no evidence to explain why IT project managers fail to apply risk management, the recognition of best practices in risk management standards is inadequate (Kutsch and Hall, 2009) and that these standards remain an elusive target (Sauer et al., 2007).This study was undertaken against this background and knowledge gap.

2.2 Empirical Literature Review

2.2.1 Risk management in IT projects in the world

Several studies pertaining to risk management in IT projects have been carried out across the globe. The following discussion provides an overview of risk management inIT projects in several countries.

UK. A study by Kutsch et al. (2014) established that the prescription for risk management in IT projects is made up of standard operating procedures comprising a sequence of activities, namely forecasting individual risk, assessing its importance and response mechanisms. They further highlight that despite the repetitive organisational activities to manage risk, there is growing evidence of the ineffectiveness of risk management in projects. The factors contributing to this ineffectiveness, according to many scholars (Nelson, 2007; Hubbard, 2009), include lack of knowledge or inadequate integration of stakeholders into project risk management activities.

Singapore. In a study on eight projects, Chua (2009) concluded that although the projects had visible top management sponsorship, clearly articulated business objectives and strong financial backing, they failed. He highlighted that risk management in IT projects was partially applied as initial risk factors and those that cropped up later were not managed well. This adds to the motivation for the study to establish the application of risk management in IT projects.

The Netherlands. De Bakker et al. (2011) posit that risk management in projects is able to synchronise the perception of stakeholders, thus leading to action that increases effectiveness. They further highlight that risk control, allocation and analysis may stimulate action, resulting in effective risk management. Practices in risk management in IT projects may also influence the perception of individual stakeholders in the situation by generating positive feelings and acceptance of risk and the establishment of trust (De Bakker et al., 2011).

Romania. Didraga et al. (2013) conclude that stakeholders, i.e. top management, customers, contractors, functional managers and suppliers (Larson and Gary, 2011), have to be included in risk management in IT projects, since they are critical for its success. They state that techniques of risk management in projects try to increase stakeholder satisfaction, thereby increasing the likelihood of project success. The iterative nature of project risk management is mentioned by Didraga et al. (2013). However, Didraga (2013) concludes that project managers would act sensibly by not applying risk management in projects if the utility of not applying it is higher than the utility of confronting stakeholders with discomforting information (Kutsch and Hall, 2009). He states that the probability of higher success in IT projects is increased through risk management in projects. This includes clarifying expectations, creating acceptance and commitment,creating awareness, establishing trust and setting priorities.

Palestine. Ezamly and Hussin (2011) report that in spite of the effort made to ensure the success of IT projects, many IT projects have high failure rates. They assert that apart from technical risks, management practices and conflicts of interest among stakeholders are the other major causes of IT project risk.

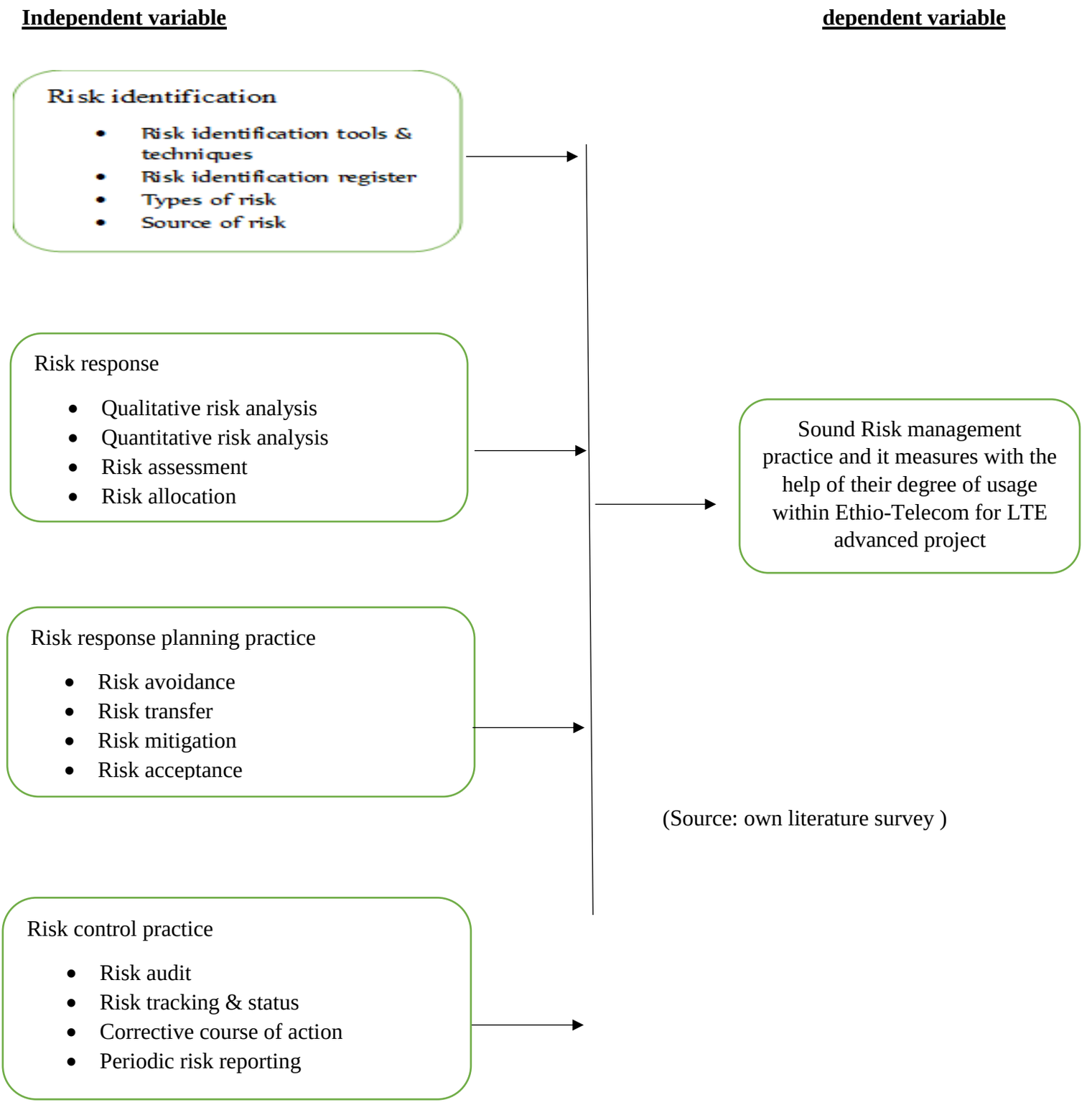
A study by Barry and Uys (2011) conclude that in their bid not to appear to let down project stakeholders, project managers use optimistic reporting. They contend that among others the following matters are key to project success: senior management buy-in, teamwork and communication. This is supported by Smith et al. (2006), who found that lack of top management commitment was ranked as the most important IT project risk factor in their study. This had also been established earlier by Schmidt et al. (2001) in their risk list. Furthermore, Anthony (2011) found that comprehensive information on IT project risks can indirectly result in development of better risk management strategies.The argument is that such information will reveal the likelihood of the occurrence of risk and its impact on the project objectives. He further postulates that since risk management in projects contributes to success at every level of the project lifecycle, it must be applied throughout the lifecycle of the project. However, De Wet and Visser (2013) conclude that on average, the success of IT projects in South Africa is very low and that risks experienced in such projects are the same as those in the developed world. This is seconded by Marnewick and Labuschagne (2010) when they say that many scholars allege that IT projects do not add value to organisations, since they are often not completed within the defined time and costing. IT project management and its subsequent risk management consequently require specific attention.

2.2.2 Risk management in IT projects in Ethiopia

The study conducted by Abeselom & Mankandla (2017) risk management practice on software project in Ethiopia. It also investigates the level of adoption of formal risk management models and which steps are included in the ad-hoc risk management exercise. Finally, it looks into the relationship between risk management practice and project success. They conducted a survey of 45 banks, insurance companies and United Nations agency offices in Addis Ababa, Ethiopia. The finding of a very low rate of application of formal risk management models was observed. And different perception of risk management whereby only watching projects to see if any risks occur during implementation without performing risk identification and mitigation or response plan was considered as a risk management practice by project managers. It was also found that some project managers were not able to confidently tell whether risk management processes have taken place in the projects they manage. This is aligned to what De Wit and Visser (2013) establish when they conclude that IT projects with a risk management plan and action have a better chance of success than those without these. Anthony (2011) mentions that effective management of IT project risks entails the implementation of suitable procedures and standards. In conclusion, Anthony (2011) postulates that implementing risk management during the early phases of an IT project and understanding the importance of knowing the key risk factors is critical for project managers. However,what is of paramount importance is whether this is happening in Ethiopia.This also builds on the issues that this study seeks to unfold.

Conceptual Framework : to guide the study

Figure 2-1:Conceptual Framework : to guide the study



(Source: own literature survey)

CHAPTER THREE

RESEARCH METHODOLOGY

3 Research approach and design

Descriptive survey research design was adopted to meet the stated objectives. Research design is a plan that provides guideline to the study as far as gathering and analysis of data in concerned (Dzwigol, 2019). It is a blue print for the methods to be embraced in gathering, analysis and interpretation of a result. According to Harris, Holyfield, Jones, Ellis and Neal (2019) descriptive survey research design seek to provide responses to questions regarding the status of an inquiry by gathering of data relevant behavior and attributes are some of the key issues that need to be studied through this type of design. This design helps in gathering information from a sample of participants at a given point of time to draw inference to the larger population. The justification of adopting this design was that it allowed the study to provide description of the current state on project risk management practices of Ethio-telecom for the project of LTE advanced.

3.1 Target population, Sampling design and Sample Size

3.1.1 Target population

The study targeted 36 program director, project manager, program manager, project technical support and operations support staff from these projects. Target population is representation of item as well as individuals that are in line with established criteria for selection and inclusion in the study (Knights & Thanem, 2019). The below table shows the breakdown of the total population based on professional category

Table 3-1:Total population based on professional category

Catagory	Number
Program director	1
Program Manager	1
Project Manager	2

Project Specialist/Coordinator	8
Project support staff	24
Total	36

Source: Ethio-Telecom

3.1.2 Sampling design and sample size

Sampling the method that is used to select participants for inclusion in an inquiry (Hennink, Hutter & Bailey, 2020) sample size on the other hand is smaller population that is selected from the larger population to provide the basis of generalization of the result (Ghauri, Gronhaug & Strange, 2020). Given the relatively smaller population of the study. This study adopted census and thus all 36 respondents were included.

3.2 Data sources and data collection method

The research employed questionnaires to collect to gather primary data. According to Quinlan, Babin, Carr and Griffin (2019). Data collection is the methodical & carful gathering of information that is pertinent to answering research question. Structured question and semi – structured question helped in gathering the primary data that was used to support the analysis. The questionnaires were structured to ensure it was accompanied by a list of relevant alternatives that gave an option for participants to select from A-5 point Likert scale with 1=Strongly Disagree to 5=Strongly Agree range was used to develop the questionnaire. The questionnaire was divided in to sections that addressed both the general information and the inquiries variables.

3.3 Data analysis method

Descriptive statistics used to analyze and interpret the findings. The mean scores and standard deviation of the finding will be interpreted using descriptive statistics used to find out the factors of the project risk management process major phases: risk identification; risk quantification; risk response development; risk response control and communications via SPSS Version 27.0.1.

3.4 Validity and Reliability

Research validity is the extent, which the test provides measurement of what it is designed to indicate. It is critical for the questionnaire to be aligned with the definition that has been used to operationalize the study

variable (Hair, Page & Burnsville, 2019). A reliable measure can easily be understood &the results can be understood & clearly utilized.

Reliability is the dependability, stability & consistence of the information and views that have been shared by the participants. It is the degree to which a measure provides results that are consistent and stable (Greener, 2022). The dully-filled questionnaire from pilot testing was used to compute values of Cronbach Alpha in order to test for reliability. questionnaire was checked by the Cronbach's-Alpha test coefficient using SPSS version 27.0.1 software.Creswell and Creswell(2017) suggest the following rule of thumb when it comes to the interpretation of Cronbach Alpha values: > 0.9 implies excellent, >0.8 implies good, >0.7 implies acceptable, >0.6 means questionable.Reliability was done and the findings summarized as shown in tables 3.1

Table 3-2:Reliability test result

Variables	No of item	Cronbach Alpha coefficient
Risk management as knowledge base	5	0.750
Risk planning practice	6	0.891
Risk identification practice	6	0.734
Risk analysis practice	3	0.730
Risk response practice	5	0.837
Risk monitoring and controlling practice Risk management	8 5	0.906 0.82
Total		0.923

Note. The average Cronbach Alpha coefficient values are above 0.7, which means that a reliable scale was adopted in the study. so the researcher conclude that it has internal consistency and is reliable for further analysis.

3.5 Ethical Considerations

Ethics describe the norms that provide guideline on how the research should be conducted (privitera, 2022). A formal request for ethical clearance was sent to the human resources unit of the organization and to the admin and finance director of the project. At the beginning of each questionnaire, the researcher clearly stated that there will be no way of mentioning the name and identity of the respondents and the purpose of the study was purely academic. The same declaration was also stated at the first paragraph of the front page of the questionnaire.all the information gathered in literature was acknowledged and cited using APA system of referencing.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4 Introduction

This chapter presents the data collected from the field, analysis and interpretation. The study has attempted to examine some general aspects of risk management practices of Ethiotelecom LTE advanced projects by gathering information from administrators of the organization through questionnaire and open ended question. The questionnaire was distributed to 36 Ethio-telecom network division employees. In this research from the total of 36 target population the response rate is 100%.

4.1 Respondents' Profile Category

Table 4-1:General Information

Category	Classification	Frequency	Percentage
Gender	Male	20	55.6%
	female	16	44.6%
	Total	36	100%
Age	20 – 39 years	20	55.6%
	40 -49 years	12	33.3%
	50 -60 years	4	11.1%
	Total	36	100%
Highest level of education	Diploma	2	5.6%
	Degree	25	69.4%
	Masters	9	25%
	Total	36	100%

Years of experience	Less than 5 years	17	47.2%
	6 – 15 years	13	36.1%
	Above 15 years	6	16.7%
	Total	36	100%

It was shown from table 4.1 that 55.6% of the respondents were male, 44.6%were female. In terms of Age, while 55.6% was in the range of 20-39 and 33.3% was in range of 40- 49 and 11.1% was in range of 50 -59. In view of level of education, while 5.6% had diploma, 69.4% had degree and 25% had masters. For experience, while 47.2% had worked for less than 5 years, 36.1% had worked for 6 -15 years, and the rest 16.7% had worked for 15 years and above.

4.1.1 Descriptive Statistics

Respondents were asked to rate the Risk management practice base on a five point likert scale type ranging from 1 to 5. (1=strongly disagree, 2=Disagree, 3=uncertian, 4=Agree, 5=strongly agree), and the analysis of the mean score is based on the below assumptions;

- If the mean statistical value is between 0 to 1.5 it implies the respondents strongly disagreed.
- If the mean statistical value is between 1.5 to 2.5 it implies the respondents disagreed.
- If the mean statistical value is between 2.5 to 3.5 it implies the respondents were undecided or neutral.
- If the mean statistical value is between 3.5 to 4.5 it implies the respondents were agreed.
- If the mean statistical value is above 4.5, it implies that the respondents were strongly agreed.

Based on the above assumptions from (Burns, 2008, cited in Kidanemariam, 2019) the mean score have been computed for each components of the variables and analysis is presented for each variables. The average mean result together with their respective variables was separately presented analyzed and interpreted as follows:

Risk management as knowledge base

Table 4-2:Risk management as knowledge base

	N	Mean	Std. Deviation

Risk management as knowledge base is important in the project	36	3.5278	1.44393
Knowledge of risk management in the project is ready available	36	3.1111	1.18990
Knowledge sharing on risk management in the project is important	36	3.8333	1.18322
Knowledge sharing assists in identifying project risk	36	3.9167	.99642
Knowledge sharing on risk management in projects accelerates the relationship between project client &project team	36	3.3611	1.04616

Knowledge of risk management is readily available in the organisations, according to respondents 3.111 mean score s were uncertain. Risk management as a knowledge base is important in the view of 3.572 mean score of the respondents were agreed, while 3.9167 mean score of respondents agreed that such a knowledge sharing is important on risk management ,followed by a mean score of 3.833 were agreed on assisting in identifying project risk , and in accelerating the relation between project client and project team, 3.3611 respondents were uncertain about it. These results highlight the position that risk management is important both as a knowledge base, to identify and knowledge sharing on risk management in the projects in the organisations. This is in line with what Cooper (2003) states, that knowledge is among the most powerful tools to manage risks in projects. This is emphasised by Neef (2005), who states that several projects were unsuccessful because of lack of knowledge among the project team or while the project was conducted. To expand on this point, similar sentiments are echoed by Tiwana and McLean (2005), who conclude that knowledge sharing in IT projects is increasingly emphasised in practice in organisations.

4.1.2 Descriptive Analysis

How Well Project Risk Management Practices Were Applied To The Projects.

In a Likert scale of 1-5, the respondents were required to indicate the extent to which they agreed on how well the project risk management practices were applied to their projects including general information about risk management plan, risk identification, risk analysis, risk response and monitoring. This was done in order to determine which risk management practice was extensively used in the construction projects of the companies. A level of 1 indicated that the risk management practices were not well applied to their project while a level of 5 indicated that risk management practices were very well applied to their project. This was done in order to

determine which risk management practices were well applied to the project. Results are presented in the table below.

Table 4-3: risk management practices

	N	Mean	Std. Deviation
RMK	36	3.9556	.59926
PRP	36	3.5046	.89663
PRI	36	3.4167	.61018
PRA	36	3.3889	.92066
PRR	36	3.1611	.74192
PRMC	36	3.3090	.82672
MR	36	3.9556	.59926
Total score		3.5273	

Note.It can be seen that the application of the five-risk management practices result was revealed that project risk planning was high ranked practice having average mean 3.5046, followed by project risk identification having average mean 3.4167.According to Voetsch et al. (2004) posit that risk identification is done in virtually all IT projects. The aforementioned is supported through extensive research which examined the impact of the range of project risk factors in IT projects (Taylor et al., 2008). The finding align with what scholar said.

The follow-up process is risk analysis, which aims at exploring recognised risks to establish the timeframe, impact and likelihood of occurrence (Susser, 2012). It is interesting to note that a qualitative or quantitative approach can be used during the analysis step. It can be argued that while most organisations prefer a qualitative approach, particularity for assessing risks, it is imperative to distinguish between the two, since a quantitative approach does not follow qualitative analysis as a rule (Susser, 2012). However, scholarly evidence shows that in the 17 public sector IT projects Bannerman (2008) explored none used quantitative risk analysis. Beside in the current study the organization were not using the qualitative approach. Project

risk analysis having average mean 3.3889. On the other hand, Voetsch et al. (2004) conclude that risk analysis is rarely done in IT projects.this assumption align with the findings.

According to the PMI (2008), responding to risk helps project managers to develop procedures and processes to mitigate the defined risks and allows them to keep track of such risks, to identify new risks occurring in the project and to implement risk response plans. Richardson (2010) supports this, as he postulates that response planning involves developing responses to known risks, thus enhancing opportunities and reducing threats to project objectives. However, the finding reveal that the respondents were uncertain about the practice of risk response having average mean (3.1611).

According to Richardson (2010), highlights that activities related to the monitoring and control process often result in plan changes and updates. If conducted properly, this process improves the likelihood of project success. In practice, the supposition that IT project managers will follow the risk management process has been questioned by many scholars.again the finding revealed risk monitoring and controlling were not applied in the project, having average mean (3.3090). However the respondent were agreed on the practice of risk, management as knowledge base and risk management (MR) having average mean of 3.9556.

From the table above, respondents of the projects felt that PRM practices were well applied to their projects with a mean score range of 3.5046 to mean score 3.1611.

As indicated by respondents, the extent of application of the seven risk management practices was adequate to certain extent, recording 3.5273 total mean score. However, detail analysis of the application of the risk management practices indicated that some of the practices are applied to some/great extent and some are not well applied to the projects.

Table 4-4:Risk planning result

	N	Mean	Std. Deviation
There is systematic approach or careful planning	36	3.5833	1.05221
Relevant stakeholders are involved in the planning	36	3.0833	1.20416
Tools like expert judgment, meetings or others are considered for risk planning	36	3.6667	1.06904

Environmental factors are included as an input to plan for uncertainties.	36	3.5000	1.08233
Project team members receive training or have enough knowledge about how to handle uncertainties.	36	3.4722	1.18288
Risk management plan is incorporated with the project plan.	36	3.7222	1.08525

It can be seen that from the above table, respondents were agreed on the practice of: risk management plan were incorporated with the project risk , tools like expert judgment, meetings or others are considered for risk planning, and there is systematic approach or careful planning having mean of (3.7222), (3.6667), and (3.5833). The respondents were uncertain about environmental factors are included as an input to plan for uncertainties (3.500), Project team members receive training or have enough knowledge about how to handle uncertainties (3.4722). Respondents disagreed about relevant stakeholders are involved in the planning (2.8889).

Table 4-5:Risk identification result

	N	Mean	Std. Deviation
Project team members play roles to identify risk.	36	3.3889	.99363
The organization identifies the main potential risks relating to each of its declared aims and objectives of the project	36	3.5000	.97101
All key participants/stakeholders involved in risk identification	36	3.2778	1.08525
Expert jugment	36	3.0278	1.40379
Checklists	36	3.1389	1.09942
Document review	36	3.0556	1.21760
Information gathering	36	4.0556	.95452
Assumption analysis	36	3.8889	1.06309

The above table describe that the type of risk identification technique that the organization uses in the project and information gathering and assumption analysis were agreed technique among the respondents having mean

of (4.055) and (3.8889) respectively. The checklist, document review, and expert judgment were uncertain if the company use it or not having mean value of (3.1389, 3.0556, and 3.0278). In addition to this, respondents were uncertain in project team members play roles to identify risk (3.3889) and all key participants/stakeholder involved in risk identification (3.2778). Apart from this respondent agree on the organization identifies the main potential risks relating to each of its declared aims and objectives of the project.

Table 4-6:Risk analysis result

	N	Mean	Std. Deviation
Characteristics of the risk are considered.	36	3.5556	1.02663
There are established qualitative and quantitative risk analysis methods and tools	36	3.3333	1.19523
Quantification of the possible outcomes for the project and their probabilities is practiced in your organization.	36	3.2778	1.13669

Based on survey data, the respondents agree on the availability of qualitative and quantitative risk analysis methods and tools (3.5556); but the respondents were uncertain if quantification of the possible outcomes for the project and their probabilities is practiced in their organization (3.3333) and on the well- developed strategy to respond risk (3.2778).

Table 4-7:Risk response result

	N	Mean	Std. Deviation
There is a well-developed strategy to respond risk.	36	3.0278	.97060
Factors such as budget, schedule and resources and quality are considered while responding to risk.	36	3.3056	1.09073
In your organization there are planned responses as opposed to considering risks as they arise.	36	2.9444	.86005

Your organization use decision tree analysis to choose the most appropriate response.	36	2.8889	1.03586
Your organization develop primary and backup strategies for the risk response plan.	36	3.0833	1.02470

From the above description, the respondents indicated that factors such as budget, schedule and resources and quality are considered while responding to risk, your organization develop primary and backup strategies for the risk response plan , and there is a well-developed strategy to respond risk were responded as uncertain by respondent having mean score of 3.3059 , 3.0833 and 3.0278. The rest strategies were rated by respondents as disagreed on there is planned response as opposed to considering risk as they arise and decision tree analysis to choose the most appropriate response having mean 2.944 and 2.8889 respectively.

Table 4-8:Risk monitor & control result

	N	Mean	Std. Deviation
Risks are registered and communicated properly	36	3.1111	1.21368
Risk responses are audited	36	3.2500	1.20416
Risks are reviewed periodically	36	3.1389	1.15022
project performance is evaluated against risk	36	2.9444	1.11981
Risks are monitored and controlled appropriately.	36	2.8333	1.10841
The organization monitors and reviews the risks in the achievement of its objectives	36	3.0833	1.29560
The organization has a clearly defined policy and process for the reporting of changing risks, incidents and control failings as they occur	36	3.3056	1.16667
The organization routinely reviews the effectiveness of the controls in place to manage risks	36	3.1944	1.09073

The above Table presents the description of questions related to risk monitoring and control. Respondents were uncertain whether to all practice listed in the table. To high ranked 3.2500- to least ranked 2.833

Data from open-ended indicated that respondents has a good awareness about risk management because they have attended workshop, which is specific to risk management in their organization. However, respondents were not thought that project risks are properly monitored or controlled as per known risk identification, mitigation, avoidance, accepting, and transferring principle. Except only one respondents write like “we deal project risk in our organization by identifying the risk first then determine the project risk tolerance”. The other question was raised to reveal the risk management model. Findings showed that there is a risk based mechanism addressing; the uncertainty in the relationship between faulty costs, schedule on the project impact, and the model is based on the project type, which is preventive, reactive and detective methods. Findings from both data demonstrated that there is a mechanism of identifying the risk and there is risk management model. The respondents expressed their ideas when they answered to “most frequent risks encountered in your projects?” identified like. “It is in the initiation phase and during execution time”. For the questions, which aim to know the general attitude towards IT project risks in Ethio-Telecom, respondents answered, “Since IT project are the highest capital-intensive project, the company gives more attention than other project type”.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMEDATIONS

5 Introduction

This chapter presents the summary of the research findings; conclusion and recommendations. The conclusions were drawn from the findings of the study in line with the study objectives.and areas that needs further research are also indicated.

5.1 Summary of Findings

This study attempted to examine the risk management practices of LTE advanced project in Ethio-Telecom. As mentioned in chapter four, respondents' responses on risk management processes and risk as knowledge base were analyzed by using percentage and descriptive mean by using SPSS descriptive statistics analyzer. The findings from chapter four analyses are established and outlined as below:

Risk management as a knowledge base

- According to the response of the respondent, the analysis revealed that risk management as knowledge base and knowledge sharing is important for the project as well as for identifying the risk despite the fact that, there no knowledge of risk management that is ready available in the project. The analysis also show that respondent was uncertain about the sharing of knowledge accelerate the relationship between project client and project team.

Risk management practice

- According to the response of the respondents on the general questions of project risk management practice, the analysis revealed that there was no a guideline and defined standard risk management process to manage uncertainties in the project. The analysis also shows some extent that risk management was a continuous process and there is a department to handle risks. In addition, the availability of model of risk management.
- With regard to risk management plan, analysis of respondents' responses implies that although there were tools like expert judgment, meetings or others and risk management plan was incorporated with the project plan, the risk planning approach was not systematic. Despite the fact that relevant stakeholders were involved for risk planning, project team members didn't get required training to handle risks and environmental factors were not considered as an input to plan risk.

- The findings of the analysis for the risk identification process revealed that methods like expert judgment, checklist,and document review the least practiced. However, information gathering and assumption analysis were prominent while the project teams' role was low in to identify project risks. They were low stakeholder involvement. Nevertheless, the organization was identifying risks to their aims and objectives of the project.

- According to respondents' responses on risk analysis process, the result implies that risk characteristics were considered; however, it was found difficult to conclude about a measurement system to analyze the risk and quantification of the possible outcome and their probabilities is practiced in the organization. since the respondents were uncertain of this case.

- According to respondents' responses on risk response, the result revealed that risk response plan was the least practice in the project because there were uncertain about the practice, which are explained risk response practice.
- According to the findings on risk monitoring and controlling practice of the projects, the analysis revealed that the monitoring and controlling process was not strong because majority of the respondents were either uncertain or disagreed for proper communication, periodic review, project performance evaluation against risk and response audit of the project risk, monitoring and reviewing the risks in the achivement of its objectives.
- According to data from open-ended question, findings showed that there were understanding of practice of risk management out of it a practice of risk identification, after it determined risk tolerance. Moreover, there were a model for handling risk, which was based on uncertainty for the relationship between faulty costs, schedule on the project impact, and it was called preventive, reactive and detective methods. In addition, there were occurrence of risk in initiation phase and execution phase, even though the company had given more concern to ward IT project because it is high capital-intensive project.

5.2 Conclusions

The purpose of the study is to identify the actual risk management practice at (LTE advanced project) Ethio-Telecom. Based on the findings mentioned in chapter four analysis part of this study, the following conclusions are drawn about the practice deployed in the project.

Risk management as knowledge base

From the empirical study it has emerged that risk management is important both as a knowledge base and in mitigating risks in IT projects. This was the dominant view and is congruent with previous global findings. However, there has been minimal development with regard to databases and tools for managing knowledge of risk in IT projects. The evidence suggests that in as much as knowledge sharing and knowledge bases in risk management are important, the link to risk mangemnt developement. It was also established that although emphasis is placed on the importance of risk management, its recognition as a knowledge base among IT project experts is low in the organisation. Respondents agreed it, the importance of knowledge sharing to manage risk even though the finding revealed that it is not accelerate the relationship between project client and team.

Risk management practice

First, there was a risk department section and defined standard or guideline to handle uncertainties and risk management was perceived as a continuous process throughout the project life cycle

Second, it is found that tool like expert judgment and meetings with relevant stakeholder were used to plan risk management. The decisive factor is that risk management plan was incorporated with the project plan; however, project team members didn't get required training to handle risks and environmental factors were not considered as an input to plan risk which implies non-systematic risk planning approach.

Third, methods like expert judgment, checklist, document review, were the least practiced techniques, but information gathering, and assumption analysis were used to identify risks.

Fourth, findings on risk analysis process imply that characteristics were considered for analysis and no assurance whether the use risk analysis measurement or quantification of the possible outcomes and there probabilities practiced.

Fifth, the analysis result enables the researcher to conclude there is no well-developed strategy that considers factors such as budget, schedule and resources and quality while responding to risk.

Sixth, findings of risk monitoring and controlling practice implies that there was not effective risk monitoring and controlling process within the project and project performance was not evaluated against risk. There was not transparent communication, periodic review and response audit of the project risk.

5.3 Recommendations

This recommendation was done by the researcher in order to minimize the gap between the theory of project risk management and actual risk practice of Ethio-Telecom the case of LTE advanced project and then to improve and enhance the practice of risk management by increasing opportunities and reducing threats.

Establishment of knowledge base

There is a requirement for project executives to build databases and tools to manage risk in the projects. These will act as tools to communicate IT project risks during project implementation, thus increasing the likelihood of project success as well as risk management .

It is recommended that knowledge sharing on risk management be practised in the projects. This should be spearheaded by project executives and cascaded throughout the network division team. Among others, the benefits might constitute appreciation of knowledge sharing on risk management and consequently its bearing on IT project success. Based on the aforementioned, project executive support is crucialin the development of databases and tools and the establishment of a culture of knowledge sharing; all within risk management in IT projects. Project executives need to be enlightened to this effect.

Risk management practice

Policy and a standard process that guides on how to deal with project risk is prerequisite to project risk management. The standard needs to be communicated thoroughly and regularly to every project team. The risk management section should put this task on its list of duties.

Necessary preparations have to be done for systematic risk planning; usually poor planning is the cause for failures and then appropriate attention should be given to consider environmental factors, train project teams to increase and update their skills. Moreover, the risk management plan should be integrated with the project plan in order to reduce the consequence of project uncertainties within the project.

The role of project teams to identify risk should be given valuable credit because they are the decisive components to implement risk within the project. If they are given the role to identify risk, they can have better motivation to encounter them.

There should be well-developed strategy for risk responses. Risks should be recorded and their characteristics has to be considered to in order to apply appropriate risk response strategies that considers factors such as budget, schedule and resources and quality are considered while responding to risk.

The risk monitor and control part of risk management process must be given serious attention as it is the major component to measure the overall implementation of risk management process. Project performance should be evaluated against risk. Moreover, risk should be reviewed, audited and communicated properly. The last but not the least thing the researcher recommend is that further study has to be conducted on the same title. Because there are issues for which the respondents were uncertain to express their agreement or disagreement. Moreover, additional study should be carried :

- on the other project management knowledge areas since the integration of these knowledge areas affects the success of a project.
- Away from IT project, future studies should be done focusing on other project like water and sanitation or educational project.
- Future studies should be conducted focusing on other dependent variable like project sustainability or performance or success factor aside from risk management.

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7 Annexes/Appendices

ST. MARY'S UNIVERSITY SCHOOL OF GRADUATES STUDY

DEPARTMENT OF PROJECT MANAGEMNT

An Assessment of risk management practices of Ethio- telecom: in the case of LTE

Advanced project.

To the respondents,

My name is Eyerus Gezahegn.I am a postgraduate student of St. Mary's University (SGS) department of project management. This questionnaire aim is to identify and assess the most common and frequently used the risk management practices of Ethio-telecom for LTE advanced projects. Therefore, I kindly request you to spend some time and to honestly respond to all the questions. All the information you provide will kept in strict confidentiality and it will be only used for this study. Please answer each questions carefully. I have a big value for your participation and great thanks for the commitment of time, energy and effort. If you have any additional question related to the questionnaire, you can contact in the below addresses.

- It is not necessary to write your name
- Try to address all the question given below
- For the closed ended questions use (√) mark for your choice in the given box

Thanks for yours coopration

Eyerus Gezahegn

St, Mary university SGS

Addis Ababa, Ethiopia

+ 251 936 97 72 03

eyugezahegn@gmail.com

QUESTIONS

Section I includes demographic of general information.

1. Gender: male ☐ female ☐

2. Age (in year) : _____

3. Level of education: Diploma ☐ Degree ☐ Msaters ☐

Others, please specify: _____

5. For how many years have you worked on the project? _____

Section II: close-ended questions

Please tick the number in the given box for the five point scale question that best describes how you perceive project risk management as knowledge base.

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

Question related to Risk management as knowledge base

S.N	**Questions**	**SD** (1)	**D (2)**	**U (3)**	**A (4)**	**SA (5)**
1	Risk management as the knowledge base is important in the project					
2	Knowledge of risk management in the project is ready available					

3	Knowledge sharing on risk management in the project is important					
4	Knowledge sharing assists in identifying project risk					
5	Knowledge sharing on risk management in projects accelerates the relationship between project client &project team					

Questions Related to Project Risk Management Practice

S.N.	RISK PLANNING	**SD(1)**	**D (2)**	**U(3)**	**A (4)**	**SA (5)**
6	There is systematic approach or careful planning					
7	Relevant stakeholders are involved in the planning					
8	Tools like expert judgment, meetings or others are considered for risk planning					
9	Environmental factors are included as an input to plan for uncertainties.					
10	Project team members receive training or have enough knowledge about how to handle uncertainties.					
11	Risk management plan is incorporated with the project plan.					
	Risk identification question	**SD (1)**	**D (2)**	**U (**3)	**A (4)**	**SA (5)**
12	Project team members play roles to identify risk.					
13	The organization identifies the main potential risks relating to each of its declared aims and objectives of the project					

14	All key participants/stakeholders involved in risk identification					
15	Which type of risk identification technique your organization uses in the project					
	• Expert Judgment					
	• Checklists					
	• Document Review					
	• Information gathering					
	• Assumption analysis					

	Risk response	**SD (1)**	**D (2)**	**U (3)**	**A (4)**	**SA (5)**
19	There is a well-developed strategy to respond risk.					
20	Factors such as budget, schedule and resources and quality are considered while responding to risk.					
21	In your organization, there are planned responses as opposed to considering risks as they arise.					
22	Your organization use decision tree analysis to choose the most appropriate response.					
23	Your organization develop primary and backup strategies for the risk response plan.					

	RISK MONITOR AND CONTROL	**SD (1)**	**D (2)**	**U (3)**	**A (4)**	**SA (5)**
24	Risks are registered and communicated properly					
25	Risks are reviewed periodically					
26	Risk responses are audited					
27	project performance is evaluated against risk					
28	Risks are monitored and controlled appropriately.					
29	The organization monitors and reviews the risks in the achievement of its objectives					
30	The organization has a clearly defined policy and process for the reporting of changing risks, incidents and control failings as they occur					
31	The organization routinely reviews the effectiveness of the controls in place to manage risks					

S.N	Question	SD(1)	D(2)	U(3)	A(4)	SA(5)
1	There is a policy or guideline that recommends how to manage unexpected uncertainties.					
2	The project has a standard risk management process.					
3	There is responsible person or department to handle risk					
4	There is a continuous usage of risk management through the Life cycle of the project.					
5	There is a risk management model to use.					

	Risk analysis	SD (1)	D (2)	U (3)	A (4)	SA (5)
16	Characteristics of the risk are considered					
17	There are established qualitative and quantitative risk analysis methods and tools					
18	Quantification of the possible outcomes for the project and their probabilities is practiced in your organization.					

7.1 Appendix 2: open - ended questions

1. How do you deal with project risks in your organization?

_____
_____
_____
_____.

2. Have you attended any risk management workshop in Ethio -telecom LTE advanced project?
_____
_____
_____.

3. Do you have any risk management model for your projects?

_____
_____
_____.

4. If the answer to question 3 is Yes, what control method do you apply?

_____
_____
_____.

5. When are the most frequent risks encountered in your projects?

_____
_____.

6. What is the general attitude toward IT Project risks in Ethio -telecom?

_____
_____
_____.

"THANK YOU"