ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

Project Risk Management Practice in Ministry of Communication and Information Technology: The case of Online Content Regulatory Legal Framework Development Project (OCRLFDP)

By: Yehualashet Lessanu

Advisor: Teklegiorgis Assefa (Asst. Prof.)

A Research Project Work Submitted to Addis Ababa University School of Commerce in Partial Fulfillment of the Requirements for the Award of Master of Arts Degree in Project Management

June 2019

Addis Ababa, Ethiopia

Addis Ababa University College of Business and Economics
School of Commerce

Project Risk Management Practice in Ministry of Communication and Information Technology: The case of Online Content Regulatory Legal Framework Development Project (OCRLFDP)

By: Yehualashet Lessanu

Declaration

I, Yehualashet Lessanu, hereby declare that the thesis work entitled:

"Project Risk Management Practice in Ministry of Communication and Information Technology: The case of Online Content Regulatory Legal Framework Development Project (OCRLFDP)"

is submitted by me for the award of the degree of Master of Art in Project Management from the school of Commerce of Addis Ababa University, is my original work and it hasn't been presented for the award of any other Degree, Diploma, Fellowship or other similar titles of any other university or institution.

Name Yehualashet Lessanu

Signature _____

As an advisor, this thesis has been presented for examination with my approval of its originality with the required level of accepted standard.

Name **Teklegiorgis Assefa (Asst. Prof.)**

Signature _____

Approval of Examination

This thesis work entitled as "Project Risk Management Practice in Ministry of Communication and Information Technology: The case of Online Content Regulatory Legal Framework Development Project (OCRLFDP)" has been examined and approved for the award of the degree of Master of Art in Project Management from Addis Ababa University, College of Business and Economics, School of Commerce.

Name and signature of Member of the Examining Board

Name	***Title***	***Signature***	***Date***
_____	**Advisor**	_____	_____
_____	**Examiner**	_____	_____
_____	**Examiner**	_____	_____

ACKNOWLEDGMENTS

First of all, I would like to glorify the Almighty God and his mother Saint Virgin Marry for helping me to finalize this project work, all the honor is yours and only yours!

My especial thanks go to my advisor Teklegiorgis Assefa (Asst**.** Prof.) thank you for your priceless comments, encouragement and tolerance. For helping me from the beginning, till the end of the study. Thank you again Teklegiorgis Assefa (Asst**.** Prof.)!

I extend my gratitude to project manager, project team, experts of the ICT Standards Development and Enforcement Case Team and Information Technology Steering Committee who had role in Project Risk Management Practice in Ministry of Communication and Information Technology: The case of Online Content Regulatory Legal Framework Development Project (OCRLFDP) for their willingness to participate in this study.

I would like to thank all MCIT employees who participated and provided their genuine feedback in the survey questionnaire and interview which is the foundation for the success of this study. I would also like to give special thanks to Solomon Kidane and Alazar Amberber, for their advice, review of the thesis and feedback throughout my study.

Last but not least, I would like to thank deeply my beloved family: my Wife Fasika Wolde and our kid Yostina (Betaye) Yehualashet, for their encouragement, understanding, and patience while I can’t play my role as a husband and father for the sake of getting done this study. Thank you darlings!

ABSTRACT

Project risk is an uncertain event or condition that, if it occurs, has an effect on at least one project objective. Risk management is a key part of project management for any project size. The purpose of this research is to describe the practice of project risk management in Ministry of Communication and Information Technology Development of Online Content Regulatory Legal Framework project for Ethiopia. The study has conducted a census survey in order to investigate important aspects of project management process using descriptive approach. The scope of the study was limited to the extent of assessing, evaluating, analyzing, describing and identifying project risk management practices. A cross-sectional case study research has been conducted to collect data from 27 respondents of the ministry. Data had been collected through closed ended questionnaire; semi structured interview and document analysis. The respondents were comprised of project manager, project team, and IT steering committee. The quantitative data was analyzed statistically using Statistical Package for Social Sciences and the qualitative data was analyzed by relating the results with literatures. In addition, reliability and validity have also been taken in to consideration. The main findings revealed that risk identification, qualitative risk analysis, monitoring and control were fairly practiced. The practice of risk planning and risk response was poor. Moreover, the practice of quantitative risk analysis was very poor. As a recommendation, it is better the ministry looking into best practices to apply standard project risk management processes, tools and techniques in future projects in order to achieve projects' objective successfully.

Key words: Risk, Risk Management, Information Technology, Project Risk Management

Table of contents

List of Figures

List of Table

ACRONYMS/ABBREVIATIONS

GDP	Growth Domestic Product
ICT	Information Communication Technology
IS	Information Systems
IT	Information Technology
MCIT	Ministry of Communication and Information Technology
OCRLFDP	Online Content Regulatory Legal Framework Development Project
PM	Project Management
PMO	Project Management Office
RM	Risk Management
RMP	Risk Management Plan
SPSS	Statistical Package for Social Sciences
SWOT	Strength Weakness Opportunity Threat
WBS	Work Breakdown Structure

CHAPTER ONE

INTRODUCTION

1.1.Background of the Study

Many public organizations implemented Information Technology (IT) projects to improve their management accountability and effectiveness. IT allows the government to be more accountable, open and transparent by supporting its internal processes, decisions, and policy-making (L. Anthopoulos, C. G. Reddick, I. Giannakidou, and N. Mavridis, 2015). Although IT has a positive impact on an organization, its failure rate has led to significant concerns (H. S. A. Nawi, A. A. Rahman, and O. Ibrahim, 2012). Thakurta (2014) showed that the failure rate of IT projects remains high, which raises the question about the feasibility and sustainability of the IT projects. There are many factors that contribute to IT project failure; poor risk management (RM) has been identified as one of the main factors (A. N. Talet, R. Mat-zin, and M. Houari, 2013).

Risk management is a concept which becomes very prevalent in a number of businesses. According to Gajewska and Ropel (2012), Risk Management is used in all industries; from IT related business, automobile or pharmaceutical industry, to the construction sector. Industries have developed their own RM standards but the general ideas of the concept usually remain the same regardless of the sector (Ibid). Risk management, as an integral part of project management, occurs on a daily basis. With proactive risk management, we look at projects in a comprehensive manner and assess and document risks and uncertainty (WSDOT, 2014).

Risks may potentially endanger the ability of the project manager to meet the predefined project objectives, such as scope, time, and cost; tasks may take longer than planned, consequently negatively influencing the project manager's fulfillment of the project objectives. Equally, of course, risk can be seen as offering previously unconsidered opportunities for the project at an operational level, or for stakeholders at a strategic level (what is sometimes referred to as "opportunity risk"; Ward & Chapman, 2002)

Because of this potential of risk to either adversely influence a project's performance or present thus far unrecognized opportunities for value enhancement, the PMI, in its Guide to the Project Management Body of Knowledge (PMBOK® Guide) Third edition (PMI, 2004), acknowledges the management of risk as one of its nine key knowledge areas. This represents, according to Pender (2001), best practice in the area of project management. There are a number of other "best practice" project risk management processes, such as that of the British Standards Institution (2000) and the APM's Body of Knowledge guidance (APM, 2005; Chapman, 1997).

1.2.Background of the Organization

The Ethiopian government established the Ministry of Communication and Information Technology (MCIT) in 2010 recognizing this critical role of ICT to national development and along with the Proclamation No. 916/2015 gave the MCIT a comprehensive mandate to promote the expansion and development of ICT.

Ethiopia's ICT infrastructure has seen significant improvements in the past few years. Mobile telecommunications alone grew from a mere 1 million subscribers in 2007 to 60 million in 2018/19. The country has made equally impressive strides in spreading ICTs across the government, education and health sectors and developing the computer software and ICT manufacturing sectors.

Nevertheless, the adoption of ICT in Ethiopia remains low in comparison with regional and global peers. The major constraints that are preventing Ethiopia from achieving its full digital potential include:

- Unavailability of legal and regulatory frameworks to deal with new technological advances and, with recent infrastructure growth, to enhance monitoring of service affordability and quality;
- Constraints in take up of ICT services in rural areas by citizens, businesses and health and educational institutions due to awareness issues;
- Unavailability of affordable ICT devices and services for the population;
- Challenges boosting locally relevant applications and services and scaling up innovative entrepreneurs; and

- Low levels of Internet penetration, as compared with take-up of mobile services, and low levels of fixed broadband penetration, as compared with take-up of mobile broadband.

Profile of the project:

Over the last two decades the Ethiopian Government has made strategic priorities and commitment for the development of ICT, both as an enabler and an industry, for transformation of Ethiopia from a predominantly agrarian economy to an information and knowledge based economy. Towards this end the government has elaborated and institutionalized the national ICT development framework and created favorable environment to enhance the exploitation of ICTs for accelerated socio-economic development. The Ministry of Communication and Information Technology (MCIT) has been established and mandated to coordinate and supervise the planning and implementation of various ICT development initiatives and to develop relevant ICT policies, strategies, standards, frameworks, guidelines, and common national platforms.

Among others the MCIT has commissioned a number of projects that aim at favorably transforming the Ethiopian policy, regulatory and legal environment and develop suitable frameworks to respond to new challenges presented by the advent of Internet. This has included projects relating to development of legal frameworks for the protection of personal data, electronic commerce and ICT intellectual property rights. The most recent of such initiatives is the present project: "Development of Online Content Regulatory Legal Framework for Ethiopia", which aims to find ways to improve the Ethiopian legal regime relating to the regulation of illegal, harmful and offensive content that has come to be a concern in the wake of speedy proliferation of Internet use in the country.

The primary goal of this project is to identify and put forward the most optimal strategies for the development of an online content regulatory legal framework that is fit for the socio-economic, cultural, religious and political realities of Ethiopia. This project is also meant to inform policy and legislative reforms in Ethiopia by identifying major gaps relating to policies and laws applicable to online content regulation in the context of proliferating ICTs based on international, regional and national best practices broadly discussed in the AS-IS Report previously submitted by the Consultant to the MCIT. The overarching goal of the project is to put forward legal, policy and technical online content regulatory alternatives

that ensure rule of law on internet content, while at the same time upholding fundamental freedoms such as freedom of information and of expression guaranteed under the Ethiopian Constitution and international human rights treaties to which Ethiopia is a party.

This project is an IT project and organized by a matrix project organization structure. The team members were selected from functional departments and a project manager from IT standard and regulatory directorate project office. The project was monitored and controlled by IT steering committee. The project started On October 13, 2016 and scheduled to end June 28, 2018. However, it couldn't be completed within the schedule and delayed more than 1year and 6 months. In addition, the allocated budget was two million and three hundred thousand birr (2,300,000). However, the actual cost became four million two hundred thousand birr (4,200,000) even though in governmental organization it's not affordable to pay the beyond budgeted one.

1.3.Statement of the Problem

ICT industry plays significant role in the economy of developing countries like Ethiopia. It also has a crucial role to play to the Growth Domestic Product (GDP) of these countries (African Economic Outlook 2015 edition). Africa's infrastructure for information and communication technologies has progressed rapidly (AfDB et al, 2009). Ministry of Communication and Information Technology is undertaking various initiatives to ensure the quality of ICT services in Ethiopia. One of the major initiatives with this regard is the development of ICT policy, guideline and framework. So as to achieve these goals the ministry develops different projects.

In order to accomplish project objectives with specific attention on time, cost quality, safety and environmental sustainability, IT projects (the provision of a service to implement systems and solutions, including a variety of hardware and software products; (Howard, 2001) seem to be more problematic than other types of projects, with a particularly high rate of failure (McGrew & Bilotta, 2000; The Standish Group International, 2007; Whittaker, 1999). Despite well-established best practice project management processes, project managers appear to be ineffective in the light of such failure.

Organizations such as the Project Management Institute (PMI) and the United Kingdom's Association for Project Management (APM) promote best practice project management

standards. As part of these standards, project risk management is defined as the systematic process of identifying, analyzing, and responding to risks. Risk is any project related event, or managerial behavior, that is not definitely known in advance but has the potential of adverse consequences on a project objective (PMI, 2004).

It is clear that in order to achieve the final objective of a project; appropriate risk management process must be implemented within a project. Some scholars have described the extent of risk management practice and its importance in projects as follows:

Elkington & Smallman (2002) have identified that there is a strong link between the amount of risk management undertaken in a project and the level of success of the project in that more successful projects use more risk management. Also the earlier that risk management was used in a project, the more successful it was. It is essential that the risks of a project be assessed at the project brief stage. Risks identified here will not only help the production of the necessary project products, but will increase the chance of overall project success. A significant risk that is not identified and mitigated will become a real problem at some point during the project life cycle (Tinnirello, 2000).

Information and Communication Technology is believed to play an important role in development. However, the success rates of IT projects from 1994-2012 ranged between 16% and 39%, with the remainder having performance issues or being complete failures (Joseph, Erasmus, & Marnewick, 2014). The success of IT 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 (Alhawari et al., 2012; Bakker et al., 2010; Bhatia & Kapoor, 2011; Boehm, 1991). Risk management allows controlling the effect of risks and it contributes to the success of projects (Bannerman, 2008; Bhatia &Kapoor, 2011; Kwak & Stoddard, 2004).

Successful IT project management was the most desirable for all organizations and stakeholders. IT project success or failure had long been interesting for researchers over the past 20 years. High failure rates of IT projects were caused by completion beyond budget, behind schedule, and without meeting requirements, and could threaten the very existence of the company (Bloch M, Blumberg S & Laartz J., 2016).

Risk management is a critical part of project management as, “unmanaged or unmitigated risks are one of the primary causes of project failure” Royer PS (2000). While numerous

papers have been written on the subject of risk management, little current information exists on the actual use of risk management in practice Lyons, T (2002).

Local studies which have been reviewed in the current study generally confirm the inadequate risk management practices of projects. However, it should be pointed out that none of those studies reviewed so far had considered risk management practices of MCIT OCRLFDP. Therefore, due to the dearth of theoretically hinged risk management research on assessing and evaluating risk management practices and techniques in peculiar environments like Ethiopia is the motivation for undertaking this study.

The project manager and three of the project teams was interviewed, informally and document like reports were reviewed, by the researcher as preliminary assessment and it revealed that MCIT OCRLFDP encountered major delays and cost overrun. One of the major contributors for such delay and cost overrun was inadequate project risk management. In this regard, standard risk management processes couldn't be effectively applied. These processes are risk planning, risk identification, risk analysis, risk response, risk monitoring and controlling. During document analysis also, the researcher found poor risk management plan, quantitative risk analysis and unclear risk response plan. In addition, the risk monitoring was performed without effective controlling of risks. Therefore, the researcher became initiated to undertake a research on assessing project risk management practices in MCIT OCRLFDP. And most of prior studies conducted on assessment of project risk management practice on construction sector. Moreover, as far as the researcher's knowledge, research studies exclusively on project risk management practices in MCIT.

This study tried to address the gap between theory of project risk management and the actual practice by focusing on MCIT OCRLFDP for Ethiopia. Regarding the topic of the study, no research has been done which focused primarily on risk management practice of this project.

1.4.Basic Research Questions

To address the purpose and objectives of the study, the following research questions were used.

Main question:

- What practices are being carried out by the ministry to manage risks in the projects?

Sub questions:

- ✓ What risk management planning processes are being followed?
- ✓ What are the methods used to identify risk that arises in the projects?
- ✓ What actions are performed to analyze risks that occur in the projects?
- ✓ What risk response options are applied in the projects?
- ✓ What practice is applied to monitor and control risks in the projects?

1.5.Objectives of the study

General Objective

- To evaluate risk management practices in the projects of the ministry.

Specific Objectives

- ✓ To describe risk management plan in the project.
- ✓ To assess the methods used to identify risks in the project.
- ✓ To identify how the identified risks are analyzed in the project.
- ✓ To identify the options used to respond to risks that occur in the project.
- ✓ To assess the practice of risk monitoring and controlling mechanism in the project.

1.6.Significance of the study

The findings and recommendations of this study could serve as an ingredient and be informative to the project under examination as well as to regulatory bodies. It could also give a general insight to the academic & professional society regarding risk management aspects. Moreover, the study has the following significances:

1. It provides valuable information for regulatory bodies on the status of the project in practicing risk management and findings could be used to determine how risk management practice is being implemented in such type of projects.
2. It can be used by other IT projects in evaluating their operations in identifying and taking corrective actions about possible risk exposures.
3. It serves as a reference material for anyone who will undertake a further study on the

same or related topic.

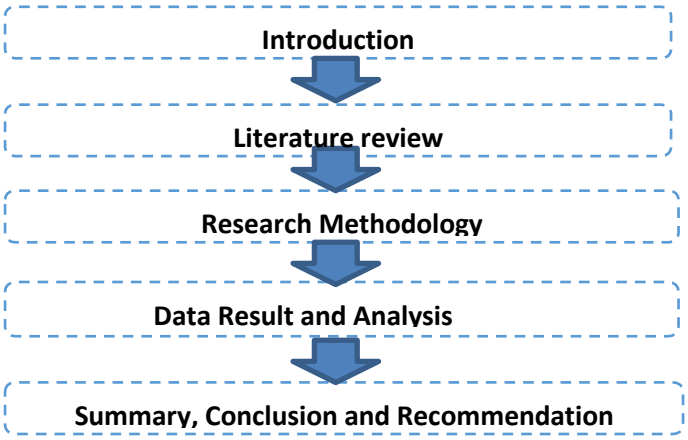
1.7.Delimitation and Limitation of the study

The scope of the research is delimited to Development of Online Content Regulatory Legal Framework project for Ethiopia out of the many projects that are undergoing currently which may be viewed as a restriction that limits the generalization of the result. Because of lack of time and money this study was limited to the extent of assessing, evaluating, analyzing, describing and identifying project risk management practices in MCIT's single project.

The scope of the study is delimited on one of the Project management Knowledge area out of the ten project knowledge areas which is only Project risk management. And the other limitation would be lack of adequate time.

1.8.Organization of the Research

The research was organized into five chapters as follows:



CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1.Theoretical Literature Review

The aim of literature review is to demonstrate primary and secondary research skills; to show that the researcher understands the research subject; has studied existing works in relation to the research objectives, design and methodology (hart, 1998).

2.1.1. Projects and Project Management

2.1.1.1.Project

According to PMI (2013), a project is a 'temporary endeavor to create a unique product, services, or results'. Prince2-glosary-of-terms (2009) define a project as a temporary organization that is created for the purpose of delivering one or more business products according to a specified business case. Projects have constraints such as 'time, scope, and cost' in which all these need to be balanced in order to achieve desired project success.

2.1.1.2.Project Management

Project management is the application of knowledge, skills, tools and techniques to projects with aim of delivering projects within specified scope, time, and cost (PMBOK, 2013). Project management has 5 process groups and 10 knowledge areas. According to Wysocki (2014), whatever project life cycle model that is used must contain all of the following process groups The 5 process groups are initiation, planning, execution, monitoring and control, and closing (PMBOK,2013).

- **Initiation process group:** Those processes performed to define a new project or a new phase of an existing project by obtaining authorization to start a project or phase (PMBOK, 2013).
- **Planning process group:** Those processes required to establish the scope of the project, refine the objectives, and define course of action required to attain the objectives that the project was undertaken to achieve (PMBOK, 2013).
- **Executing process group:** Those processes performed to complete the work defined in project management plan to satisfy the project specifications (PMBOK, 2013).
- **Monitoring and Control process group:** Those processes required to track, review and

regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate corresponding changes (PMBOK, 2013).

- **Closing process group:** Those processes performed to finalize all activities across all process groups to formally close project or phase (PMBOK, 2013).

2.1.2. Characteristics of Project Management

According to Project Management Maturity Model (OGC, 2010), good project management will be expected to have the following characteristics.

- A finite and defined lifespan
- Defined and measurable business deliverables that contribute towards the achievement of business objectives
- A defined amount of resources
- Delivery of capabilities from which business benefits and performance improvements can be leveraged
- An organizational structure, with defined roles and responsibilities
- Focus on management and coordination
- Delivery of outputs within time and cost constraints
- Quality management, focusing on fit-for-purpose output based on requirements
- Business cases containing an accurate budget for output delivery
- Risk management focused on cost, quality and time scales for delivery
- Issue management is proactive and focused on ensuring successful delivery
- Project plans that are both product and activity oriented

2.1.3.IT Project Management

Application of knowledge, skills, tools, and techniques to IT project activities in order to meet or exceed IT project requirements (Schwalbe, 2013). Information technology projects involve using network, software, and hardware to create service, product, or result. There are five key issues commonly encountered in IT projects (Bridge, 2015).

Firstly, there are typically multiple vendors or partners who may be supplying the infrastructure like servers or hardware components, database or firmware, or any other components. Each vendor-partner comes with their own expectations, their assumptions or

constraints that must be captured and incorporated into the overall project charter or project plan (Bridge, 2015).

The next is changing versions and releases. There are multiple components going on and specifically with IT, it changes so rapidly between hardware improvements or enhancement coming along, even firmware or software. This can happen in the middle of the project and most of the time they need to be incorporated and constantly monitored (Bridge, 2015).

Then there are complex dependencies. Sometime if there is a delay in one of component, this can have impact on other components which affect all other deliverables of the project (Bridge, 2015). Then there is disaster recovery. The disaster recovery is a project on its own as it needs to be well planned, implemented and tested before the go live of the implemented system. Making sure all people and resources are available to accomplish disaster recovery project is a challenging task (Bridge, 2015). Number five, most importantly, is the support. This should be addressed as early as possible. Making sure there is a proper support when something goes wrong, that they get escalated and get support in a timely manner (Bridge,2015).

Uncertainty is a fact of life for most large IT capital investments. From enterprise applications to infrastructure technologies to IT-enabled strategic initiatives of every favor, a common element is doubt, which about the project will achieve its goals. This uncertainty arises from many sources—the immaturity, complexity, and unpredictable evolution of the technologies themselves; the increasing integration of technologies within and across organizations; and the increasing emphasis on using IT to support customer-facing processes and innovative products with hard-to-predict market appeal (winter, 2005).

2.1.4.Project Management Body of Knowledge

Project management is regulated by professional bodies. One such body is the PMI. The PMI has published a knowledge guide known as the PMBOK guide. There are ten knowledge areas according to the PMBoK guide (PMI, 2013) as described below.

2.1.4.1. Project Integration Management

Project integration management includes the processes and activities to identify, define,

combine, unify, and coordinate the various processes and project management activities within the project management process groups (PMI, 2013 & Duncan, 1996).

2.1.4.2. Project Scope Management

Project scope management includes the processes required to ensure that the project includes all the work required and to complete the project successfully. Managing the project scope is primarily concerned with defining and controlling what is and is not included in the project (PMI, 2013).

2.1.4.3. Project time management

Project time management includes the processes required to manage the timely completion of the project. Plan schedule, define and sequence activity, resource and duration estimation, develop and control schedule are the processes required in project time management (Wysocki, 2009&PMI, 2013).

2.1.4.4. Project cost management

Project cost management includes the processes involved in planning, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget (PMI, 2013).

2.1.4.5. Project quality management

Project quality management includes the process and activities of the performing organization that determine quality polices, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. It works to ensure that the project requirements, including product requirements, are met and validated (PMI, 2013). In general, Project Quality Management includes the Processes required to ensure the Project will satisfy the needs for which it was undertaken (Project Management Methodology Guidebook, 2015).

2.1.4.6. Project human resource management

Project human resource management includes the processes that organize, manage, and lead the project team. The project team is comprised of the people with assigned roles and

responsibilities for completing the project (Duncan, 1996 &PMI, 2013).

2.1.4.7. Project communications management

Project communications management includes the processes required to ensure timely and appropriate planning, collection, creation and distribution, storage, retrieval, management, control, monitoring and the ultimate disposition of project information (Duncan, 1996 &PMI, 2013).

2.1.4.8. Project risk management

Project risk management includes the processes of conducting risk management planning, identification, response planning, and controlling risk on a project. The objectives of project management are to increase the likelihood and impact of positive events, and decrease the likelihood and impact of negative events in the project (Robert, 2016; The Orange Book, 2004; Williams, 2004 &PMI, 2013).

2.1.4.9. Project procurement management

Project procurement management includes the processes necessary to purchase or acquire products, services, or results needed from outside to the project team. The organization can be buyer or seller of the products, services, or results of a project. It includes the contract management and change control processes required to develop and administer contracts or purchase orders issued by authorized project team members (Duncan, 1996 & PMI, 2013).

2.1.4.10. Project stakeholder management

Project stakeholder management includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution (Harold Kerzner, 2009 & PMI, 2013).

2.1.5.Project Risk

Project risk is the combination of probability of an event occurring and its consequences for project objectives, other times positive and others negative (Chapman, Ward, 2003).Risk is

not only related to a specific point of actions, but it also relates to future project conditions. Conditions can change during project life cycle and may turn out to be favorable or unfavorable. In addition, it is very difficult to "guess" any change in the future conditions of a project, and so to estimate all the potential risks in the early stages of the project life cycle. PMBOK (2004) states that risk should consider both the positive and negative effects of a project objective. This is a broad view of risk that includes the terms of threats and opportunities, but is something that can work in theory and fail in practice. Risks and uncertainty could be addressed either as random or epistemic. Random risk means that we can estimate it using probabilities but it still has random outcomes, not predictable. This type of risk can occur because of natural unpredictable variation. According to Pitz and Wallsten (2000), the knowledge of experts cannot be expected to reduce random uncertainty although their knowledge may be useful in quantifying the uncertainty.

An epistemic risk or uncertainty is due to lack of knowledge about the behavior of the system. The epistemic uncertainty can, in principle, be eliminated by sufficient study and, therefore, expert judgments may be useful in its reduction (Oakley and O' Hagan, 2003). An epistemic uncertainty is thus an "unknown event from an unknown set of possible outcomes (Hillson, 2003).

A dynamic risk is a risk where there is a possibility to gain something in the end, whereas a static risk has only losses in the outcomes (Flanagan and Norman, 1993). In the early stage of a project, there is a high degree of uncertainty, which decreases when we have a high degree of background knowledge. It is however essential to mention that a project manager should always be aware both of random and epistemic uncertainty, because they both have great impact in the project outcome.

Bedford and Cook (2001) characterize risk with two elements: hazard (danger) and uncertainty (quantified by probability). Uncertainty is part of our everyday life, since we are unable to predict the future conditions. An uncertainty can lead project to threats of failure or, equally, opportunities. According to Pitz and Wallsten (2000), the knowledge of experts cannot be expected to reduce random uncertainty although their knowledge may be useful in quantifying the uncertainty.

2.1.6.Project Risk Categories

PMI (2013) has categorized risks as external-unpredictable and external-predictable. External unpredictable risks are government regulations, natural hazards, and acts of God. External predictable risks are cost of money, borrowing rates, raw material availability. The external risks are outside of the project manager's control but may affect the direction of the project. The internal risks may be within the control of the project manager and present uncertainty that may affect the project. Internal (nontechnical) risks include labor stoppages, cash flow problems, safety issues, health and benefit plans. Technical risks relate to the utilization of technology and the impact it has on the direction of the project. Technical risks include changes in technology, changes in state of the art, design issues, production, support, threat, and all other non-project risks. Legal risks include licenses, patent rights, lawsuits, subcontractor performance, and contractual failure.

Ding (1996) proposed that the risk factors can be categorized in three main groups:

a) Internal risks, means things that the project team can control or influence, such as scope of the project, resource assignments, production costs, etc.
b) Project- specific risks, means unexpected things during the construction project that leads to time or cost overrunning or in lower level in performance.
c) External risks, means things that are beyond the control of the project team, such as financial, government actions or actions of God.

2.1.6.1. Internal risks

Internal risks are initiated inside the project (Aleshin, 2001). In many cases, mainly of Joint Ventures Company a very critical risk, which affects directly its performance, is the reduction of autonomy and the contribution of under qualified staff. All these factors affect negatively the company and create problems in its operation. The cooperation among all staff in the company is absolutely necessary in order to be efficient, with high performance and all members involved should be allied and not enemies. A change in technology is a critical factor for the success of the project. This might occur because of the uniqueness of each project. New technology demands qualified staff.

2.1.6.2. Project-Specific Risk Factors

Lack of communication and poor relationships between all parties in a project may expose the project in jeopardize. They should be established a straight forward communication, in order to find solutions in any problem at the moment, and to avoid misunderstandings between parties. Large engineering projects, in order to share risks, due to their dynamic environment, they cooperate with subcontractors. This new cooperation lurks new risks, such as technical qualifications, reliability and financial stability (Akinci and Fischer, 1998). Contractual risks are usually caused by improper contractual proviso, improper tender documents, or inappropriate types of contracts (Schwartz, 1985).

2.1.6.3. External risks

The political risk includes threats for war, political volatility, changes in laws and convention, labor strikes and so on. It is considered the most significant risk for this category, because any political dispute and political change can affect the project negatively (Ling and Hoi, 2006). Economic risk category includes inflation, changes in exchange rates, risks of economic fluctuation. These factors can have serious collision on the revenue or loss margin in each contributor. Any economic slowdown leads to a shrink of the construction sector. Moreover, changes in fluctuation of exchange rates impose on directly the profitability of the project (Baker, 1997).

Another critical factor is the environmental risks. We refer to the actions of God, events that occur as an outcome of nature and are often called natural phenomena. The common risks under this category include physical damages, destruction of facilities, equipment, material, even labor death (Rashid, 1991). Social risk factors include security problems, different cultures, religion, and folkways. These risks are not so critical but we should respect them (Barber, 2005).

2.1.7. Project Risk Management Process

Risk management is a procedure to handle the risks in a project and try to mitigate their effects, (Toakley, 1989). According to Kerzner (2003), a risk management strategy must be established early in a project and that risk is continually addressed throughout the project life cycle. A high quality project risk management process must include the following

prerequisites (Abrahamson, 1973):

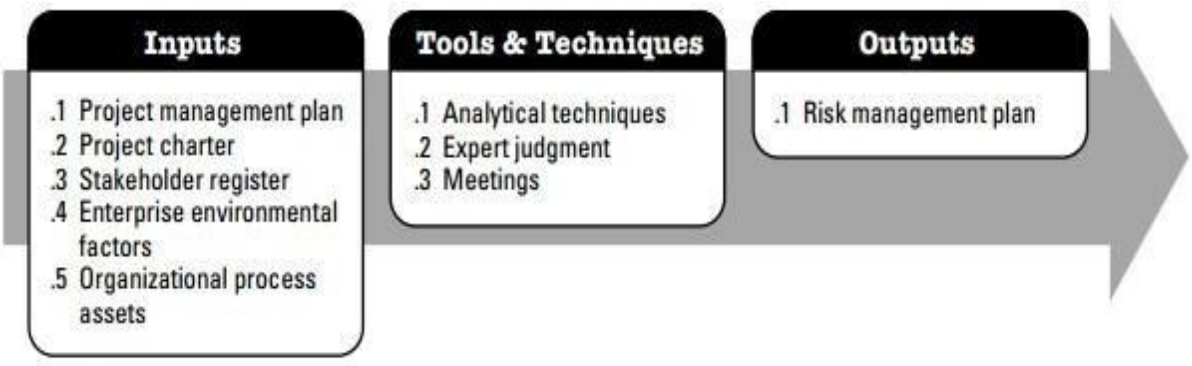
- Fully detailed specification of the project, and all associated risks
- A clear perception of risks that being born by each party(client-contractor)
- Sufficient capability, experience how to handle the risks
- Motivation to manage risks, which requires a clear accountability, responsibility and authority of each party into the project. Handling risks means rewards.

The objective of project risk management is to minimize the probability and impact of negative effects while maximizing the probability and impact of positive effects (PMI, 2013; Fukuda & Kuwano, 2017). The purpose of the Risk Management process in a wider sense should not solely be to ensure a successful project completion but also to increase the expectations of project goals and objectives (Mills, 2001). According to PMI (2013), project risk management includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project.

2.1.7.1. Plan Risk Management

Plan Risk Management is the process of defining how to conduct risk management activities for a project. The key benefit of this process is to ensure that the degree, type, and visibility of risk management are commensurate with both the risks and the importance of the project to the organization. The risk management plan is vital to communicate with and obtain agreement and support from all stakeholders to ensure the risk management process is supported and performed effectively over the project life cycle (PMI, 2013). The inputs, tools and techniques, and outputs of this process are depicted in Figure2.1.

Figure 2.1 Plan Risk Management: Inputs, tools & techniques, and outputs



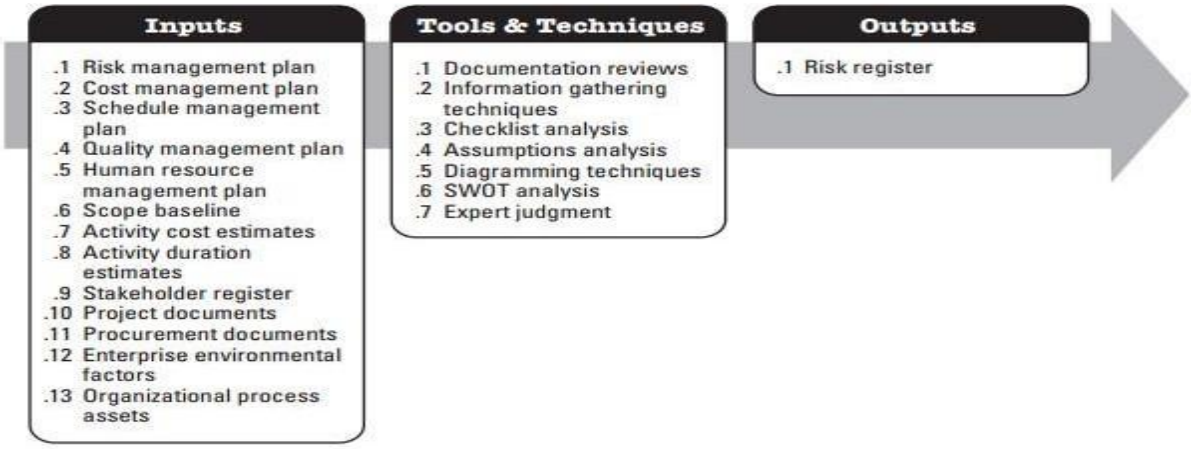
(Source: PMI, 2013)

According to Kerzner (2009), risk planning is the detailed formulation of a program of action for the management of risk. It is the process to develop and document an organized, comprehensive, and interactive risk management strategy, to determine the methods to be used to execute a program's risk management strategy, to plan for adequate resources. The key to writing a good RMP is to provide the necessary information so the program team knows the objectives; goals; tools and techniques; reporting, documentation, and communication; organizational roles and responsibilities; and behavioral climate to achieving effective risk management. The RMP should include appropriate definitions, ground rules and assumptions associated with performing risk management on the project, candidate risk categories, suitable risk identification and analysis methodologies, a suitable risk management organizational implementation, and suitable documentation for risk management activities. Since the RMP is a roadmap, it may be specific in some areas, such as the assignment of responsibilities for project personnel and definitions, and general in other areas to allow users to choose the most efficient way to proceed.

2.1.7.2. Identify Risks

Identify Risks is the process of determining which risks may affect the project and documenting their characteristics. The key benefit of this process is the documentation of existing risks and the knowledge and ability it provides to the project team to anticipate events (PMI, 2013). The inputs, tools and techniques, and outputs of this process are depicted in Figure2.2.

Figure 2.2 Identify Risks: Inputs, tools & techniques, and outputs



(Source: PMI, 2013)

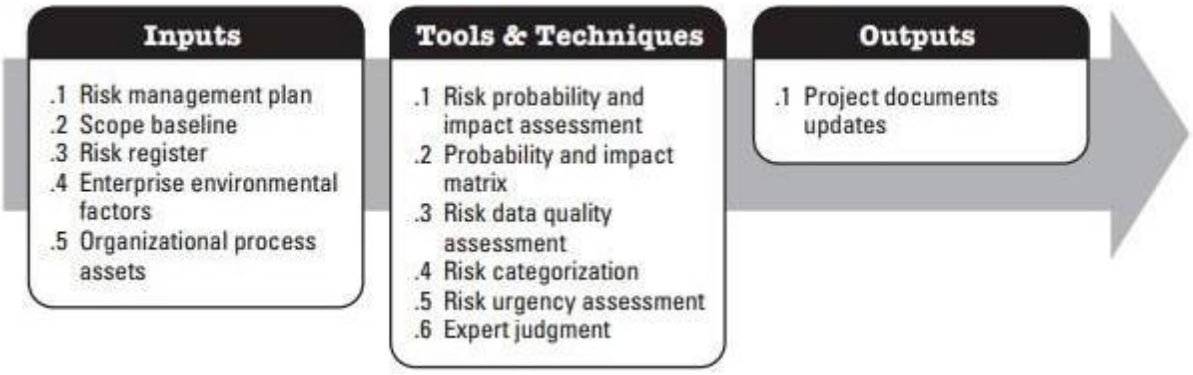
The goal of the risk identification is to identify exhaustively all significant sources of risk in a project, as well as the causes of them (Bing, Tiong and Chow, 1999). The process by which risk identification is accomplished is varied between organizations but usually include one or more of the followings: interviews, brainstorming sessions into risk teams, site visits and a large volume of data from previous experience (Akintola and Malcolm, 1997). Risk identification must continue through all project phases (Kerzner, 2009).

2.1.7.3. Risk Analysis

2.1.7.3.1. Perform Qualitative Risk Analysis

Perform Qualitative Risk Analysis is the process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact. The key benefit of this process is that it enables project managers to reduce the level of uncertainty and to focus on high priority risks (PMI, 2013). The inputs, tools and techniques, and outputs of this process are depicted in Figure 2.3

Figure 2.3 Qualitative risk Analysis: Inputs, tools & techniques, and outputs



(Source: PMI, 2013)

According to Kerzner (2009), a commonly used qualitative risk analysis methodology involves risk scales (templates) for estimating probability of occurrence and consequence of occurrence, coupled with a risk mapping matrix. The risk is evaluated using expert opinion against all relevant probability of occurrence scales as well as the three consequences of occurrence scales (cost, technical performance, and schedule), and the results are then transferred onto a risk mapping matrix to convert these values to a corresponding risk level. The risk is included in a prioritized list based upon the risk level as well as other considerations (e.g., frequency of occurrence, the time to impact, and interrelationships with

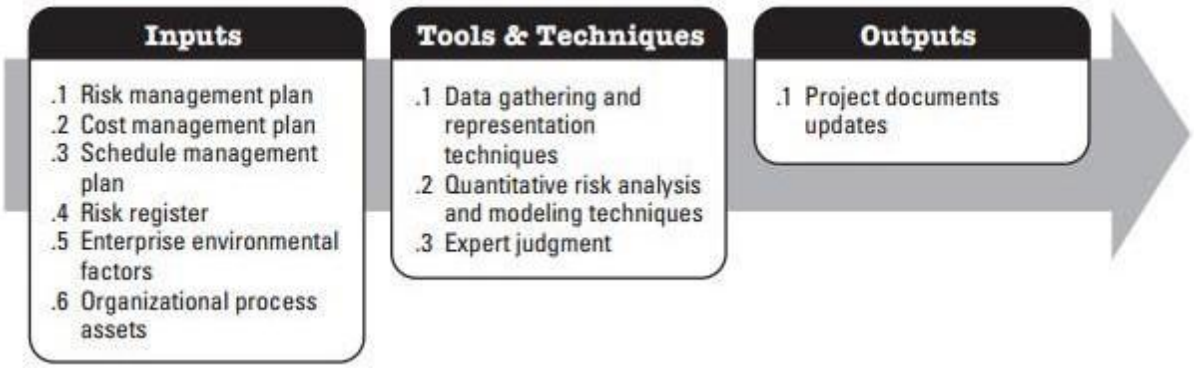
other risks). A risk mapping matrix is typically used to convert ordinal probability of occurrence and consequence of occurrence scale values to a corresponding risk level. While there is no preset size for such a matrix, its dimensions must be less than or equal to the number of scale levels used in both the probability and consequence dimensions. With five-level probability of occurrence and consequence of occurrence scales this corresponds to a 55 or smaller matrix.

2.1.7.3.2. Perform Quantitative Risk Analysis

Perform Quantitative Risk Analysis is the process of numerically analyzing the effect of identified risks on overall project objectives. The key benefit of this process is that it produces quantitative risk information to support decision making in order to reduce project uncertainty (PMI, 2013).

The inputs, tools and techniques, and outputs of this process are depicted in Figure 2.4

Figure 2.4 Quantitative risk Analysis: Inputs, tools & techniques, and outputs



(Source: PMI, 2013)

According to Kerzner (2009), two keys to producing accurate quantitative risk analysis results include developing an accurate model structure and incorporating accurate probability information. In project risk management there is often insufficient attention paid to each of these items, and the outcome can be inaccurate results. The model structure should be carefully developed and validated before any output is used for decision-making purposes. While this is easy to do for simple decision trees, it can be much more complex when scores or hundreds of branches and potential outcomes are involved.

2.1.7.4. Plan Risk Responses

Plan Risk Responses is the process of developing options and actions to enhance opportunities and to reduce threats to project objectives. The key benefit of this process is that it addresses the risks by their priority, inserting resources and activities into the budget, schedule and project management plan as needed (PMI, 2013). The inputs, tools and techniques, and outputs of this process are depicted in Figure2.5

Figure 2.5 Plan Risk Responses: Inputs, tools & techniques, and outputs

(Source: PMI, 2013)

According to Kerzner (2009), risk handling includes specific methods and techniques to deal with known risks and opportunities, identifies who is responsible for the risk or opportunity, and provides an estimate of the resources associated with handling the risk or opportunity, if any. It involves planning and execution with the objective of reducing risks to an acceptable level and exploiting potential opportunities. Risk response planning must be compatible with the RMP and any additional guidance the program manager provides. A critical part of risk response planning involves refining and selecting the most appropriate response option(s) and specific implementation approaches for selected risks (often those with medium or higher risk levels) and opportunities. The selected risk response option coupled with the specific implementation approach is known as the risk response (handling) strategy, which is documented in the risk response (handling) plan. The procedure to develop a risk response strategy is straightforward. First, the most desirable risk response option [of acceptance, avoidance, control (mitigation), and transfer for risks, and acceptance, enhance, exploit, and share for opportunities is selected; then the best implementation approach is chosen for that option. In cases where one or more backup strategies may be warranted, (e.g., high risks). While the selected option for a backup strategy may be the same as for the primary strategy,

the implementation approach will always be different; else the primary and backup strategy would be identical. Similarly, contingent responses can be developed for risks and opportunities where action is taken only if certain predefined conditions occur.

2.1.7.4.1. Response Options for Risks and Opportunities

According to Kerzner (2009), a risk or opportunity response strategy is composed of an option and implementation approach. Response options for risks include acceptance, avoidance, mitigation (also known as control), and transfer. A brief discussion of the four response options for risks follows:

- **Acceptance (i.e., retention):** The project manager says, "I know the risk exists so am aware of the possible consequences. I am willing to wait and see what happens. I accept the risk should occur."
- **Avoidance:** The project manager says, "I will not accept this option because of the potentially unfavorable results. I will either change the design to preclude the issue or requirements that lead to the issue."
- **Control (e.g., mitigation):** The project manager says, "I will take the necessary measures required to control this risk by continuously reevaluating it and developing contingency plans or fallback positions. I will do what is expected."
- **Transfer:** The project manager says, "I will share this risk with others through insurance or a warranty or transfer the entire risk to them. I may also consider partitioning the risk across hardware and/or software interfaces or using other approaches that share the risk."

2.1.7.5. Monitoring and Control Risks

Control Risks is the process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project. The key benefit of this process is that it improves efficiency of the risk approach throughout the project life cycle to continuously optimize risk responses (PMI, 2013).

The inputs, tools and techniques, and outputs of this process are depicted in Figure 2.6

Figure 2.6 Control Risks: Inputs, tools & techniques, and outputs

(Source: PMI, 2013)

According to Kerzner (2009), the monitoring and control process systematically tracks and evaluates the effectiveness of risk response actions against established metrics. Monitoring results may also provide a basis for developing additional risk response strategies, or updating existing risk response strategies, and reanalyzing known risks. In some cases, monitoring results may also be used to identify new risks and revise some aspects of risk planning. The key to the risk monitoring and control process is to establish a cost, technical performance, and schedule management indicator system over the program that the program manager and other key personnel use to evaluate the status of the program. The indicator system should be designed to provide early warning of potential problems to allow management actions. Risk monitoring and control is not a problem-solving technique but, rather a proactive technique to obtain objective information on the progress to date in reducing risks to acceptable levels.

2.2. Empirical Literature Review

This part of literature review will discuss related articles and journals to the topic under study. Pimchangthong, 2017 conducted a survey on effects of risk management practice on the success of IT Project. The descriptive statistics results found that the risk management practice in the aspect of risk identification, risk analysis and total aspect were in the high level of importance (x= 3.96, 3.55, 3.69, and S.D.= 0.644, 0.807, and 0.562). The aspect of risk response planning and risk monitoring and control were in the moderate level of importance (x= 3.49, 3.32, and S.D. =0.680, 0.671). The multiple linear regression analysis results found that risk identification, and risk response planning influenced process performance at the statistical significance level of0.05. The highest beta coefficient is 0.398,

which means that risk response planning had the greatest influence on predicting process performance, followed closely by risk identification with beta coefficient of 0.244. The multiple linear regression analysis results found that risk identification, risk analysis and risk response planning influenced product performance at the statistical significance level of 0.05. The highest beta coefficient is 0.383, which means that risk identification had the greatest influence on predicting product performance, followed closely by risk response planning and risk analysis with the beta coefficient of 0.367 and 0.135, respectively. The multiple linear regression analysis results found that risk identification and risk response planning influenced IT project success at the statistical significance level of 0.05. The highest beta coefficient is 0.359, which means risk identification had the greatest influence on predicting IT project success, followed by risk response planning with the beta coefficient of 0.333.

Zerithun, 2017 also conducted a survey on the relationship between project management maturity and competitiveness in the case of Commercial Bank of Ethiopia and assessing project risk management assessment was one of the assessment areas in this study. The assessment is based on a five point Likert scale where: 1= we do not need this element; 2= we do not have or use this element but probably should; 3= we do have or use this element but do not always use it appropriately; 4=we do have or use this element and do use it appropriately and competently; and 5= we do have or use this element and do use it in an exemplary manner. Based on this a mean is calculated for the practice of project risk management in terms of identification of risks, monitoring of identified risks, the use of project management software and using risk register. Hence, the result showed that the average mean is 3.3474. Moreover, the study also determines the effect of project risk management on organizational competitive advantage in the Commercial Bank of Ethiopia. The study used correlation analysis to establish the strength of the relationship between the study variables, and whether there are any significant relationships between them. As a result, it is found that there is a significant positive correlation between competitive advantage and project risk management .571 which has related to increase positive events, and decrease the likelihood and impact of negative events in the project.

A survey was conducted by Tigest, 2017 on project management practices in a case of Japanese Social Development Trust Fund Grant Project. The research assessed the practice

of project risk management as one of the project management knowledge areas. The survey used a Likert type scale ranging from1 (Strongly Disagree / highly dissatisfied) to 5 (Strongly Agree / Highly Satisfied) on the practice of development of risk management plan, identification and registering of risks, risk prioritization and estimation of impacts, development of risk response plan, monitoring and controlling of the identified risks. Finally, the result found a mean of 2.02, 2.07, 2.05, 2.07 and respectively. This implies that, the practice of project risk management is poor in a way that projects are expected to put in to practice.

Peixoto J.; Tereso A.; Fernandes G. & Almeida R., 2014 conducted a case study of project risk management methodology in Electric Energy Organization and the research found some setbacks such as:

• The project risk methodology is new for the project management team, so first should be assured that project team understands the project risk management plan and is committed to follow it.

• The project had already started when the risk management plan was defined, once the ideal timing for establishing the risk management plan is along with the project management plan, when the project is defined and characterized, so it is easily accepted along with the other project management practices.

• The information collection process from the project management team took more time than expected. The reasons for this can be related to:

a) The inability to perceive the relevance of risk management practices for the project success;

b) The fact that the project was already started;

c) The team being involved in other tasks, and

d) Lack of risk management knowledge.

• Difficulty in understanding and interpreting the outcomes of project risk and response plans.

• Difficulty in influencing the project team to dedicate more time to risk management activities.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Research Approach

Research approach is about turning research questions into the research project (Robson 2002 & Osipova, 2008). Since there is a growing support for methodological pluralism, project management becomes increasingly viewed from different perspectives by different scholars (Sankaran et al., 2015). As a philosophical underpinning for mixed approach, Creswell (2003) conveys the importance for focusing attention on the research problem in social science research and then using pluralistic approaches to derive knowledge about the problem. Thus, mixed method approach was adopted to investigate the risk management practices of the target companies.

3.2. Research Design

For a comprehensive description and analysis of the issue; the research applied case study method. It was selected in order to allow the study in-depth close analysis and investigation of the issues under consideration, so that its findings and interpretation will be valid and consistent. Through single-case detailed contextual analysis of a limited number of project cases, and their relationships. As Yin (2009, 1994) suggests, the types of research questions determine the most suitable strategy.

The research design presented in this project work was of a descriptive type. Descriptive research aims at identifying and recording a phenomenon, processor system and may be conducted using questionnaire (Fellows and Liu 2003). Thus, as both references suggest, questionnaire survey technique and interview are chosen for data collection. The main tool of the study is a questionnaire followed by a series of interviews with project managers. The questionnaire sample comprised project managers, project team, clients, contractors and consultants who are expected to employ risk management in a given project.

The research design was chosen for it fits well with the problem under consideration and makes the issues to intensively examine the contemporary specific context of the issue. To serve this purpose the research had guidelines indicating the process of the research as

mentioned before. In addition, this study is a cross-sectional study which only took a snapshot of a particular case in the time perspective.

3.3. Data Types and Sources

There are two types of data sources namely primary and secondary data (Kothari, 2004). The primary data are those which are collected anew and for the first time, and thus happen to be original in character (e.g. questionnaire and semi-structured interview). Secondary data is defined as data that have been previously collected for some other purpose. Hence, for this study, both primary and secondary data sources are proposed. As regards primary data, information obtained through the administration of different data gathering tools such as questionnaire was collected from 27 of the respondents (all of the population) and semi-structured interview which was conducted with the directorate director, project manager and team leader. Regarding secondary data, documents like reports, TOR, technical documentation and memos available was analyzed and reviewed in line with literature pertinent to the study. The data collection instrument was mainly adopted from Pimchangthong 2017, Zerithun 2017, & Tigest 2017 and some items were developed by the researcher.

The target population for this study was all of Online Content Regulatory Legal Framework Development Project team of the project. The assessment was undertaken with ICT Standards Development and Enforcement Case Team in the Ministry. The research considered only one framework among those frameworks and guidelines development projects that the ministry has engaged in.

According to the information gathered from the ministry there are 27 direct project team members who are responsible in planning, executing, managing and supporting the overall projects implementation of the organization. These were experts of the organization ICT Standards Development and Enforcement Case Team, OCRLFDP teams and IT steering committee. IT steering committee was comprised of project manager, IT department team leaders and standard and regulatory directorate director whose role was monitoring and control of the project. Therefore, this target population was the data source from which the data was collected through structured questionnaires.

According to Kothari (2004) census inquiry needs to be emphasized that when the universe

is a small one, it is no use resorting to a sample survey. Census is a complete enumeration of all items in the population. It can be considered that in such an inquiry, when all items are covered, no element of chance is left and highest accuracy is obtained. Thus, in this study census inquiry was employed as presented in Table1 below.

Table 3.1: Target population category

Participant category	No of target respondents	Percentage
Directorate Director	1	3.7
IT Department Team Leader	1	3.7
Project manager	1	3.7
Core development liaison	2	7.5
Graphic designers	7	25.9
Content manager	1	3.7
Case Team Experts	7	25.9
OCRLFDP team Experts	7	25.9
Grand total	27	100

Source: MCIT HR record, 2019

3.4. Data Analysis and Gathering

The data was collected with structured questionnaire. Besides, semi-structured interview were conducted. The data collected was measured by nominal scale and ordinal scale and analyzed quantitatively by descriptive statistics in which the SPSS software version 20 was used to find percentages and frequencies for tabular illustrations.

3.5. Validity and Reliability

Validity refers to the extent to which a test measures what the researcher actually wishes to measure (Kothari, 2004) whereas reliability refers accuracy and precision of measurement. To obtain acceptable and accurate response from each question in the questionnaire, the questionnaire was reviewed, commented, and rechecked. In addition to this, five respondents were given clues on the specific items; the reliability of the questionnaire was checked by the Cronbach's-Alpha test coefficient using SPSS version 20.0 software and the result obtained was the following.

Table 3.2: Cronbach's-Alpha test coefficient values

RMP	Risk planning	Risk identification	Risk analysis	Risk response	Risk monitor and control
Cronbach value	0.813	0.701	0.714	0.873	0.746

Source: own survey, 2019.

The Cronbach's-Alpha test coefficient values for each items shown above indicates the close ended Questionnaires are reliable and acceptable.

3.6. Ethical Considerations

According to Saunders there are key ethical issues that arise across the stages and duration of a research project. They stated that the issues relate to privacy and consent of participants, maintenance of the confidentiality of data and their anonymity. Therefore, the research processes were guided by sound ethical principles which include: voluntarism, objectivity, confidentiality, respect and informed consent. The researcher tried to ensure that all aspects of ethical consideration while conducting the research.

Particularly, the researcher ensured that respondents are not manipulated into participating in the study. Respondents were told the purpose of the study and their consent to participate in the study. The researcher was also ensured objectivity when carrying out the research any attempt to bias results were considered unethical and should therefore be avoided. The respondents were also assured of confidentiality and anonymity. Their names were not written anywhere in the report and the information given will only be used for academic purposes.

CHAPTER FOUR

DATA RESULT AND ANALYSIS

This chapter presents the result of the data obtained from the respondents while assessing Project Risk Management practices of MCITOCRLFDP using questionnaire and interview. The questionnaire was developed using Likert scale; where 1 represents Strongly Disagree, 2 Disagree, 3 Neutral, 4 Agree and 5 Strongly Agree. During the assessment, the researcher couldn't find a standard used by MCIT to measure the effectiveness of the project risk management practices. Therefore, for purpose of easy analysis and interpretation, the mean values of each item and the grand mean were interpreted by taking into account the acquired project resources of MCIT. Hence, the mean values from 1.00-1.50 were represented as very poor, from 1.51-2.50 were represented as poor, from 2.51-3.50 as uncertain, from 3.51-4.50 as good, and from 4.51-5.00 as very good. The results are presented by using descriptive statistics. To analyze the collected data SPSS Statistics version 20 was used. In addition, the result obtained from the interview also analyzed by relating to literatures. The collected data is summarized as follows.

4.1. Demographic Information

This part provides demographic information about the respondents' age in years, educational background, and work experience in projects and trainings in formal risk management.

Table 4.1 Demographic Information

Demography	Description	Frequency	Percent	Valid P
Age in years	21-30 years	4	5.9	5.9
	41-50 Years	9	35.3	35.3
	31-40 years	14	58.8	58.8
	Total	**27**	**100**	**100**
Educational Background	Bachelor Degree	13	47.1	47.1
	Masters	14	52.9	52.9
	Total	**27**	**100**	**100**
Work Experience in projects	1-2 Years	4	5.9	5.9
	2-3Years	6	17.6	17.6
	more than 3 Years	17	76.5	76.5
	Total	**27**	**100**	**100**
Formal Management Training	Yes	11	35.3	35.3
	No	16	64.7	64.7
	Total	**27**	**100**	**100**

Source: Own survey, 2019

Table 4.1 depicts that among 27 respondents 14(58.8%) of them were in 31- 40 years age group and 9(35.3%) of them were in 41- 50 years age group while the rest 4(5.9%) respondent was in 21- 30 years age group. This implies that majority of the respondents were above 31 years old.

According to table 4.1, respondents that acquired master's degree were 14(52.9%) and bachelor's degrees were 13(47.1%). This reveals that majority of the respondents had master's degree.

Table 4.1 also shows respondents work experience in projects. Accordingly, 17(76.5%) of the respondents have more than 3 years and 6(17.6%) have 2-3 years while the rest 4(5.9%) respondent has 1-2 years of work experience in projects.

Table 4.1 depicts that, among the respondents majority of them (64.7%) didn't take formal

risk management training. Whereas the rest (35.3%) have took formal risk management training. This implies that the practice of risk management training was insufficient.

4.2. General Project Risk Management Practice

This part provides general project risk management practice.

Table 4.2 General Project Risk Management Practice

General activities in project risk Management	Likert scale					Mean	Std. Deviation	N
	1	2	3	4	5			
There is strong linkage between business analysis of threats and opportunities and analysis of project risk	23.5	29.4	5.9	35.3	5.9	2.71	1.359	27
Project team have deep project experience in risk management	41.2	41.2	17.6			1.76	0.752	27
There is documented risk register from previous projects that support project team in risk identification and analysis	58.8	35.3		5.9		1.53	0.800	27
Risks are identified during work break down structure(WBS)	52.9	23.5	17.6	5.9		1.76	0.970	27
There is a policy and procedure that guide the project team to go through a disciplined risk management process	29.4	29.4	11.8	29.4		2.41	1.228	27
Project teams are motivated in the process of project risk management	58.8	35.3		5.9		1.53	0.800	27
Grand mean						2.00		

Source: Own survey, 2019

In table 4.2, six (6) issues were raised to assess the general practice of project risk management in MCIT's OCRLFDP. In the first issue, respondents were asked if there was a strong linkage between business analysis of threats and opportunities and analysis of project risk, 41.2% were agreed and strongly agreed, 5.9% were neutral but majority of them (52.9%) were disagreed and strongly disagreed that there was a strong linkage between business analysis of threats and opportunities and analysis of project risk. Moreover, the

mean value obtained for this issue was (2.71). This implies that the majority of the respondents were uncertain about the strong linkage between business analysis of threats and opportunities and analysis of project risk. Similarly, the result obtained from the interview with the project managers revealed that only the business threats were seen regardless of the business opportunities while planning project risk.

In the second issue, respondents were asked if project team have deep experience in risk management, 17.6% were neutral but majority of them (82.4%) were disagreed and strongly disagreed that project team have deep experience in risk management. A mean score obtained in this regard was (1.76). This indicates that almost all of the respondents didn't have deep experience in risk management. Similarly, the interviewee also confirmed that practice of training and development in risk management was weak. Hence, they couldn't acquire deep experience in project risk management.

In the third issue, respondents were asked if there was documented risk register from previous projects that support project team in risk identification and analysis. In this regard, 5.9% were agreed and strongly agreed, but majority of them (94.1%) were disagreed and strongly disagreed that there was documented risk register from previous projects that support project team in risk identification and analysis. In addition, the average response obtained in this issue was (1.53). This implies that nearly all of the respondents assured that risk register didn't practiced in the ministry. Similarly, the interviewee declared that the culture of documenting risk register of previous projects was weak.

In the fourth issue, respondents were asked if risks were identified during work break down structure (WBS), 5.9% were agreed and strongly agreed, 17.6% were neutral but majority of them (76.4%) were disagreed and strongly disagreed that risks were identified during work break down. A mean score obtained in this regard was (1.76).This shows that the respondents replied that risks were identified at the last. Similarly, the interviewee stated that risks were identified at the end rather than during WBS.

In the fifth issue, respondents were asked if there was a policy and procedure that guide the project team to go through a disciplined risk management process, 29.4% were agreed and strongly agreed, 11.8% were neutral but majority of them (58.8%) were disagreed and

strongly disagreed that there was a policy and procedure that guide the project team to go through a disciplined risk management process. A mean score obtained in this regard was (2.41). This indicates that the majority of the respondents believe that there is no policy or guideline that proposes how to handle risk and there is also no defined standard risk management process within the projects. Similarly, the interviewee added that the organization risk policy and procedure was prepared in a generic way not specific to the project. Therefore, there was no any formal procedure that guides the project team to go through a disciplined risk management process.

In the sixth tenth issue, respondents were also asked if project teams were motivated in the process of project risk management. In this regard, 5.9% were agreed and strongly agreed, but majority of them (94.1%) were disagreed and strongly disagreed that project teams were motivated in the process of project risk management. A mean score obtained in this regard was (1.53). This implies that the most of the respondents were not motivated. Similarly, the interviewee also support the result obtained from the questionnaire in that the project team was selected from different functional departments and they were responsible and accountable both to the project and their functional unit. However, there was no any motivation that encourages them to manage risks effectively.

The grand mean (2.00) and the result obtained from interviewee revealed that the organization's risk policy and procedure was insufficient for project risk management. In addition, the project teams had lack of adequate experience in risk management, motivation and documented risk register from previous projects.

4.3. Risk Planning Practice

Table 4.3 Risk Planning Practice

Risk Planning Activities	Likert scale					Mean	Std. Deviation	N
	1	2	3	4	5			
The risk management plan has obtained agreement and support from all stakeholders	41.2	41.2	17.6			1.76	0.752	27
The risk plan ensures that the degree, type, and visibility of risk management that commensurate with the project plan	41.2	17.6		35.3	5.9	2.47	1.505	27

The risk management methodology including the tools and data sources that may be used in the risk management process are established	35.3	29.4	29.4	5.9		2.06	0.966	27
The roles and responsibilities of the various project stakeholders participating in the risk management is clearly established	29.4	35.3	29.4	5.9		2.12	0.928	27
Grand mean						2.10		

Source: Own survey, 2019

In table 4.3, four (4) issues were raised to assess the practice of project risk planning. Accordingly, in the first issue, respondents were asked if the risk management plan had obtained agreement and support from all stakeholders. In addition, the average response obtained in this issue was (1.76).This implies that the risk management plan hadn't get an agreement and support from all stakeholders. Similarly, the interviewee explained that the project didn't have stakeholder management plan and all stakeholders were unable to participate in risk planning.

In the second issue, respondents were asked if the risk plan ensured the degree, type, and visibility of risk management that commensurate with the project plan, a mean score obtained in this regard was (2.47). This implies that the practice was uncertain means more than half of the respondents described the plan didn't ensure the degree, type and visibility of risk management. Similarly, the result obtained from the interviewee revealed that the risk management plan didn't follow standard project management practices and as a result its alignment with the project plan had limitation in visibility and clarity.

Regarding the third issue, respondents were asked if the risk management methodology including the tools and data sources that may be used in the risk management process was established, the mean value obtained for this issue was (2.06). It can be observed from the responses that majority of the respondents believes there was no established risk management process. Similarly, the questionnaire result agrees with the result obtained from the interview.

In the fourth issue, respondents were asked if the roles and responsibilities of the various project stakeholders participating in the risk management were clearly established, the mean value obtained for this issue was (2.12). Here, the respondents response showed that roles and responsibilities of project stakeholders not clearly established. Similarly, the interview and document analysis by a researcher revealed that roles and responsibilities of the various project stakeholders lack clarity. It only shows to whom the risk is escalated.

The grand mean (2.10) and the result obtained from interviewee revealed that all stakeholders weren't participated and even the roles and responsibilities of the project teams wasn't clearly stated in the risk plan. In addition, the risk management methodology including the tools and data sources that may be used in the risk management process weren't established. As a result, the risk plan became weak to ensure that the degree, type, and visibility of risk management that commensurate with the project plan.

4.3.1. Inputs, Tools and Techniques in risk planning

Table 4.4 Input in risk planning

Which of the following input is primarily used to plan risks within the project?

Input used in risk planning	Responses	
	N	Percent
Project Management Plan	8	35.3
Enterprise Environmental Factors	6	23.5
Project Charter	3	5.9
Organizational Process Assets	7	29.4
Stakeholder Register	3	5.9
Total	27	100.0

Source: Own survey, 2019

Table 4.4 shows that majority of the respondents (35.3%) believed that project management plan was used primarily in risk planning followed by organizational process assets (29.4%) and enterprise environmental factor (23.5%). In addition, project charter and stakeholder register (5.9%). In this regard, the interviewee agreed with the questionnaire result except that of the response on project charter and stakeholder register. Document analysis by the

researcher also agreed with the interviewee that the project didn't use project charter and stakeholder register as input in risk planning. According to PMI (2013), project charter can provide various inputs such as high-level risks, high-level project descriptions, and high-level requirements. In addition, stakeholder register, which contains all details related to the project's stakeholders, provides an overview of their roles.

Table 4.5 Tool and technique in risk planning

Which of the following tools and technique is primarily used to plan risks within the project?

Tool and Technique used in risk planning	Responses	
	N	Percent
Analytical Techniques	7	23.5
Expert Judgment	9	35.3
Meetings	10	41.2
Total	17	100.0

Source: Own survey, 2019

According to table 4.5, meetings (41.2%) followed by expert judgment (35.3%) and analytical techniques (23.5%) were used as a tool and technique in risk planning. However, the interview result agreed only with meetings and expert judgment and refused that the project used analytical techniques. According to PMI (2013), analytical techniques are used to understand and define the overall risk management context of the project. Risk management context is a combination of stakeholder risk attitudes and the strategic risk exposure of a given project based on the overall project context

In general, the respondents replied that the practice of using inputs, tools and techniques as well as incorporating the risk planning activities effectively was poor.

4.4. Risk Identification Practice

Table 4.6 Risk Identification Practice

Risk Identification Activities	Likert Scale					Mean	Std. Deviation	N
	1	2	3	4	5			
Risks are identified throughout the project lifecycle.			5.9	47.1	47.1	4.41	0.618	27
The project team is involved in the risk identification process.				41.2	58.8	4.59	0.507	27
Systemic approach is applied for the identification of risk.	52.9	35.3	11.8			1.59	0.712	27
A clear description of the risks with the cause and effects are understood and documented.	29.4	23.5	29.4	11.8	5.9	2.41	1.228	27
Risk register is produced as an output in risk identification process	29.4			17.6	52.9	3.65	1.801	27
Grand mean						3.33		

Source: Own survey, 2019

Table 4.6 depicts that risk identification activities that had been taken place in OCRLFDP. In this regard, five (5) issues were raised. In the first issue, respondents were asked if risks were identified throughout the project lifecycle, a mean score obtained in this regard was (4.41). This indicates that risks are identified throughout the project life cycle.. Similarly, the interviewee result agrees with the questionnaire result.

In the second issue, respondents were asked if the project team were involved in the risk identification process, the result found that 100% were strongly agreed that project team were involved in the risk identification process. In addition, a mean value obtained in this issue was (4.59). The response from the respondents shows that the project teams were involved in the identification process. Similarly, the interview from the project manager, team leader result supports the questionnaire result.

Regarding the third issue, respondents were asked if systemic approach was applied for the identification of risk, the mean value obtained for this issue was (1.59). The response showed that no systematic approach is applied for the risk identification. Similarly, the result

obtained from the interview revealed that the risk identification didn't follow standard and systematic approach rather used common risk identification method.

In the fourth issue, respondents were asked if a clear description of the risks with the cause and effects were understood and documented, a mean value obtained in this issue was (2.41). This implies that the respondents told that clear description of the risks weren't understood and documented. Similarly, the interviewee confirmed that the identified risk lacks detail description that guide the project team for effective risk analysis.

The fifth issue also shows the question raised for respondents if risk register was produced as an output in risk identification process, a mean value obtained in this issue is (3.65). Here the respondents respond that risk register was produced as an output in the identification process. Similarly, the interview result agreed with the above result.

The grand mean (3.33) and the result obtained from interviewee revealed that project teams were involved in the process of risk identification. In addition, risks were identified throughout the project lifecycle and risk register also be produced in a good manner. However, the project team didn't follow systemic approach in risk identification and documenting a clear description of the risks with the cause and effects were also inadequate.

4.4.1. Inputs, Tools and Techniques in Risk Identification

Table 4.7 Input in risk identification

Which of the following input is primarily used to identify risks within the project?

Input used in risk identification	Responses	
	N	Percent
Risk Management Plan	6	23.5
Schedule Management Plan	3	11.8
Human resource Management Plan	-	-
Procurement documents	2	5.9
Organizational Process Assets	4	17.6
Cost Management Plan	3	11.8
Quality Management Plan	-	-
Scope Baseline	3	11.8
Enterprise Environmental Factors	4	17.6
Total	27	100.0

Source: Own survey, 2019

Table 4.7 shows that majority of the respondents (23.5%) believed that project risk management plan was used primarily in risk identification followed by enterprise environmental factor and organizational process assets (17.6%). In addition, cost management plan, scope baseline and schedule management plan with each of them (11.8%), procurement document (5.9%) but human resource management plan and quality management plan were not used. Furthermore, the researcher document analysis also shows the same result with the interview. According to PMI (2013), quality management plan provides a baseline of quality measures and metrics for use in identifying risks. In addition, human resource management plan provides guidance on how project human resources should be defined, staffed, managed, and eventually released. It can also contain roles and responsibilities, project organization charts, and the staffing management plan, which form a key input to identify risk process.

Table 4.8 Tool and Technique used in risk identification

Which of the following tool and technique is primarily used to identify risks within the project?

Tool and Technique used in risk identification	Responses	
	N	Percent
Documentation reviews	2	5.9
Checklist Analysis	4	11.8
SWOT Analysis	2	5.9
Information Gathering Techniques	5	17.6
Assumptions Analysis	6	23.5
Expert Judgment	8	35.3
Total	27	100.0

Source: Own survey, 2019

Table 4.8 depicts that majority of the respondents (35.3%) believed that expert judgment followed by assumptions analysis (23.5%), information gathering techniques (17.6%), checklist analysis (11.8%), documentation review and SWOT analysis with each (5.9%). However, the interviewee disagreed that the project used checklist analysis, documentation

review and SWOT but agreed with the rest. According to PMI (2013), a structured review of the project documentation may be performed, including plans, assumptions, previous project files, agreements, and other information. The quality of the plans, as well as consistency between those plans and the project requirements and assumptions, may be indicators of risk in the project. In addition, Risk identification checklists are developed based on historical information and knowledge that has been accumulated from previous similar projects and from other sources of information. Moreover, SWOT analysis identifies any opportunities for the project that arise from organizational strengths, and any threats arising from organizational weaknesses. The analysis also examines the degree to which organizational strengths offset threats, as well as identifying opportunities that may serve to overcome weaknesses.

4.4.2. Risk Categories

Table 4.9 Risk Categories

Which of the following risk categories that you commonly encountered in this project?

Risk categories in the project	Responses	
	N	Percent
Internal Risk	11	41.2
Project Specific Risk	9	35.3
External Risk	7	23.5
Total	27	100.0

Source: Own survey, 2019

As shown in table 4.9, majority of the respondents (41.2%) indicated that internal risks were commonly encountered in the project followed by project specific risk (35.3%) and external risk (23.5%). Similarly, the interviewee also agreed with the questionnaire result.

In general, the practice of using inputs, tools and techniques as well as implementing the risk identification process was uncertain. However, this practice needs further improvement in future projects. Risk identification must continue through all project phases (Kerzner, 2009).

4.5. Qualitative Risk Analysis Practice

Table 4.10 Qualitative Risk Analysis Practice

Qualitative Risk Analysis Activities	Likert Scale					Mean	Std. Deviation	N
	1	2	3	4	5			
Characteristics of the risk are considered before analyzing the identified risk.	17.6	11.8	5.9	35.3	29.4	3.47	1.505	27
Assumptions made during the analysis are stated.	17.6	11.8	11.8	41.2	17.6	3.59	1.604	27
Descriptive terms are used to specify combinations of likelihood and impact.	23.5	5.9	5.9	41.2	23.5	3.65	1.639	27
Assessments are done by factual information and data where applicable.	58.8	17.6	5.9	5.9	11.8	1.94	1.435	27
Project documents are updated after risks are analyzed qualitatively.	70.6	17.6		5.9	5.9	1.59	1.176	27
Grand mean						2.73		

Source: Own survey, 2019

Table 4.10 indicates responses of respondents for questions raised on qualitative risk management process in OCRLFDP. Accordingly, five (5) issues were raised. In the first issue, do characteristics of the risk were considered before analyzing the identified risk, a mean value obtained in this issue was (3.47). The respondents responses were indicate they are in dilemma means they can't say either the characteristics are considered or not. Similarly, the interviewee result also agreed with the questionnaire result.

In the second issue, respondents were asked if assumptions made during the analysis were stated, 29.4% were disagreed and strongly disagreed, 11.8% were neutral but majority of them (58.58%) were agreed and strongly agreed that assumptions made during the analysis were stated. In addition, a mean value obtained in this issue was (3.59). The response implies that the assumptions were stated during the analysis. Similarly, the project manager also responded likewise.

Regarding the third issue, respondents were asked if descriptive terms were used to specify combinations of likelihood and impact, the mean value obtained for this issue is (3.65). Likely, descriptive terms were used to specify grouping of likelihood and impact said the

responses of the respondents. Likely, the interviewee result also agreed with the questionnaire result.

In the fourth issue, respondents were asked if assessments were done by factual information and data where applicable, a mean value obtained in this issue was (1.94). This implies that the assessments were not done by the factual data and information. Similarly, the interviewee explained that there was no formal gathering of factual information rather they use mostly by meetings.

In the fifth issue, respondents were also asked if project documents are updated after risks were analyzed qualitatively, a mean value obtained in this issue was (1.59). These respondents replied that project documents are not updated.

The grand mean (2.73) and the result obtained from interviewee confirmed that the characteristics of the risk and assumptions were fairly considered before risks are analyzed qualitatively. In addition, there was fair description of the combinations of likelihood and impact. However, the practice incorporating factual information and updating project documents was poor in qualitative risk analysis.

4.5.1. Inputs, tools and techniques in Qualitative Risk Analysis

Table 4.11 Input used in qualitative risk analysis

Which of the following input is primarily used in qualitative risk analysis?

Input used in qualitative risk analysis	Responses	
	N	Percent
Risk Management Plan	5	17.6
Risk Register	7	29.4
Organizational Process Assets	5	17.6
Scope Baseline	5	17.6
Enterprise Environmental Factors	5	17.6
Total	27	100.0

Source: Own survey, 2019

According to table 4.11, majority of the respondents (29.4%) believed that risk register were

used as input in qualitative risk analysis followed by risk management plan, organizational process asset, scope baseline and enterprise environmental factors with each of them the same response(17.6%). Similarly, the result obtained from the interview agreed with the questionnaire result.

Table 4.12 Tool and Technique used in qualitative risk analysis

Which of the following tool and technique is primarily used in qualitative risk analysis?

Tool and Technique in qualitative risk analysis	Responses	
	N	Percent
Risk Probability and Impact Assessment	12	47.1
Expert Judgment	9	35.3
Risk categorization	6	17.6
Total	27	100.0

Source: own survey, 2019

Table 4.12 shows that majority of the respondents (47.1%) believed that risk probability and impact assessment followed by expert judgment (35.3%) and risk categorization (17.6%) were used as a tool and technique in qualitative risk analysis. Similarly, the result obtained from the interview agreed with the questionnaire result.

4.5.2. Risks analysis approach

Table 4.13 Risks analysis approach

Which of the following approach is primarily used in risk analysis?

Risks analysis approach	Responses	
	N	Percent
Based on probability	10	41.2
Based on accomplishment of the objectives	8	29.4
Based on outcome	4	11.8
Based on financial impact	5	17.6
Total	27	100.0

Source: Own survey, 2019

Table 4.13 depicts that majority of the respondents (41.2%) believed that risk were analyzed

based on probability followed by accomplishment of objectives (29.4%), financial impact (17.6%) and outcome (11.8%). However, the interviewee agreed with the questionnaire result except that the project was analyzed based on financial impact and outcome.

In general, the practice of using inputs, tools and techniques as well as qualitative risk analysis was uncertain. However, this practice needs further improvement in future projects. According to Kerzner (2009), the risk is included in a prioritized list based upon the risk level as well as other considerations (e.g., frequency of occurrence, the time to impact, and interrelationships with other risks). A risk mapping matrix is typically used to convert ordinal probability of occurrence and consequence of occurrence scale values to a corresponding risk level.

4.6. Quantitative Risk Analysis Practice

Table 4.14 Quantitative Risk Analysis Practice

Risk Response Activities	Liker Scale					Mean	Std. Deviation	N
	1	2	3	4	5			
Identified risks are numerically analyzing the effect of on overall project objectives.	58.8	41.2				1.41	.507	27
An assessment is done for the probability of achieving project objectives.	47.1	52.9				1.53	.514	27
Identify realistic and achievable cost, schedule and scope targets, given the project risks.	58.8	41.2				1.41	.507	27
Project documents are updated after risks are analyzed quantitatively.	70.6	29.4				1.29	.470	27
Grand mean						1.41		

Source: Own survey, 2019

Table 4.14 depicts that results obtained during the assessment of quantitative risk analysis. In this table four (4) issues were raised. In the first issue, respondents were asked if

identified risks were numerically analyzing the effect of on overall project objectives, 100% were disagreed and strongly disagreed, that identified risks were numerically analyzing the effect of on overall project objectives. Moreover, the mean value obtained for this issue was (1.41). The respondents' response implies that the identified risks are analyzed numerically. Likewise, the interviewee also believed that there was no any numerical analysis of risk by how much it affects project objectives.

Regarding the second issue, respondents were asked if an assessment was done for the probability of achieving project objectives, 100% were disagreed and strongly disagreed, that an assessment was done for the probability of achieving project objectives. Moreover, the mean value obtained for this issue was (1.53). The respondents' response indicates that the project didn't goes through an assessment. Similarly, the interviewee agreed that further analysis wasn't being done whether the project objectives could be meeting or not.

In the third issue, respondents were asked if realistic and achievable cost, schedule and scope targets were identified given the project risks, 100% were disagreed and strongly disagreed, that realistic and achievable cost, schedule and scope targets, were identified given the project risks. In addition, a mean value obtained in this issue was (1.41). Respondents revealed that there are realistic and achievable cost, schedule and scope targets. Similarly, the interviewee explained that the project risk wasn't breakdown in that whether project objectives could be meeting or not.

The fourth issue also shows response of respondents while asked if project documents were updated after risks were analyzed quantitatively, 100% were disagreed and strongly disagreed, that project documents were updated after risks were analyzed quantitatively. Moreover, a mean value obtained in this issue was (1.29). The response from the respondents describes that no project document is updated at all. Similarly, the result obtained from the interviewee also confirmed that the culture of updating project documents was poor and document analysis by the researcher also revealed the same result.

The grand mean (1.41) and the result obtained from interviewee confirmed that identified risks weren't numerically analyzed their effects on overall project objectives. In addition, with the identified project risks, achievable cost, schedule and scope targets weren't identified realistically. Moreover, there was inadequate assessment of the probability of

achieving project objectives and also updating of project documents.

4.6.1. Inputs, Tools and Techniques in Quantitative Risk Analysis

Table 4.15 Input used in quantitative risk analysis

Which of the following input is primarily used in quantitative risk analysis?

Input used in quantitative risk analysis	Responses	
	N	Percent
Risk Management Plan	5	17.6
Schedule Management Plan	3	11.8
Enterprise Environmental Factors	3	11.8
Cost Management Plan	5	17.6
Risk Register	6	23.5
Organizational Process Assets	5	17.6
Total	27	100.0

Source: Own survey, 2019

Table 4.15 depicts that majority of the respondents (23.5%) believed that risk register followed by risk management plan, cost management plan and organizational process asset with each (17.6%). In addition, schedule management plan and enterprise environmental factors with each (11.8%) were used as input in quantitative risk analysis. However, the interviewee disagreed that nothing was done in terms of quantitative risk analysis. According to PMI (2013), Perform Quantitative Risk Analysis should be repeated, as needed, as part of the Control Risks process to determine if the overall project risk has been satisfactorily decreased. Trends may indicate the need for more or less focus on appropriate risk management activities.

Table 4.16 Tool and Technique in quantitative risk analysis

Which of the following tools and techniques is primarily used in quantitative risk analysis?

Tool and Technique used in quantitative risk analysis	Responses	
	N	Percent
Data Gathering and Representation Techniques	5	17.6
Quantitative Risk Analysis and Modeling Techniques	10	35.3
Expert Judgment	12	47.1
Total	27	100.0

Source: Own survey, 2018

Table 4.16 depicts that majority of the respondents (47.1%) believed that expert judgment followed by modeling technique (35.3%) and data gathering and representation technique (17.6%) were used as tools and technique in quantitative risk analysis. However, the interviewee disagreed that nothing was done in terms of quantitative risk analysis. According to PMI (2013), Continuous probability distributions, which are used extensively in modeling and simulation, represent the uncertainty in values such as durations of schedule activities and costs of project components. Discrete distributions can be used to represent uncertain events, such as the outcome of a test or a possible scenario in a decision tree. In addition, Sensitivity analysis helps to determine which risks have the most potential impact on the project. It helps to understand how the variations in project's objectives correlate with variations in different uncertainties. Moreover, expected monetary value (EMV) analysis is a statistical concept that calculates the average outcome when the future includes scenarios that may or may not happen (i.e., analysis under uncertainty). The EMV of opportunities are generally expressed as positive values, while those of threats are expressed as negative values.

In general, the practice of using inputs, tools and techniques as well as quantitative risk analysis process was very poor.

4.7. Risk Response Practice

Table 4.17 Risk Response Practice

Risk Response Activities	Likert Scale					Mean	Std. Deviation	N
	1	2	3	4	5			
A strategy is developed in order to prevent or mitigate all the identified risks	23.5	35.3	23.5	11.8	5.9	2.41	1.176	27
Options and actions are developed to enhance opportunities and to reduce threats to project objectives	17.6	41.2	23.5	11.8	5.9	2.47	0.931	27
The most appropriate treatment option is prepared that balance the costs of implementing each option against the benefits derived from	23.5	47.1	29.4			2.06	0.748	27
Risks are addressed by their Priority.	11.8	41.2	47.1			2.35	0.702	27
Project management plan, project documents and Organizational process assets are updated after risk response process.	58.8	29.4		5.9	5.9	1.71	1.160	27
Grand mean						2.20		

Source: Own survey, 2019

In table 4.17, five (5) issues were raised to assess the risk response for identified and analyzed risks. In the first issue, respondents were asked if a strategy was developed in order to prevent or mitigate all the identified risks, a mean value obtained in this issue was (2.41). This respondent's response shows that there was no strategy in order to prevent or mitigate the risks. Similarly, the result obtained from the interview and document analysis by a researcher revealed that the project didn't strategically develop risk response for the identified risks. The process lacks standard and formality.

In the second issue, respondents were asked if options and actions were developed to enhance opportunities and to reduce threats to project objectives, a mean value obtained in

this issue was (2.47). There is no developed options and actions to enhance the opportunity and reduce the threat as the respondents said. Similarly, the interviewee explained that the project team was only focus on threat and an opportunity wasn't in consideration while responding to risk. The researcher also understood that such ambiguity in risk management comes due to inadequate knowledge of the project team in risk management.

Regarding the third issue, respondents were asked if the most appropriate treatment option was prepared that balance the costs of implementing each option against the benefits derived from, 29.4% were neutral but majority of them (70.6%) were disagreed and strongly disagreed that the most appropriate treatment option was prepared that balance the costs of implementing each option against the benefits derived from. Moreover, the mean value obtained for this issue was (2.06). This implies that the practice was poor. Likewise, the interviewee also stated that there was no appropriate treatment prepared to balance the costs of response options.

In the fourth issue, respondents were asked if risks were addressed by their priority, 47.1% were neutral but majority of them (53.0%) were disagreed and strongly disagreed that risks were addressed by their priority. In addition, a mean value obtained in this issue was (2.35). This implies that risks are not addressed by their priority. Similarly, the interviewee result also agrees with the questionnaire result.

In the fifth issue, respondents were also asked if project management plan, project documents and organizational process assets were updated after risk response process, a mean value obtained in this issue was (1.71). This implies that almost nothing is updated according to the respondent's response. Similarly, the interviewee result also agrees with the questionnaire result.

The grand mean (2.20) and the result obtained from interviewee revealed that a well-developed strategy hadn't been prepared that balance the costs of implementing each option against the benefits and prevent or mitigate all the identified risks. In addition, the project didn't consider business opportunity to reduce threats to project objectives. Moreover, risks weren't treated by their priority and project documents also be updated inadequately. A response strategy can be to eliminate the probability or impact of a risk, or to accept the risk

and calculate with a potential extra cost if the risk occurs (Kululanga & Kuotcha, 2010). The risk response is then based on the combined value of each risk, which leads to a risk management where the response is in relation to the magnitude of the risk (Briner, Hastings, & Geddes, 1996).

4.7.1. Inputs, tools and techniques in Risk Response

Table 4.18 Input used in risk response

Which of the following input is primarily used in risk response?

Input in risk response	Responses	
	N	Percent
Risk Management Plan	13	47.1
Risk Register	14	52.9
Total	27	100.0

Source: Own survey, 2019

Table 4.18 depicts that majority of the respondents (52.9%) believed that risk register followed by risk management plan (47.1%) were used as input in risk response. Similarly, the interviewee also agreed with the questionnaire result.

Table 4.19 Tool & Technique used in risk response

Which of the following tool and technique is primarily used in risk response?

Tool & Technique used in risk response	Responses	
	N	Percent
Strategies for Negative risks or Threats	6	23.5
Strategies for Positive Risks or Opportunities	4	11.8
Expert Judgment	13	52.9
Contingent Response Strategies	4	11.8
Total	27	100.0

Source: Own survey, 2018

According to table 4.19, majority of the respondents (52.9%) believed that expert judgment followed by strategies for negative risks or threats (23.5%), strategies for positive risks or opportunities and contingent response strategies with each (11.8%) were used as a tool and

technique in risk response. However, the interviewee agreed with the response on expert judgment and strategies for negative risks or threats but disagreed with the rest responses. According to PMI (2013), the exploit strategy under strategies for positive risks or opportunities may be selected for risks with positive impacts where the organization wishes to ensure that the opportunity is realized. This strategy seeks to eliminate the uncertainty associated with a particular upside risk by ensuring the opportunity definitely happens. In addition, the enhance strategy is used to increase the probability and/or the positive impacts of an opportunity. Identifying and maximizing key drivers of these positive-impact risks may increase the probability of their occurrence. Moreover, sharing a positive risk involves allocating some or all of the ownership of the opportunity to a third party who is best able to capture the opportunity for the benefit of the project.

4.7.2. Risk response option

Table 4.20 Risk response option

Which of the following response option is primarily used in risk?

Risk response option	Responses	
	N	Percent
Transfer	7	29.4
Mitigate	14	47.1
Accept	6	23.5
Total	27	100.0

Source: Own survey, 2019

Table 4.20 depicts that majority of the respondents (47.1%) believed that mitigate followed by transfer (29.4%) and accept (23.5%) were used as a risk response option in the project. According to PMI (2013), Risk transference is a risk response strategy whereby the project team shifts the impact of a threat to a third party, together with ownership of the response. Transferring the risk simply gives another party responsibility for its management, it does not eliminate it. Transferring does not mean disowning the risk by transferring it to a later project or another person without his or her knowledge or agreement. Risk transference nearly always involves payment of a risk premium to the party taking on the risk. Transferring liability for risk is most effective in dealing with financial risk exposure.

In general, the practice of using inputs, tools and techniques as well as the risk response

activities was poor. Therefore, this practice should be improved in future projects. According to Kerzner (2009), a critical part of risk response planning involves refining and selecting the most appropriate response option(s) and specific implementation approaches for selected risks (often those with medium or higher risk levels) and opportunities.

4.8. Risk Monitoring and Control Practice

Table 4.21 Risk Monitoring and Control Practice

Risk Monitoring and Control Activities	Likert Scale					Mean	Std. Deviation	N
	1	2	3	4	5			
Risks that occur within the project are controlled in a way that goes with the goal and objective of the project.	11.8	52.9	5.9	11.8	17.6	2.71	1.417	27
Identified risks are tracked	11.8		17.6	52.9	17.6	3.65	1.278	27
Residual risks are monitored	11.8	5.9		29.4	52.9	4.06	1.414	27
New risks are identified	11.8	5.9	11.8	41.2	29.4	3.71	1.372	27
Effectiveness of risk management process is evaluated throughout the project	35.3	41.2	5.9	5.9	11.8	2.18	1.185	27
Risk monitoring and control is treated as a continuous process in the project	35.3	23.5	11.8	23.5	5.9	2.41	1.197	27
Project management plan, project documents and organizational process assets are updated after monitoring and control process	52.9	17.6	17.6	5.9	5.9	1.94	0.712	27
Grand mean						2.95		

Source: Own survey, 2019

Table 4.21 shows result obtained from response of respondents in risk monitoring and control process. In this regard, seven (7) issues were raised. In the first issue, respondents were asked if risks that occur within the project were controlled in a way that goes with the goal and objective of the project, a mean value obtained in this issue was (2.71).

Respondents' response implies that risks are not controlled according to the goal and objective of the project. Similarly, the interviewee confirmed that the project team and IT steering committee were unable to control the identified risks within the schedule and allocated budget.

Regarding the second issue, respondents were asked if identified risks were tracked, 11.8% were disagreed and strongly disagreed, 17.6% were neutral but majority of them (70.5%) were agreed and strongly agreed that identified risks were tracked. Moreover, the mean value obtained for this issue was (3.65). This implies that the identified risks are tracked according to the response. Similarly, the interviewee result also agreed with the questionnaire result.

In the third issue, respondents were asked if residual risks were monitored, a mean value obtained in this issue was (4.06). The respondents' response shows that residual risks are monitored very well. Similarly, the interviewee stated that the IT steering team was aware of residual risks that the project team identified during the project life cycle.

In the fourth issue, respondents were asked if new risks were identified, a mean value obtained in this issue was (3.71). Again new risks are identified according to the response. Similarly, the interviewee agreed that the IT steering committee were liable to identify the risks together with the project team.

Regarding the fifth issue, respondents were asked if effectiveness of risk management process was evaluated throughout the project, the mean value obtained for this issue was (2.18). The respondents' response indicates that there is no evaluation of risk management process throughout the project. Similarly, the interviewee agreed that the project team had limitation in risk management knowledge to evaluate the effectiveness of the risk management process. In addition, the IT steering committee was also having weakness in this regard.

Regarding the sixth issue, respondents were asked if risk monitoring and control was treated as a continuous process in the project, the mean value obtained for this issue was (2.41). Risk monitoring and control is not treated as a continuous process the respondents response

said. Similarly, the interviewee stated that there was sometimes discontinuity in the process risk monitoring and control since the project had a matrix based organization structure and also the project team was collected from the functional units and engaged in other functional works other than the project work by giving priority to their functional work.

In the seventh issue, respondents were also asked if project management plan, project documents and organizational process assets were updated after monitoring and control process, 11.8% were agreed and strongly agreed, 17.6% were neutral but majority of them (70.5%) were disagreed and strongly disagreed that project management plan, project documents and organizational process assets were updated after monitoring and control process. In addition, a mean value obtained in this issue was (1.94). This implies that the practice is poor since no updates of project documents are done. Similarly, the interviewee agreed that the culture of updating and documentation requires great improvement.

The grand mean (2.95) and the result obtained from interviewee revealed that monitoring of risks, identification of new risks and tracking of risks were performed in a good manner. While, the practice of controlling of project risks was uncertain in a way that goes with the goal and objective of the project. On the contrary, evaluating effectiveness of risk management process was poor and lacks continuity. In addition, updating project management plan, project documents and organizational process assets were seen as very poor practice in the project.

4.8.1. Inputs, tools and techniques in risk monitoring and Control

Table 4.22 Input used in risk monitoring and control

Which of the following input is primarily used in risk monitoring and control?

Input used in risk monitoring and control	Responses	
	N	Percent
Project Management Plan	4	11.8
Work Performance Data	5	17.6
Risk Register	7	29.4
Work Performance Reports	11	41.2
Total	27	100.0

Source: Own survey, 2019

According to table 4.22, majority of the respondents (41.2%) believed that work performance reports followed by risk register (29.4%), work performance data (17.6%) and project management plan (11.8%) were used as input in risk monitoring and control in the project. Similarly, the result obtained from the interview agreed with the questionnaire result.

Table 4.23 Tool & Technique used in risk monitoring and control

Which of the following tool and technique is primarily used in risk monitoring and control?

Tool & Technique used in risk monitoring and control	Responses	
	N	Percent
Risk Reassessment	2	5.9
Risk Audit	2	5.9
Reserve Analysis	2	5.9
Variance and Trend Analysis	2	5.9
Technical Performance Measurement	2	5.9
Meetings	17	70.6
Total	27	100.0%

Source: Own survey, 2019

According to table 4.23, majority of the respondents (70.6%) believed that meeting was the main tool and technique used in risk monitoring and control followed by technical performance measurement, risk reassessment, risk audit, reserve analysis and variance analysis with each (5.9%) were used as a tool and technique in risk monitoring and control. However, the interviewee agreed only with the response on meetings and disagreed with the other questionnaire results. According to PMI (2013), control Risks often results in identification of new risks, reassessment of current risks, and the closing of risks that are outdated. Project risk reassessments should be regularly scheduled. The amount and detail of repetition that are appropriate depends on how the project progresses relative to its objectives. Risk audits examine and document the effectiveness of risk responses in dealing with identified risks and their root causes, as well as the effectiveness of the risk

management process. For the purposes of controlling risks, trends in the project's execution should be reviewed using performance information. Earned value analysis and other methods of project variance and trend analysis may be used for monitoring overall project performance. Outcomes from these analyses may forecast potential deviation of the project at completion from cost and schedule targets. Deviation from the baseline plan may indicate the potential impact of threats or opportunities. In addition, technical performance measurement compares technical accomplishments during project execution to the schedule of technical achievement. It requires the definition of objective, quantifiable measures of technical performance, which can be used to compare actual results against targets. Throughout execution of the project, some risks may occur with positive or negative impacts on budget or schedule contingency reserves. Reserve analysis compares the amount of the contingency reserves remaining to the amount of risk remaining at any time in the project in order to determine if the remaining reserve is adequate.

In general, the practice of using inputs, tools and techniques as well as implementation of the risk monitoring and control was uncertain. However, this practice needs further improvement in future projects. According to Kerzner (2009), the key to the risk monitoring and control process is to establish a cost, technical performance, and schedule management indicator system. The indicator system should be designed to provide early warning of potential problems to allow management actions.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1.Summary

This research was aimed to assess project risk management practices in MCIT OCRLFDP. In this regard, the practice of risk planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response, monitoring and control of risk were seen in the assessment by raising different issues in the form of questionnaire and interview.

According to the response obtained from majority of the respondents revealed that the project team didn't have deep experience in risk management. In addition, there was no documented risk register from previous projects that support the project team in risk identification and analysis. Moreover, the organization policy and procedure was inadequate to guide the project team to go through a disciplined risk management process.

The result obtained in risk planning implied that all stakeholders weren't participated in risk planning. In addition, the roles and responsibilities of the various stakeholders participating in the risk management weren't clearly established. Moreover, the risk management methodology including the tools and data sources that may be used in the risk management process weren't established efficiently

Regarding risk identification, systematic approach wasn't applied and also the description of the risks with the cause and effect lacks clarity. In addition, quality management plan and human resource management plan weren't used as input and document review, checklist analysis and SWOT analysis as a tool in risk identification. Moreover, internal risks were commonly encountered in the project followed by project specific risk and external risk.

According to response of majority of the respondents in qualitative risk analysis revealed that assessments were not done by factual information and risks weren't analyzed based on financial impact. In addition, project documents weren't being updated after risks were analyzed qualitatively. Moreover, the practice of risk response was primarily mitigate followed by transfer and accept.

In quantitative risk analysis, no input and tools were used. As a result, identified risks weren't analyzed numerically. In addition, realistic achievable cost, schedule and scope targets weren't identified with the given project risk. Moreover, project documents weren't updated after risks were analyzed quantitatively.

In risk response, strategies for positive risks or opportunities, contingent response strategies weren't used as a tool and techniques in risk response. In addition, project document plan, project documents and organizational process assets weren't updated.

The result obtained from the assessment of risk monitoring and control practice revealed that technical performance measurement, reserve analysis, variance and trend analysis weren't used as a tool and techniques in risk monitoring and control. In addition, there was a limitation in evaluating the effectiveness of risk management process throughout the project. The risk monitoring and control process also lacks continuity. Moreover, project management plan, project documents and organizational process assets weren't updated.

Furthermore, important inputs, tools and techniques weren't used effectively during the process of risk planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response, risk monitoring and control.

5.2.Conclusion

The general objective of the study was to assess project risk management practices of MCIT OCRLFDP. In this regard, the study specifically assessed the practice of risk planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response, monitoring and control. Accordingly, the following conclusions have been made.

Regarding the process of risk planning, the project used project management plan, enterprise environmental factor and organizational process assets as input and meetings, expert judgment as a technique. However, project charter and stakeholder register were missed to be used as input and analytical techniques as a technique in risk planning process. In addition, all stakeholders weren't participated and the roles and responsibilities of the project teams weren't clearly stated in the risk plan. As a result, the risk plan had weakness

to ensure the degree, type, and visibility of risk management that commensurate with the project plan. So the participants confirmed that the project risk planning management is not satisfactory. There the ministry is failed in risk aspects from the very beginning by no planning it.

In the process of risk identification, the project used risk management plan, enterprise environmental factors, organizational process assets, cost management plan, scope baseline, schedule management plan, procurement document as input and expert judgment, information gathering techniques, and assumptions analysis as techniques. However, human resource management plan and quality management plan as input and checklist analysis, documentation review, SWOT analysis as techniques were missed to be used in risk identification and also project teams didn't follow systemic approach in risk identification even though they were involved in the identification of risks throughout the project lifecycle. Moreover, internal risks were commonly encountered in the project followed by project specific risks and external risk. Thus, in this regard, the practice of risk identification was in a condition that drives the project to its failure. In this regard the ministry is working not in accordance with the recognized literatures and body of knowledge.

Regarding the process of qualitative risk analysis, the project used scope baseline, risk management plan, enterprise environmental factors as input and impact assessment, expert judgment, risk categorization as techniques. However, the practice of incorporating factual information and updating project documents was poor even though it considered assumptions before risks were analyzed qualitatively and the combinations of likelihood and impact also be described fairly. Consequently, the project didn't' has a well-established process of qualitative risk analysis. So MCIT's experience on qualitative risk analysis is poor.

In the process of quantitative risk analysis, project risks weren't analyzed realistically based on financial impact and achievable cost, schedule and scope targets. In addition, there was inadequate assessment of the probability of achieving project objectives and also updating of project documents. Moreover, there were no any input, tools and techniques used in

quantitative risk analysis. Such as risk management plan, enterprise environmental factors, schedule management plan, cost management plan, risk register and organizational process assets as input and expert judgment, modeling technique, data gathering and representation technique as technique weren't applicable. The ministry quantitative risk analysis process is practiced not in organized and formal way.

Regarding the process of risk response, the project used risk management plan and risk register as input and expert judgment, strategies for negative risks as techniques. However, strategies for positive risks or opportunities and contingent response strategies were missed which could be used as a technique in the risk response. In addition, a well-developed strategy hadn't been prepared that balance the costs of implementing each option against the benefits and prevent or mitigate all the identified risks even though mitigation followed by transfer and accept were used as risk response option in the project. Moreover, the risk response wasn't based on priority of risks. Thus, the practice of risk response planning was not effective.

In the process of risk monitoring and control, the project used work performance reports, project management plan, and risk register as input and meetings as technique. However, technical performance measurement, risk reassessment, risk audit, reserve analysis, variance and trend analysis were missed which could be used as techniques in risk monitoring and control. Consequently, risks couldn't be controlled effectively that goes with the goal and objective of the project. In addition, effectiveness of risk management process wasn't evaluated. Moreover, project management plan, project documents and organizational process assets weren't updated appropriately even though risks were monitored, new risks were identified and risks were tracked in a good manner. Thus, in this regard, the practice of risk monitoring and control practice of MCIT is unsuccessful.

Furthermore, the organization's risk policy and procedure was insufficient for project risk management. In addition, the project teams had lack of adequate experience in risk management.

Moreover, project teams weren't motivated and unable to get documented risk register from previous projects that help them to go through a disciplined risk management process. Hence, the practice of project risk management in the ministry doesn't continuously

optimize risk responses.

5.3.Recommendation

Based on the study findings there are some recommendations. These are important to improve the project risk management practice of the Ministry.

- Training and development have to be given for project team in project risk management particularly using tools and techniques in risk planning, risk identification, risk analysis, risk response, monitoring and control.
- The risk procedure has to be prepared clearly and specifically for projects that guide the project team to go through a disciplined risk management process.
- All project stakeholders should participate in the risk planning.
- The roles and responsibilities of various stakeholders participating in the project should be clearly mentioned and documented.
- For effective project risk management; relevant inputs, tools and techniques should be applied in the process of risk planning (inputs such as project charter, stakeholder register & tools and techniques such as analytical techniques), risk identification (inputs such as human resource management plan and quality management plan & tools and techniques such as checklist analysis, documentation review and SWOT analysis), risk analysis (inputs such as risk management plan, enterprise environmental factors, schedule management plan, cost management plan, risk register and organizational process assets & tools and techniques such as expert judgment, modeling technique, data gathering and representation technique), risk response (tools and techniques such as strategies for positive risks or opportunities and contingent response strategies), risk monitoring and control (tools and techniques such as technical performance measurement, risk reassessment, risk audit, reserve analysis, variance and trend analysis).
- The risk management plan should be prepared with detail requirement gathering.
- The risk management plan should have strong linkage with business analysis of threats and opportunities and analysis of project risk.

- Financial impact of the risk that hinders the project objective should be numerically specified.
- Contingency should be allocated to mitigate the risks that occur in the project.
- Project teams should be motivated by using different motivational factors.
- Effectiveness of the risk management process should be evaluated throughout the project.

5.4.Future area of research

As part of further future researches, the following are the researcher's suggestions for knowledge.

- ***Enhancing the project risk management-project success alignment maturity model***

  Further study can be conducted to identify additional constructs that determine the project risk management maturity -project success alignment by having multiple sectors and organizations.
- ***Enhancing Survey instrument***

  Further study can be conducted to enhance the survey instrument and re-conduct an empirical study since the instrument exhibited lack of internal consistency in communication and scope.
- ***Impact Assessment Study***

  The impact assessment can be conducted in order to assess the practice of the recommended solutions with respect to its contribution on the overall improvement of project management.
- ***The practice of project management***

  Further study can be conducted on analyzing the practice of other project management body of knowledge on organization's performance.

REFERENCES

Abrahamson, M. (1973). Contractual risks in tunneling: how they should be shared. Tunnels and Tunneling, pp.587-598.

Akinci, B. & Fischer, M. (1998). Factors affecting contractors' risk of cost over burden.J. Mgmt. Engrg., pp.67-76.

Akintola, SA, Malcolm, J. (1997). Risk analysis and management in construction. International Journal of Management in Engineering, pp.37-44.

Aleshin, A. (2001). Risk management of international projects in Russia. Int J Project Manage, pp.207-222.

Alhawari S., Karadech L., Talet N.A., Mansour E., Knowledge-based risk management framework for information technology project, International Journal of Information Management, 32, 1, 50–65,2012.

Alhawari, S., Karadsheh, L., Talet, A.N. & Mansour, E. (2012) Knowledge-Based Risk

APM (2006) APM Body of Knowledge. 5ed, ISBN-1-903494-25-7.

Baker, R. (1997). Financial crisis affecting Aussie Asian joint ventures. Retrieved from (http://www.asial.com.sg/cgi-bin/b...1211).

Bakker, K., Boonstra, A. & Wortmann, H. (2010) Does Risk Management Contribute to IT Project Success? A Meta-Analysis of Empirical Evidence. International Journal of Project Management. 28, 5,493–503.

Barber, R. (2005). Understanding internally generated risks in projects. International Journal Project Management, pp.584-590.

Bannerman, P .L. (2008) Risk and Risk Management in Software Projects : A Reassessment.

Bedford, T. & Cook, M. (2001). Probabilistic Risk Analysis: Foundations and Methods. Cambridge University Press.

Bhatia, N., & Kapoor, N. (2011) Fuzzy Cognitive Map based Approach for Software Quality

, L., Tiong, R. L. K., Wong, W. F., & Chow, D. (1999). Risk management of international construction joint ventures. J. Constr. Engrg., and Mgmt, pp.277-284.

Bloch, M., Blumberg, S., & Laartz, J. (2012). Delivering Large Scale IT Projects On Time, On Budget, and On Value. McKinsey &Company

Boehm, B.W. (1991) Software Risk Management: Principles and Practices. Software, IEEE.8, 1,32-41.

BridgeJ. (2015) 5 Key Issues for IT Projects. Available @:https://projectmanager.com (Accessed: 10 February 2015).

Chapman C.B. (1983, November). Risk analysis: Testing some prejudices. European Journal of Operational Research, 14, 238-247. Retrieved from http://www.sciencedirect.com

Cooke-Davies, T. J. (2005). Measurement of organizational maturity: What are the relevant questions about maturity and metrics for a project-based organization to ask, and what do these imply for project management research? In P. M. (PMI), D. P. Slevin, D. I. Cleland, & J. K. Pinto (Eds.), Innovations: Project management research 2004 (pp. 1-13). Project Management Institute (PMI). Development Environment. Technovation. 24, 11,915–920.

Ding, D. Z. (1996). Exploring Chinese conflict management styles in joint ventures in the People's Republic of China. Mgmt. Res. News, pp.43-53.

Duncan, W.R., 1996. A Guide to Project Management Body of Knowledge. PMI Standards Committee. White Plains, Maryland, USA.

Elkington, P and Smallman, C (2002). Managing project risks: a case study from the utilities sector. International Journal of Project Management, 20(1), 49-57.

Flanagan, R. & Norman, G (1995). Risk management and construction (3rd ed.). Oxford: Black well Scientific.

Hajeer, S. (2012). Critical risk factors for information system (IS) projects: Projects between Sink and Swim.

Harker, P and Starvos, A.Z, (1998) What Drives Performance of Financial Institution s? The Wharton Financial Institutions Center. The Wharton School, University of Pennsylvania.

Hart, C., (1988) 'doing a literature review: Releasing the social science research

imagination' Thousand Oaks, Sage,UK

Hillson, D. (2003). Using a Risk Breakdown Structure in project management, Journal of Facilities Management, pp.85-97

Idoko, L. A. (2008). Developing local capacity for project management - Key to social and business transformation in developing countries. PMI Global Congress 2008. Project Management Institute. Information Management. 32, 1, 50–65.

Kerzner, H. (2009). Project management, a system approach to planning, scheduling and controlling (10th Ed.). John Wiley &Sons, Inc.

Kwak, Y .H. & Stoddard, J. (2004) Project Risk Management: Lessons Learned from Software

Lam, K C, WANG, D, Lee, P T K and Tsang, Y T (2007) Modeling risk allocation decision in construction contracts. International Journal of Project Management, 25(5), 485-493.

Legris, P. & Collerette, P. (2006), A Roadmap for IT Project Implementation: Integrating Stakeholders and Change Management Issues ‟ Project Management Journal; Dec; 37, 5, pp. 64.

Ling, F., & Hoi, L. (2006). Risks faced by Singapore firms when undertaking construction projects in India. Int J Project Manage, pp.261-270.

Malan, A., Pretorius, L., & Pretorius, J. (2007). A frame work for increasing project maturity and capability in South Africa. Management of Engineering and Technology (pp.2212 -2224). Portland OR: Portland International Center for Management of Engineering and Technology. Management Framework for Information Technology Project. International Journal of Management Institute, Inc.

Ministry of communication and information technology library documents, journals, stndards. Available online at **www.mcit.gov.et**

Mills, A. (2001) A systematic approach to risk management for construction, Structural Survey, pp.245-252

Mnkandla, E. (2012) Assessing a Methodology's Project Risk Management Competence. Journal of Contemporary Management. 9, 279-299.

Mobey, A and Parker, D (2002). Risk Evaluation and its Importance to Project Implementation. Work Study, 51(4), 202-206.

O' Hagan, & Oakley, A. (2004). Probability is perfect, but we can't elicit it perfectly. Reliability Engineering and System safety, p.123.

Office of Government Commerce (2010) Project Management Maturity Model. The Stationary Office.London.

Peixoto, J.; Tereso, A.; Fernandes, G. & Almeida, R. (2014), Project Risk Management Methodology: A Case Study of an Electric Energy Organization. Procedia Technology 16 (2014) 1096 – 1105. Available online at www.sciencedirect.com

Pimchangthong, D. (2017), Effects of Risk Management Practice on the Success of IT Project.

Pimchangthong. Procedia Engineering 182 (2017) 579 – 586. Available online at www.sciencedirect.com

Pitz. C. F., & Wallsten, M. (2000). A Bayesian Comparison of Choice Strategies under Epistemic Uncertainty, pp.26.

PMI (2008), A Guide to the Project Management Body of Knowledge, Project Management Institute, Newtown Square, PA.

PMI, (2013). A Guide to the Project Management Body of Knowledge.5th edition.

Project Management Institute: PMBOK (2004). A Guide to the Project Management Body of Knowledge. 3rd Ed. Newtown Square, USA: Project Management Inc./www.pmi.org. Project Management Journal. 31, 1, 6-13.

Rashid, A. A. A. (1991). Global strategies of construction firms, Dept. of Construction Management & Engineering, University of Reading, UK.

Risk Analysis. ACM SIGSOFT Software Engineering Notes. 36, 6, 1–9.

Robert K. Wysocki, (2014). Effective Project Management: Traditional, Agile, Extreme, 7th edition. John Wiley and Sons, Inc. Indianapolis, Indiana.

Royer, P .S. (2000) Risk Management: The Undiscovered Dimension of Project Management.

Sanchez, H., Robert, B., Bourgault, M. & Pellerin, R. (2009) Risk Management Applied to Projects, Programs, and Portfolios. International Journal of Managing Projects in

Business. 2, 1, 14–35.

Saunders, M.; Lewis, p and Thorn hill, a. (2009): research methods for business students, 5th Ed, Pearson education ltd, London

Schwalbe, K. (2013) Information technology project management. C engage Learning.

Schwartz, E.A.(1985).Dispute between joint venture: A case study. Proc., 7th Conf. of the Int. Bar Association's Sect. on Business Laws (pp. 162-188). Singapore: International Bar Association.

Standish Group International, Inc. (2009). CHAOS Summary 2009 report, Retrieved from<http://www.standishgroup.com> (14.04.2012).

Taylor H, Artman E, Woelfer JP. Information Technology Project Risk Management: Bridging the Gap between Research and Practice. J Inform Technol2012; 27:17–34. The Journal of Systems and Software. 81, 12, 2118–2133.

Tigest, S. (2017), Assessment on Project Management Practices: a case study on Japanese Social Development Trust Fund Grant Project, MSc thesis, Addis Ababa University.

Tinnirello, P C (ed.) (2000) Best Practices Series- Project Management. USA: Auerbach.

Toakley, A.R. (1989). Risk, uncertainty and subjectivity in the building procurement process- a critical review. School of Building, p. 144.

Ward, S. & Chapman C. (1988). Developing competitive bids: a framework for information processing. J. Oper. Res. Soc., pp. 123-134.

Zerithun, M. (2017), Assessing the relationship between Project Management Maturity and Competitiveness: The Case of Commercial Bank of Ethiopia, MSc thesis, Addis Ababa University.

APPENDICES

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

PROJECT MANAGEMET DEPARTMENT

Dear Participants

First of all I would like to appreciate those who are willing to participate in this research. I am Yehualashet Lessanu, an MA graduate student in Project Management at AAUSC. The main purpose of this questionnaire and interview is to collect data for the research entitled "Project Risk Management Practice in Ministry of Communication and Information Technology: The case of Online Content Regulatory Legal Framework Development Project".

This is an academic research and the information you provide will be treated strictly confidential. Therefore, I kindly request you to complete the questionnaire honestly and genuinely.

If you have any queries, please contact:

Yehualashet Lessanu

Mobile: +251 923 292939

Email: yehubeta@gmail.com

General Instruction:

- Part I contains questions on demographic information. Please respond by putting a tick (□)in boxes or write the answer in the space provided (if any other).
- Part II contains questions on Project Risk Management Process. Please indicate your perceived risk management practice by putting a tick (□) at the corresponding column from strongly agree to strongly disagree (i.e. Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, strongly Disagree = 1). In addition, please put a tick (□) to one or more of your choice for other multiple choice questions.
- Part III contains interview questions.
- Please attempt all questions.

Appendix A: Questionnaire Survey

Part I: Demographic Information

1. Age:

   21-30 Years ☐ 31-40 Years ☐ 41-50 Years ☐ Above 50 Years ☐

2. Educational Background

   Bachelor Degree ☐ Masters ☐ PHD ☐ Other, please specify, _____

3. Work Experience?

   Below 1 year ☐ 1-2 Years ☐ 2-3 Years ☐ More than 3 Years ☐

4. Work Experience in projects?

   Below 1 year ☐ 1-2 Years ☐ 2-3 Years ☐ More than 3 Years

5. Do you have any formal risk management training?

   Yes ☐ No ☐

Part II: Project Risk Management Process

A. General Project Risk Management Practice

S/No.	Questions	Strongly Disagree(1)	Disagree(2)	Neutral(3)	Agree(4)	Strongly Agree(5)
1	There is strong linkage between business analysis of threats and opportunities and analysis of project risk					
2	Project team have deep project experience in risk management					
3	There is documented risk register from previous projects that support project team in risk identification and analysis					
4	Risks are identified during work break down structure(WBS)					
5	There is a policy and procedure that guide the project team to go through a disciplined risk management process					
6	Project teams are motivated in the process of project risk management					

B. Risk Planning

S/No.	Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
7	The risk management plan has obtained agreement and support from all stakeholders					
8	The risk plan ensures that the degree, type, and visibility of risk management that commensurate with the project plan					
9	The risk management methodology including the tools and data sources that may be used in the risk management process are established					
10	The roles and responsibilities of the various project stakeholders participating in the risk management is clearly established					

11. Which of the following input is primarily used to plan risks within the project?

a. Project Management Plan ☐ c. Project Charter ☐ e. Stakeholder Register ☐
b. Enterprise Environmental Factors ☐ d. Organizational Process Asset ☐

12. Which of the following tools and technique is primarily used to plan risks within the project?

a. Analytical Techniques ☐ b. Expert Judgment ☐ c. Meetings ☐

C. Risk Identification

S/No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13	Risks are identified throughout the project lifecycle					
14	The project team is involved in the risk identification process.					
15	Systemic approach is applied for the identification of risk					
16	A clear description of the risks with the cause and effects are understood and documented.					
17	Risk register is produced as an output in risk identification process					

18. Which of the following risk categories that you commonly encountered in this project?

a. Internal risk ☐ b. Projects specific risk ☐ c. External risk ☐

19. Which of the following input is primarily used to identify risks within the project?

a. Risk Management Plan ☐
b. Schedule Management Plan ☐
c. Human Resource Management Plan ☐
d. Procurement documents ☐
e. Organizational Process Assets ☐
f. Cost Management Plan ☐
g. Quality Management Plan ☐
h. Scope Baseline ☐
i. Enterprise Environmental Factors ☐

20. Which of the following tools and technique is primarily used to identify risks within the project?

a. Documentation reviews ☐
b. Checklist Analysis ☐
c. SWOT Analysis ☐
d. Information Gathering techniques ☐
e. Assumptions Analysis ☐
f. Expert Judgment ☐

D. Risk Analysis

Qualitative Risk Analysis

S/No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
21	Characteristics of the risk are considered before analyzing the identified risk.					
22	Assumptions made during the analysis are stated					
23	Descriptive terms are used to specify combinations of likelihood and impact					
24	Assessments are done by factual information and data where applicable					
25	Project documents are updated after risks are analyzed qualitatively					

26. Which of the following input is primarily used to analyze risks qualitatively within the project?

a. Risk Management Plan ☐
b. Risk register ☐
c. Organizational Process Assets ☐
d. Scope Baseline ☐
e. Enterprise Environmental Factors ☐

27. Which of the following tools and technique is primarily used to analyze risks qualitatively within the project?

a. Risk Probability and Impact Assessment ☐
b. Expert Judgment ☐
c. Risk categorization ☐

28. Risks are primarily analyzed based on

a. Probability ☐
b. Accomplishment of the objectives ☐
c. Outcome ☐
d. Enterprise Environmental Factors ☐

Quantitative Risk Analysis

S/No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
29	Identified risks are numerically analyzing the effect of on overall project objectives					
30	An assessment is done for the probability of achieving project objectives					
31	Identify realistic and achievable cost, schedule and scope targets, given the project risks.					
32	Project documents are updated after risks are analyzed quantitatively					

33. Which of the following input is primarily used to analyze risks quantitatively within the project?

a. Risk Management Plan ☐
b. Risk register ☐
c. Organizational Process Assets ☐
d. Schedule Management Plan ☐
e. Enterprise Environmental Factors ☐
f. Cost Management Plan ☐

34. Which of the following tools and technique is primarily used to analyze risks quantitatively within the project?

a. Data Gathering and representation techniques ☐
b. Quantitative risk Analysis and Modeling techniques ☐
c. Expert Judgment ☐

E. Risk Response

S/No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
35	A strategy is developed in order to prevent or mitigate all the identified risks					
36	Options and actions are developed to enhance opportunities and to reduce threats to project objectives					
37	The most appropriate treatment option is prepared that balance the costs of implementing each option against the benefits derived from					
38	Risks are addressed by their priority,					
39	Project management plan, project documents and organizational process assets are updated after risk response process					

40. Which of the following input is primarily used to response risks within the project?

a. Risk Management Plan ☐ b. Risk register ☐

41. Which of the following tools and technique is primarily used to response risks within the project?

a. Strategies for negative risks or threats ☐
b. Strategies for positive risks or opportunities ☐
c. Contingent response strategies ☐
d. Expert Judgment ☐

42. Which of the following response option is primarily used in risk?

a. Avoid ☐ b. Transfer ☐ c. Mitigate ☐ d. Mitigate ☐

F. Risk Monitoring and Control

S/No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
43	Risks that occur within the project are controlled in a way that goes with the goal and objective of the project.					
44	Identified risks are tracked					
45	Residual risks are monitored					
46	New risks are identified					
47	Effectiveness of risk management process is evaluated throughout the project					
48	Risk monitoring and control is treated as a continuous process in the project					
49	Project management plan, project documents and organizational process assets are updated after monitoring and control process					

50. Which input is primarily used in risk monitoring and control?

a. Project Management Plan ☐
b. Risk register ☐
d. Work Performance Data ☐
e. Work Performance Reports ☐

51. Which tool and technique is primarily used in risk monitoring and control?

a. Risk Reassessment ☐
b. Risk Audit ☐
c. Reserve Analysis ☐
d. Variance and Trend Analysis ☐
e. Technical Performance Measurement ☐
f. Meetings ☐

Appendix B: Interview Outline

Part III Interview

1. Is there a policy and procedure that guide the project team to go through a disciplined risk management process? If yes, how it supports the project team in risk management?
2. Do project teams get training in risk management? If yes, how it helps in risk management activities?
3. Does the project have risk management plan? If yes, does it have a strong linkage with the project plan?
4. Are the roles and responsibilities of the project team assigned for risk management?
5. Does the project follow standard risk management process (i.e. risk planning, risk identification, Qualitative & Quantitative risk analysis, Risk response, monitoring and control)?
6. Is there any reward that motivates project teams to develop effective risk management system?
7. How risk planning process is performed in the project? What inputs used in the risk planning? What tools and techniques are used?
8. Are project stakeholders participated in the risk planning process of the project? If yes what input they have in the process?
9. Are risks categorized? If yes, which types of risk appear in the project?
10. How risk identification process is performed in the project? What inputs are used? What tools and techniques are used?
11. How qualitative risk analysis process is performed in the project? What inputs are used? What tools and techniques are used?
12. How quantitative risk analysis process is performed in the project? What inputs are used? What tools and techniques are used?
13. How risk response process is performed in the project? What inputs are? What tools and techniques are used? What risk response option is applied in the project?
14. How monitoring and control process is performed in the project? What inputs are used? What tools and techniques are used? Is monitoring and control a continuous process?