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ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

DEPARTMENT OF PROJECT MANAGEMENT

**PRACTICE OF RISK MANAGEMENT IN BUTAJIRA TOWN ASPHALT ROAD
CONSTRUCTION PROJECT**

**A 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**

By: BEREKET NEGASH (DSE/0655/07)

Advisor: Abdurezak Mohammed (PhD)

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ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
MASTER OF ARTS DEGREE IN
PROJECT MANAGEMENT
PRACTICE OF RISK MANAGEMENT IN BUTAJIRA TOWN
ASPHALT ROAD CONSTRUCTION PROJECT

APPROVED BY THE BOARD OF EXAMINERS

Research Advisor: Abdurezak Mohammed(PhD)

Signature _____ date _____

Internal Examiner: Teklegiorgis Assefa (Asst. Professor)

Signature _____ date _____

External Examiner: Afework Getachew(PhD)

Signature _____ date _____

DECLARATION

I, Bereket Negash Denbel, declare that this project work entitled “Practice of risk management in Butajira town asphalt road construction project” is my original work and has not been submitted to Addis Ababa University or any other institution of higher learning as a project work and all sources of information have been duly acknowledged.

I have carried out the project work independently under the supervision of the research advisor, Dr. Abdurezak Mohammed.

Bereket Negash

Date &signature

June 2017

Addis Ababa University

Addis Ababa, Ethiopia

LETTER OF CERTEFICATION

This is to certify that Mr. Bereket Negash has carried out this project work entitled “Practice of risk management in Butajira town asphalt road construction project” is under my supervision.

This work is original and suitable for the submission in partial fulfillment of the requirement for the award of Master of Arts Degree in Project Management.

Abdurezak Mohammed (PhD)

Date & signature

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Abbreviations

PMBOK: Project Management Body of Knowledge

PMI: Project Management Institute

RMP: Risk Management Plan

SNNPR: Southern Nations Nationalities Peoples Region

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Abstract

Risk is prevalent in all project activities and influences the achievement or non-achievement of project goals. This necessitates the need for a structured process for effective risk management. Risk management in a project context is a formal process that enables the planning, identification, analysis, response and management of risks throughout the life cycle of the project. This paper reviews the risk management practice of Butajira Asphalt Road Construction project. The study was a descriptive type and questionnaire and interview were used to collect information from 24 individuals working on the project under study. The findings obtained about the practice of risk planning revealed that the project does not have a systematic risk planning process even though it is prepared with the involvement of relevant stakeholders and consideration of an expert judgment or meetings are done while planning for risks. However, team members do not receive training or have enough knowledge about how to handle risks. Regarding the practice of risk identification, the management with the involvement of all team members, used physical inspection, and the experience of the organization only to identify risk. The project uses a measurement system to analyze risk and subjective probability assessment to assess the probability of risk occurrence. Moreover there is consideration of the characteristics of the risk before analysis and the project updates documents after assessment of risk that might occur. While responding to risk the project considers factors such as budget, schedule and resources but the response strategy used is not a well-developed strategy. There is little practice of risk monitoring and control and this little practice is not done in accordance with the goal and objective of the project. Overall the project does not treat risk management as a continuous process and it does not have a policy or guideline that recommends how to manage unexpected Uncertainties. The practice of assigning a responsible person to handle risk is also weak. Therefore, the project should improve its risk management practice by filling the gap between the real practice in the project and the theory. It is expected that the output of this study will have a good and beneficial contribution to save time and money for both public and private road construction sectors and regulatory bodies due to expected awareness and improvements in the risk management practice.

Key words: Risk management, risk management processes

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Management can be different from one organization to another but in every company it relies on three basic fields: strategic management, operational management, and risk management. Risk management is an iterative process conducted during the entire life duration of a project and it helps identify and analyze risks in order to find the right answers for each one. It is one of the essential components of a project management.

Risk is the possibility that an event will occur and adversely affect the achievement of objectives. Risk management is the process that attempts to manage the uncertainty that influences the achievement of objectives, with the goal of reaching the objectives and thus creating value for the organization in which it is applied (COSO, 2004). Therefore In order to accomplish the goal it is necessary to constantly apply risk management throughout all of the aspects of a project.

According to PMI (2013) the difficulties encountered in project implementation are frequent. They often result in the failure to comply with project fundamental objectives from the perspective of techniques, costs, terms, therefore quality. These difficulties are more frequent and important if the project is bigger, if it is further from the project managers' usual field of activity, and if the number of project participants is higher

“Risk management can be justified on almost all projects. The level of implementation can vary from project to project, depending on such factors as size, type of project, who the customer is, relationship to the corporate strategic plan, and corporate culture. Risk management is particularly important when the overall stakes are high and a great deal of uncertainty exists. It forces us to focus on the future where uncertainty exists and develop suitable plans of action to prevent potential issues from becoming potential problems and adversely impacting the project.” (Kerzner, 2009)

The success or failure of a project largely depends on the approach to possible risk in which the appearance of risk could affect productivity, quality, time, and project cost. Traditionally, risks were managed intuitively with the goal of dealing with the consequences.

Project risk management is a very complex task, which has a significant impact on the success of project goals. It is based on knowledge and experience and communication and mutual understanding among stakeholders that sometimes necessitates significant additional investments. Methods based solely on intuition or ignoring the existence of risk in complex conditions in which projects are developed do not constitute satisfactory management methods. Managing risk is a difficult task that is avoided or performed with a minimal effort by individuals, and this often results in delays and losses.

The main consideration of this study involved the problem of understanding and using risk management methods in Butajira town asphalt road construction project given their representations in literature and in practical applications with a special focus on the distinctions between risk management in theory and practice as well as the use of traditional and holistic approaches.

1.2 Statement of the problem

Risk is an integral part of all projects, and thus risk management is an essential part of the decision making process at every stage of a project. The success or failure of a project largely depends on the approach to possible risk in which the appearance of risk could affect productivity, quality, deadlines, and project cost. This might lead to schedule expansion and even total project failure.

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:

A Survey was conducted by Yimam, 2013 on the maturity of project management in the construction industry of developing countries in the case of Ethiopia. The

survey analyzed the data collected through questioner from 26 construction projects and identified that, risk management knowledge area is practiced little or by very few in the industry. As cited by Yimam, other studies done in the country in the areas have also found similar findings. According to (Gesse, 2009), formal risk management is not instituted and rarely practiced. “In Ethiopia risk analysis is preliminary and undeveloped practice. The use of easy to use risk management tools and techniques is not generally known”. The study reveals that as developing countries are characterized by very volatile and uncertain environment, management of risk should have been a logical priority. The study concludes that this may be due to the low level of awareness and importance given to the risk management knowledge area in the country. Therefore, special attention should be given to risk management to lower negative impact of uncertainties and improve performance of projects through better planning and monitoring of the risks.

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)

This study tried to address the gap between theory of project risk management and the actual practice by focusing on Butajira Town Asphalt road construction Project. Regarding the topic of the study, no research has been done which focused primarily on risk management practice of this project.

1.3 Basic Research Questions

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

Main question:

- What practices are being undertaken to manage risk in the project risk management at Butajira Asphalt Road construction project?

Sub questions:

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

1.4 Objectives of the study

1.4.1 General Objective

- To check if risk management practice is applied in the project.

1.4.2 Specific Objectives

- To find if there is risk management plan in the project.
- To assess the methods used to identify risks in the project.
- To identify how the risks that are identified are analyzed in the project.
- To identify the options used to respond to risks that occur in the project.
- To identify if risk monitoring and controlling mechanism is applied in the project.

1.5 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 project.
2. It can be used by other construction 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

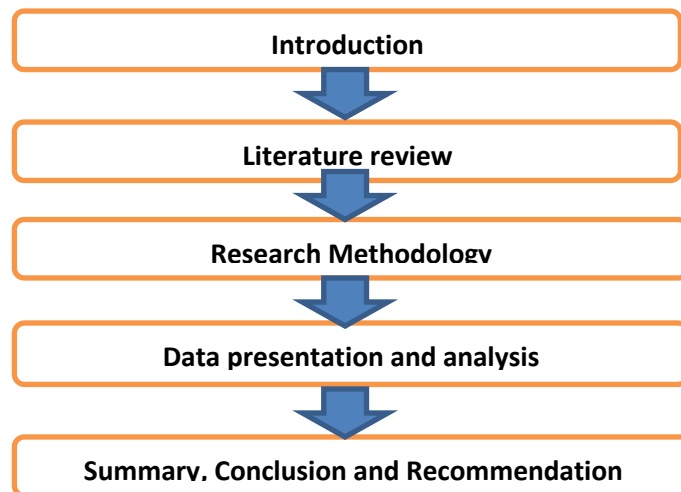
1.6 Delimitation and Limitation of the study

Delimitation of a research study explains how the scope of the study is focused on one specific area. Project risk management practice can be seen from different perspectives. However, this research was delimited to review the risk management practice of Butajira Asphalt road construction project. The scope of the study is delimited on one of the Project management Knowledge area out of the ten project management knowledge areas which is Project risk management.

The project used in the study was in its initial stage. Thus, the collected information does not give the holistic overview of risk in the project, even though some of the respondents were going to be present under the whole project duration.

1.7 Organization of the Research

The research was organized into five chapters as follows:



Chapter one presents an overview of the research. Covered in this chapter are the background of the research area, the research problem, objectives, the significance of the study; and the scope and limitations of the study.

Chapter Two covers a discussion of literatures on the topic. Conscious effort shall be made to explain project risk management.

Chapter Three discusses in detail the methodology that were employed in conducting the research; the design and methods that were used for data collection as well as the approach that were applied in analyzing data gathered.

Chapter Four presents analysis of the data that were collected through the survey and discussion of relevant issues and finally it bring out the findings of the survey. Finally, in chapter five a summary of the findings of the research were presented and conclusions and recommendations were drawn there from.

CHAPTER TWO

LITERATURE REVIEW

2.1 RISK AND RISK MANAGEMENT

Risk is all about uncertainty. That is inability to precisely determine what will happen in the future, as future is full of uncertain. With regard to what is a risk Osborne (2012) has claimed that, what we all are talking about is a future problem- or, indeed, opportunity – or the potential future effect of a decision or an action that we take now. And every decision we make or action we take contains some element of risk.

The implication of risk is that, something that we could not expect could happen and it will lead to huge losses. And, of course, risk is a state of nature as every walk of life is surrounded by a certain level of risk. However, it can't be generalized that risk only leads to cost (loss) but could also involve an opportunity (reward) if it is dealt with wisely as like in the case of undertaking business activities.

Furthermore, Osborne (2012) has indicated that, Risks can arise as a result of our business's activities or as a result of external factors such as legislation, market forces, and interest or exchange rate fluctuations, the activities of others or even the weather. They can be a product of business environment, the natural environment, the political or economic climate or of human inadequacies, failing or errors. The bottom line is that risk may impact on our ability to meet our business objectives or even threaten the business itself.

The types and the degree of effect of risk defers among business organizations, even within industry level as they might differ in their size, complexity of task, types of service or product being offered or organizational structure

As of Osborne (2012) risk management is a central part of any organization's strategic management. It is the process whereby organizations methodically address the risks attaching to their activities with the goal of achieving sustained benefit within each activity and across the portfolio of all activities. The focus of good risk management is the identification and treatment of these risks. Its objective is to add maximum sustainable value to all the activities of the

organization. It marshals the understanding of the potential upside and downside of all those factors which can affect the organization. It increases the probability of success, and reduces both the probability of failure and the uncertainty of achieving the organization's overall objectives.

Furthermore, he has stated that, "Many risks are seen as having purely negative consequences and for this reason it's not uncommon for those involved in risk management to take a pessimistic view of a risk. But we shouldn't forget that many risks also have positive consequences. Effective risk management can help us to reduce the negative and increase the positive consequences of risk, thus helping our business to grow and flourish".

Chapman and Cooper (1983) defined risk as "exposure to the possibility of economic and financial loss or gain, physical damage or injury, or delay as a consequence of the uncertainty associated with pursuing a particular course of action"

British Standard Code BS 4778 defines risk as a growing "combination of likelihood (probability) for a certain problem to occur with the corresponding value (impact) of the damage caused". On any project, a problem is an unwanted situation which may potentially jeopardize the project objectives. Risk is the occurrence of a negative event or the non-occurrence of a positive event (PMI, 2008a).

"When there is a risk, there must be something that is unknown or has an unknown outcome. Therefore, knowledge about risk is knowledge about lack of knowledge. This combination of knowledge and lack thereof contributes to making issues of risk complicated from an epistemological point of view" – Stanford Encyclopedia of Philosophy.

"Risk and uncertainty characterize situations where the actual outcome for a particular event or activity is likely to deviate from the estimate or forecast value". [Risk Analysis in Project Management (Raftery, 2003)].

In order to manage this increasingly complex notion of risk, the concept of risk management was introduced and later made part and parcel of Project Management areas of knowledge by PMI. Risk management requires a high level of project management skills and knowledge; it is a challenging area for project managers worldwide. Although almost everyone agrees to have a 'good risk management program', it is nevertheless little tricky to define one owing to the intricacies of common nomenclature and lack of managerial knowledge among practitioners.

PMI (2008a) defines risk management as “the systematic process of identifying, analyzing and responding to project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives”.

Risk can be almost any uncertain event associated with the work. Similarly, according to Richardson (2015), one view of risk is that it involves the full spectrum of uncertainties in the project. These uncertainties can be related to schedule, cost, and quality variability of the end deliverable. In a project environment, because of the essential uniqueness of projects, some uncertainty must always remain, and the emphasis of management becomes to manage the risk. Therefore, the essence of project management is risk management (Turner,2009).

2.2 Risk and Uncertainty

Kerzner,(2009) described the difference between risk and uncertainty as follows: the difference is that under risk there are assigned specific probabilities, and under uncertainty meaningful assignments of specific probabilities are not possible. As with decision making under risk, uncertainty also implies that there may exist no single dominant strategy. The decision-maker, however, does have at his disposal four basic criteria from which to make a management decision. The use of each criterion will depend on the type of project as well as the project manager's tolerance to risk.

2.3 Project Management Knowledge Areas

According to PMI (2013), Knowledge Area represents a complete set of concepts, terms, and activities that make up a professional field, project management field, or area of specialization. These ten Knowledge Areas are used on most projects most of the time. Project teams should utilize these ten Knowledge Areas and other Knowledge Areas, as appropriate, for their specific project. The Knowledge Areas are: Project Integration Management, Project Scope Management, Project Time Management, Project Quality Management, Project Human Resource Management, Project Communications Management, Project Risk Management, Project Procurement Management and Project Stakeholder Management.

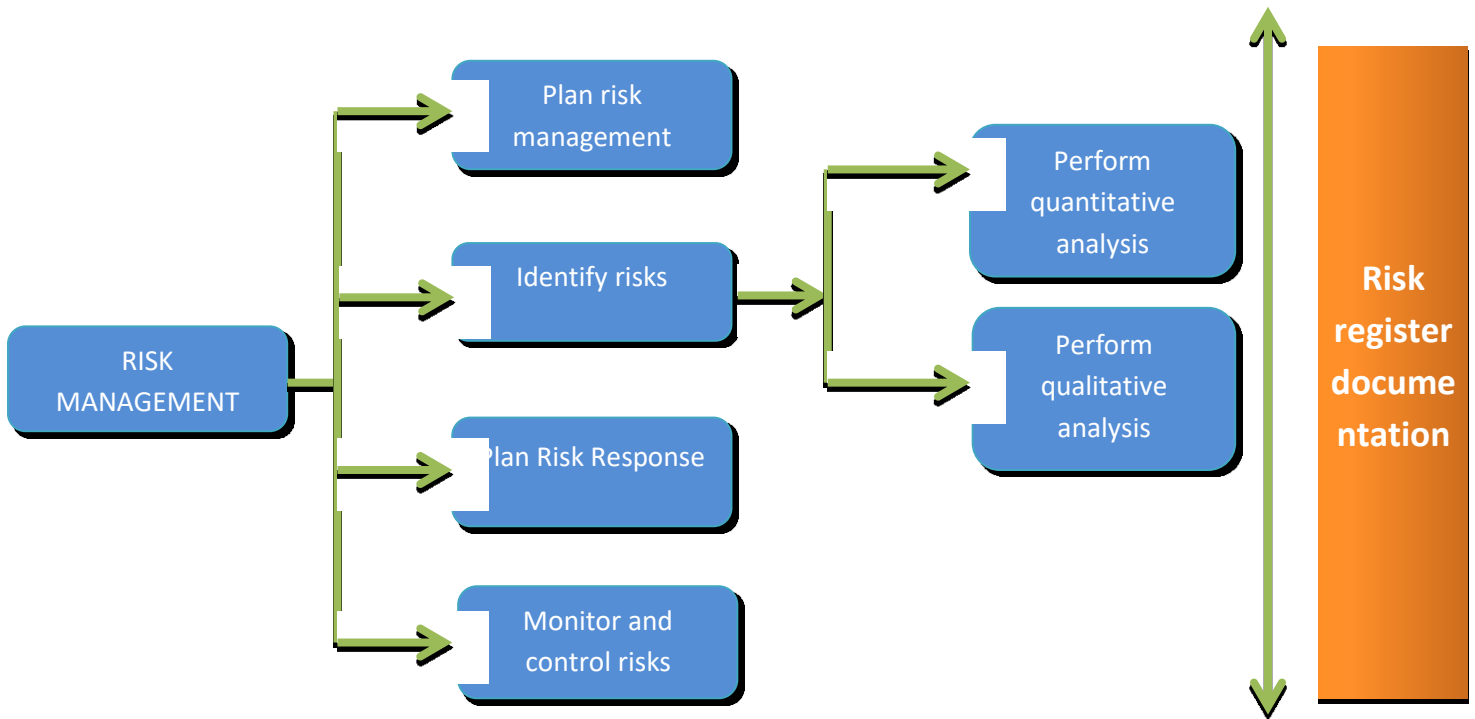
The successes of any project heavily depend on the effective utilization of these knowledge areas. Project teams should utilize these ten Knowledge Areas and other Knowledge Areas, as appropriate, for their specific project.

2.4 Risk Management Process

It is important that a risk management strategy be established early in a project and that risk be continually addressed throughout the project life cycle. Risk management includes several related actions, including risk: planning, identification, analysis, response (handling), and monitoring and control.(kerzner, 2009)

Project risk management includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project (PMI, 2013).

Figure 2.1 : An overview of the Project Risk Management Processes



(Source: Richardson, 2015)

Berkeley et al. (1991); Flanagan and Norman (1993) have categorized risk management process to risk identification, risk classification, risk analysis and risk response. Chapman and Ward (1997) have gone further and have divided the process into more detailed processes. Their stage structure of risk management process consists of: define, focus, identify, structure, ownership, estimate, evaluate, plan and manage. However, others' divisions after Chapman and Ward comprise fewer sub-processes. The risk management framework has been divided into five stages by PMI (2004) and it contains risk planning, risk identification, risk analysis, risk response, and risk monitoring and control.

Adams (2008) has further integrated some of these sub-processes and has divided the risk management process into three sub-processes as: risk identification, risk analysis and evaluation, and risk response and management.

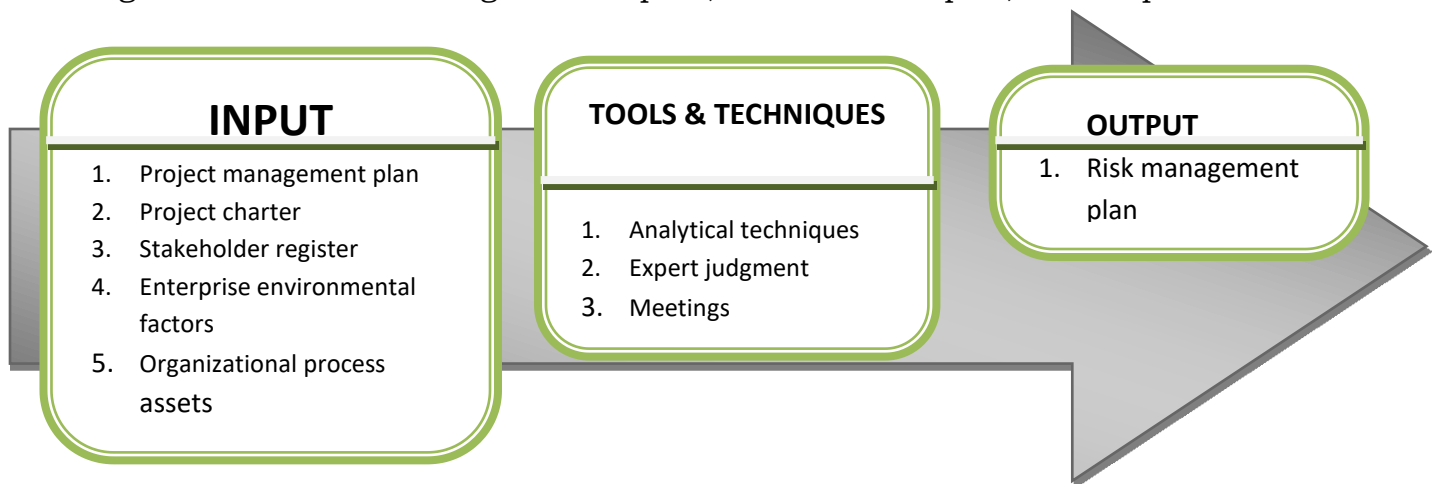
The five interdependent sub-processes are briefly described below

2.4.1 Risk planning

The planning process defines how to implement and practice the risk management framework's sub-processes. Without planning managers do not know exactly what to do, when and how. This process prepares the organization for risk management such as developing policies, determining the steps which need to be taken and their order, any resources which may be required, how long it may take, who is responsible for specific processes and may even include trainings and seminars for improving the risk management expertise of personnel (PMI, 2013).

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. The inputs, tools and techniques, and outputs of this process are depicted in the Figure 2.2.

Figure 2.2 Plan risk Management: Inputs, tools & techniques, and outputs



(Source PMBOK 5th edition, 2012)

2.4.2 Risk identification

Risks need to be identified early enough to do something about them. Project risks should be considered from the earliest conceptual stage.

Risk identification is an important step as the other steps in the risk management process such as analysis and response are only successful if potential risks are identified properly (Toakeley and Ling 1991, Wang et al. 2004). According to Chapman (2011), the purpose of this step is to identify both the threats to the business with the potential of reducing and removing the likelihood of the business reaching its objectives, and the opportunities, which could enhance business performance. External factors which may include economic, political, socio-cultural, technological and environmental as well as internal factors including infrastructure, personnel, process and technology may affect successful achievement of objectives (Marchetti, 2012).

PMBOK in similar way defines risk identification as the process of determining which risks may affect the project and documenting their characteristics. According to Kerzner (2009), risk identification must continue through all project phases and is important that the identification process is concerned with the source of the risk rather than the event itself or the effect. This is because the risk taker can do something about the sources of the risk, but not really do very much about the event or the effects (Roberts and Wallace, 2004).

Tayntor (2010), states that there are a number of possible techniques for identifying risks. As risk identification is a process of uncovering potential risk according to the PMBOK (2013), the tools and techniques that can be used to identify risk are documentation reviews, information gathering techniques, checklist analysis, assumptions analysis, diagramming techniques, SWOT analysis, and expert judgment. In addition, Richardson (2015), also adds that potential risks can be identified based on a general understanding of common risk sources and by reviewing project scope documents, the WBS details, environmental factors, documentation review, brainstorming, and other organizational issues.

The output is a risk register which clearly defines and explains each risk which is referred to and incrementally developed throughout the overall risk management process (Chapman 2011; Jordan 2013)

2.4.3 Risk Analysis

The risk identification process would have highlighted risks that may be considered by project management to be more significant and selected for further analysis. According to Francis K. (2008) the objective of a risk analysis technique is therefore to determine probability numbers that quantify beliefs about uncertainty and thereby quantify the effects on the project of the identified major risks, their frequency, severity, and probability of the risk event. The risk analysis process tries to estimate the consequences and impact of the risks on the project objectives.

There are tools and techniques which are used in risk analysis process for assessing the probability and impacts of the identified risks more precisely. These techniques may be quantitative such as probability analysis, sensitivity analysis, scenario analysis, simulation analysis, and correlation analysis or may be qualitative like direct judgment, ranking options, comparing options and descriptive analysis (Minassian and Jergeas, 2009)

2.4.3.1 Qualitative analysis

Once major risks have been identified and compiled in a list, a qualitative risk assessment should be conducted and entered in the risk register. The first procedure is to give a short, clear description of each risk to avoid ambiguity and confusion. After the risk has been described, it should be classified according to its source (there should be sufficient categories to cover as many risks as possible), and the adverse event that will produce the risk should be specified (PMI, 2013).

2.4.3.2 Quantitative analysis

While the Qualitative Risk Assessment is a good tool to analyze individual risks, the Quantitative Risk Analysis analyzes the combined effect of the risks in the project. This is often the only accurate assessment of the overall risk exposure in the project, and should be performed where necessary. (Hillson, D. 2009):

Two popular techniques for Qualitative Risk Analysis are the Monte Carlo Simulation and the use of decision tree.

2.4.4 Risk Response

Risk response development is a critical element in the risk management process that determines what action will be taken to address risks evaluated in the identification, qualification, and quantification efforts. Once the risks of the project have been identified and analyzed appropriate risk response strategy must be adopted in order to take the necessary steps to minimize the negative effects of risk on project objectives.

Mead (2007) stressed that instead of simply pricing for risks, there are other opportunities for mitigating risks including: risk elimination (e.g. not proceeding or proceeding on a different basis); risk reduction (e.g. by undertaking further investigations/due diligence); risk transference (e.g. by legal, contractual and insurance); risk retention (e.g. self-insurance, bearing a large deductible, internal management of risk). Risk response occurs to eliminate, mitigate, deflect or accept the risk and logically will reflect the cost benefit of the risk management process (Fewings, 2005). Generally, risk allocation, or risk response takes any one or combination of risk retention, risk reduction, risk transfer and risk avoidances.

According to PMI (2013), the key benefit of risk response is that it addresses the risks by their priority, inserting resources and activities into the budget, schedule and project management plan as needed. Risk response strategies have varied and unique influence on the risk condition. These strategies should be chosen to match the risk's probability and impact on the project's overall objectives. Roberts and Wallace (2004), similarly affirms that the response depends on the nature of the risk, the detail of the analysis and the attitude of the risk taker.

According to Kerzner (2009) and PMI (2013), the response strategies, which typically deal with threats or risks that may have negative impacts on project objectives if they occur, are: avoid, transfer, and mitigate. The responses that are

suggested to deal with risks with potentially positive impacts on project objectives are to exploit, share, enhance, and accept.

2.4.4.1 Risk response strategies

Risk mitigation: It involves the activities used to reduce the probability or impact of the risk. Risk reduction can be achieved through taking proactive action to reduce the negative effects of risk. Mitigation is action taken to reduce the risk and deflection is action taken to transfer the risk. They are not mutually exclusive, but deflection alone is not a way of reducing the probability. Mitigation may have the effect of reducing probability and impact (Fewings, 2005). According to Cooper (2005), mitigation strategies include: Contingency planning, Quality assurance, Separation or relocation of activities and resources, Contract terms and conditions and Crisis management and disaster recovery plans.

The uncertainty of a risk event as well as the probability of occurrence or potential impact should decrease by selecting the appropriate risk mitigation strategy.

Risk avoidance: is a strategy for negative risks or threats that involves changing the project plan to eliminate the risk or to protect the project objectives (time, cost, scope, quality) from its impact (OSPMI, 2007). This can be achieved through activities including using suitable procurement option, change the method of execution and etc. However, risk avoidance in construction is generally recognized to be impractical as it may lead to projects not going ahead or a contractor submitting an excessively high bid for a project (Akintoye, 1997). Cooper et al. (2005) list some activities that can help to avoid potential risk: More detailed planning, Alternative approaches, Protection and safety systems, Operation reviews, Regular inspection, Training and skills enhancement and Permits to work.

Risk transfer: it involves shifting the responsibility to respond for risk to another party who is in the better position to deal with it. Risk transfer is not aimed to eliminate or reduce risk. The transfer of risk can be achieved by using the relationship between client, contractor, subcontractor and insurer. If more risk is allocated to the contractor, the greater the project cost as inflated amount of

contingency budgeted for risk response by the contractor. Thus, transferring all the project risk to other party is not economical as some of the risks may be better managed by the transferee.

Many large scale projects purchase insurance for risks ranging from theft to fire to transfer project risks and by doing so; the risk is effectively transferred to the insurance company in such a way that if a disaster occurs, the insurance company would be liable to pay the costs associated with the disaster. Insurance certainly is the most direct method of transferring risk; however, there are other methods as well. For example, a fixed price contract with a contractor states that work will be done for a pre-specified amount. Fixed schedule can also be added to such a contract and penalties are imposed in case of overruns.

Risk retention: it involves activities used to absorb the effect of risk. Risks that have no significant effect and are repetitive can be effectively managed through retaining the responsibility by the owner of the project. There are two types of risk retention, i.e. passive retention and active retention (Rahman, 2013).

Risk retention is a strategy that is adopted because it is either not possible to eliminate that risk from a project or the cost in time or money of the response is not warranted by the importance of the risk (OSPMI, 2007).

2.4.5 Risk Monitor and Control

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. Kerzner, (2009). Some techniques suitable for risk monitoring and control that can be used in a program-wide indicator system include:

- **Earned Value (EV):** This uses standard cost/schedule data to evaluate a program's cost performance (and provide an indicator of schedule performance) in an integrated fashion. As such, it provides a basis to determine if risk response actions are achieving their forecasted results.

- Program Metrics: These are formal, periodic performance assessments of the selected development processes, evaluating how well the development process is achieving its objective. This technique can be used to monitor corrective actions that emerged from an assessment of critical program processes.
- Schedule Performance Monitoring: This is the use of program schedule data to evaluate how well the program is progressing to completion.
- Technical Performance Measurement (TPM): TPM is a product design assessment that estimates, through engineering analysis and tests, the values of essential technical performance parameters of the current design as affected by risk response actions.

The purpose of this process is to certify that the risk identification, analysis and response processes are on-going. Some of the requirements for this process are: checking the status of the identified risks in the risk registers periodically; evaluating the efficiency of the risk responses used; identifying new risks, assessing them and developing risk responses for them.

The task of identifying new risks in this sub-process is not only because of changes in the project and its environment which cause new risks to come up but also due to appearance of secondary risks. Secondary risk can be considered as a new risk that may arise after implementation of a risk response (Cruz et al., 2006).

2.5. Empirical Literature Review

An effective risk management process encourages construction companies to identify and quantify risks and to consider risk containment and risk reduction policies. Construction companies that manage risk effectively and efficiently enjoy financial savings, and greater productivity, improved success rates of new projects and better decision making.

Straw (2015), states that the area of risk and uncertainty is particularly important in project management and is a natural element of projects. That is why risk management can be justified on almost all projects. Whereas, the level of

implementation can vary from project to project, depending on such factors as size, type of project, who the customer is, relationship to the corporate strategic plan, and corporate culture. Risk management is particularly important when the overall stakes are high and a great deal of uncertainty exists. In the past, we treated risk as a "let's live with it." Today, risk management is a key part of overall project management. It forces us to focus on the future where uncertainty exists and develop suitable plans of action to prevent potential issues from adversely impacting the project (Kerzner, 2009).

Risk management in the construction project management context is a comprehensive and systematic way of identifying, analyzing and responding to risks to achieve the project objectives (PMBOK 5th edition, 2012).

Because the dynamic nature of construction works a great amount of risk and uncertainty is involved in construction activities (Chapman and Ward 2004). This uncertainty may have a significant impact on the project objectives and, therefore, has to be properly managed by the project actors during the whole project life cycle.

The incorporation of risk management in construction will lead to more precise estimates of cost and more profit. Since there is a great concern about project risks affecting the outcome of the project, different methods of managing risks are attempted. Management of risks holds the key to project success or failure. Managing risk is an integral part of good management (risk management guideline, 2004).

A Survey was conducted by Frezewed, 2016 on the practice of project risk management in the case of Batu and Dukem town water supply projects and it revealed that risk management knowledge area is practiced little in the projects. The study also showed that there is no practice of assigning a risk manager, whose primary responsibility is managing risks. The same study sited that, other studies done in the country in the areas have also found similar findings. According to (Yimam, 2013) the practice of risk management in Ethiopia is very little and undeveloped. A study conducted by Getachew, 2014 on the practice of

construction risks management through insurance in the Ethiopian federal road projects revealed that formal risk management is not practiced well. “Road construction risks are not managed with formal risk management system. However, there are routine practices employed to manage risks. These traditional practices, though contribute to risk management, do not conform to the formal risk management processes which involves risk management planning, identifications, assessment, response planning, and monitoring. It is evident that the Federal road projects are not free of risks which have an impact on time, cost, and quality objectives of the projects. Responding to risks with no structured system does not bring about substantial improvement in managing the risks.”

The above discussion on theories and summary of findings of related studies clearly indicates that project risk management practice is important to lead projects towards success by reducing the negative impact of risks and uncertainties

2.6 Conceptual Framework

Based on the above theoretical and empirical literatures the below indicated conceptual frame work was developed for the purpose of the study

Figure 2.3 Conceptual framework



Risk management process (RMP) is the basic principle of understanding and managing risks in a project. It consists of the main phases: risk identification, risk planning, risk assessment and analysis, risk monitoring and response (Smith et al. 2006) as shown in Figure 2.2. All steps in RMP should be included when dealing with risks, in order to efficiently implement the process in the project. There are many variations of RMP available in literature, but most commonly described frameworks consist of those mentioned steps. For the purpose of this paper the model of RMP described by Smith et al. (2006) was used for further analysis.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Research Design

The research design applied for this study was descriptive research design as the study attempts to reveal the practice of project risk management in Butajira Asphalt road construction project.

According to Kothari (2004), descriptive design is concerned with describing the characteristics of a particular situation. As the research purpose was to describe a particular phenomenon at a particular point in time it was a cross-sectional study.

Creswell (2009), there is more insight to be gained from the combination of both qualitative and quantitative research than either form by itself. Their combined use provides an expanded understanding of research problems. Thus, with the intention of getting the general picture of the practice of project risk management the research used both quantitative and qualitative research designs in conducting the study.

3.2 Type and source of Data

The study employed both primary and secondary sources of data In order to get appropriate data. Semi- structured interview and close ended questionnaire were used as a primary source of data which were helpful in answering questions related to the study objectives. As a secondary data source document analysis such as relevant books, articles, journals and online information were investigated to supplement and to serve as the basis for the instruments and findings of the study.

3.3 Data Gathering Instruments

In order to gather firsthand information, interview and questionnaire were prepared and administered based on the review of related literature important to the subject of the study. Based on which this study employed interviews and questionnaires as a tool to collect data. The reviewed literatures were made to

develop an insight on risk management practice within the process related with the project. Thus, interview and questionnaires were designed focusing on the practice of project risk management.

3.4 Sampling Techniques and Sample Size

3.4.1 Sampling Technique

The sampling design that is employed for this study was a non-probability sampling. A non-probability sampling provides with an information-rich case study in which it enables to explore the research question and gain theoretical insight (Saunders, Lewis & Thornhil 2009).

The sampling type that is applied for this study was purposive sampling. According to Creswell (2009), while using purposive sampling respondents were chosen based on their convenience and availability. Thus, for this study samples were selected based on people convenience to the issue of the study.

3.4.2 Sampling Size

The target populations of the study were the team members and individuals participating in carrying out the project at the time of the study. Including the individuals, who participated in the planning and design of the project there were 83 participants in the project. The sample size of the research was selected through purposive sampling technique to select who were appropriate for the research and the sample size for the study were 24 individuals.

3.5 Method of Data Analysis and Presentation

The data that were collected through questionnaires were analyzed using quantitative descriptive statistics with the help of IBM SPSS Statistics version 20 statistical computer software. The data that were obtained using semi structured interview were analyzed by combining and summarizing the results.

3.6 Validity and Reliability

Neuman(2007) emphasizes that reliability and validity are important in establishing the truthfulness, credibility, or believability of findings. Reliability is the degree to which an assessment tool produces stable and consistent results. Therefore, to ensure the validity of the data the researcher used reliable sources such as published books and recent articles written by different authors in the area of project risk management. 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:

Table 3.1 : Cronbach's-Alpha test coefficient values

No	Item Type	Cronbach's-Alpha test coefficient
1	Risk Planning	0.736
2	Risk Identification	0.764
3	Risk Analysis	0.789
4	Risk Response	0.759
5	Risk Monitoring & control	0.799

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

3.7. Ethical considerations

Ethical considerations are expected to be involved in any kind of research study. This paper therefore takes into consideration of those ethical issues on access and use of data, analysis and report of the findings in a moral and responsible way. Confidentiality and anonymity of the voluntary respondents was also guaranteed.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

Research findings

The study aims at identifying the opinions of the study sample about—the practice of risk management. And to achieve this end I have developed a questionnaire to review the opinions of the study sample. After questionnaires were distributed and collected Answers were recoded into SPSS program, then I have adopted an appropriate statistical analysis.

Descriptive Statistics

This section provides analysis of the sample data. Tables and graphs illustrate the results and trends, together with discussion.

4.1. General information of respondents

The Demographical Properties:

1) Gender

Table 4.1 : Gender

Gender of respondent				
	Frequency	Percent	Valid Percent	Cumulative Percent
female	2	8.3	8.3	8.3
Valid male	22	91.7	91.7	100.0
Total	24	100.0	100.0	

Source: Own survey, 2017

The table shows distribution of the sample according to Gender.

The table shows that males were more than females. They were (22) with a (91.7%). Females were (2) with a (8.3%).

2) Age:

Table 4.2: Age of respondents

SPSS TABLE

Age of respondent				
	Frequency	Percent	Valid Percent	Cumulative Percent
19-30	8	33.3	33.3	33.3
31-40	9	37.5	37.5	70.8
Valid 41-50	5	20.8	20.8	91.7
Above 50	2	8.3	8.3	100.0
Total	24	100.0	100.0	

Source: Own survey, 2017

The table shows distribution of the sample according to Age.

The above table shows that:

- 33.3 % of the sample was less than 30 years old.
- 37.5 % of the sample was 31-40 years old.
- 20.8 % of the sample was 41-50 years old.
- 8.3 % of the sample was more than 50 years old.

3) Level of education

Table 4.3: Education level of respondents

SPSS TABLE

level of education				
	Frequency	Percent	Valid Percent	Cumulative Percent
Diploma	6	25.0	25.0	25.0
Degree	11	45.8	45.8	70.8
Valid Postgraduate	2	8.3	8.3	79.2
Other	5	20.8	20.8	100.0
Total	24	100.0	100.0	

Source: Own survey, 2017

The table shows distribution of the sample according to Level of education.

The above table shows that:

- 25.0 % of the sample has Diploma.
- 45.8 % of the sample has Degree.
- 8.3 % of the sample has Master’s Degree.

4) Experience in the project

Table 4.4: Experience of respondents in the project

Experience of respondents in the project				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1-3 months	1	4.2	4.2	4.2
4-6 months	1	4.2	4.2	8.3
more than 6 months	22	91.7	91.7	100.0
Total	24	100.0	100.0	

Source: Own survey, 2017

Table (4.4) shows distribution of the sample according to experience in the project. The table shows that (4.2%) of the samples were 1-less than 3 months of experience at the current position, (4.2%) have 4-less than 6 months, (91.7%) have more than 6 months of experience at the current position.

5) Total Experience

Table 4.5: Total Experience of the respondents

Total years of work experience				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid below 2 years	1	4.2	4.2	4.2
3-5 years	4	16.7	16.7	20.8
6-10 years	8	33.3	33.3	54.2
more than 10 years	11	45.8	45.8	100.0
Total	24	100.0	100.0	

Source: Own survey, 2017

Table (4.5) shows distribution of the sample according to experience including the current position.

The majority of respondents had more than 10 years of experience (45.8%) followed by respondents with between 6 and 10 years of experience (33.3%) and

respondents with between 3 and 5 years of experience (16.7%). On the whole it would appear that the respondent's base was therefore comprised of senior to relatively senior short-term construction participants with a considerable amount of construction industry experience.

4.2. Responses on Risk Planning

RISK PLANNING

Table 4.6: Mean & St. Deviation of Risk planning

No	Statements Risk Planning	mean	St. Deviation
1	There is systematic approach or careful planning done to perform risk management in the project.	1.94	0.833
2	Relevant stakeholders are involved in the planning and performing of managing risk	3.65	0.885
3	An expert judgment or meetings are considered while planning for risks that might occur in the project.	3.58	0.717
4	Environmental factors are included as an input to plan for uncertainties.	3.63	0.970
5	Risk management plan is incorporated with the project plan.	3.63	0.970
	Overall average	3.29	
6	Team members within the project receive training or have enough knowledge about how to handle risks	2.29	0.908
		3.25	

Source: Own survey, 2017

The average response obtained for the question if there is a systematic approach or careful planning done to perform risk management in the project is (1.94). This result shows majority of the respondents rated this practice as below average and the response obtained from the interview also reveals the same result.

Regarding the issue on the involvement of relevant stake holders in the planning and performing of managing risk the average response is (3.65) which is nearer to a rating of good and it implies much of the respondents agree on the involvement of relevant stakeholders in the planning and performing of managing risk.

The average result (3.58), obtained for the question designed to check if the project considered an expert judgment or meetings while planning for risks that might

occur in the project, reveals that majority of the respondents agree on the consideration of an expert judgment or meetings while planning for risks.

The average responses (3.63) for item 4 and 5 on the same table indicates that the inclusion of environmental factors as an input to plan for uncertainties and inclusion of risk management plan in the project plan is recognized.

On the issue of adequate risk management training provided by the organization and having enough knowledge about how to handle risks the average response (2.29) which is nearer to a rating of below average shows majority of the respondents indicated that neither they are given enough training nor have enough knowledge about how to handle risks when it occurs. This shows that employees of the project have not adequately been trained and enabled to perform their risk management activities.

The overall result shown in the above table and the interview held with the project manager indicate the project does not have a systematic and careful risk planning process. The study results on the issue of risk planning show that, even though the some of the activities related with risk planning had been done well; to make the risk planning process systematic more effort is needed on equipping employees with the knowledge and skills of planning and handling risks. The result obtained through interview from the project manager also reveals the same finding.

4.3. Responses on Risk Identification

Table 4.7: Mean & St. Deviation of Risk identification

NO	Statements Risk identification	mean	St. Deviation
1	All team members within the project play a role in identifying risk.	3.91	0.73
2	The management used the experience of the organization to identify risk.	3.88	0.60
3	The management used physical inspection to identify risk.	3.71	0.86
4	The management used SWOT Analysis to identify risk	2.19	0.71
	Total	3.42	

Source: Own survey, 2017

The average mean value of the first three risk identification factors is rated as good and individual mean of the factors range between 3 and 4. Individual factors mean values are closer to each other indicating these factors have similar level of significance. The above table indicates that the mean result (3.91) for the question asked to rate the roles of the team members in identifying risk shows the involvement of all team members in playing a role of identifying risk is good in the project.

The response obtained (3.88) for the question if the organization used its experience to identify risk indicates that majority of the respondents are in agreement with the statement. Regarding the questions if the management used physical inspection and SWOT Analysis to identify risk the average result obtained is 3.71 and 2.19 respectively shows, physical inspection is the preferred way of risk identification for the project.

Table 4.8 frequency distribution of identification methods used in the project

Which of the following method is primarily used to identify risks within the project:

	Frequency	Percent	Valid Percent	Cumulative Percent
Expert judgment	17	70.8	70.8	70.8
Checklists	1	4.2	4.2	75.0
Valid Document review	2	8.3	8.3	83.3
Information gathering	4	16.7	16.7	100.0
Total	24	100.0	100.0	

Source: Own survey, 2017

As shown in the table above, 70.8% of the respondents say that expert judgment is primarily used to identify risk followed by information gathering (16.7%), Document review (8.3%) and Checklists (4.2%).The interview held with the project manager also rated expert judgment as the primary method of risk identification followed by information gathering.

4.4. Responses on Risk Analysis

Table 4.9 Mean and St.Deviation of processes of risk analysis

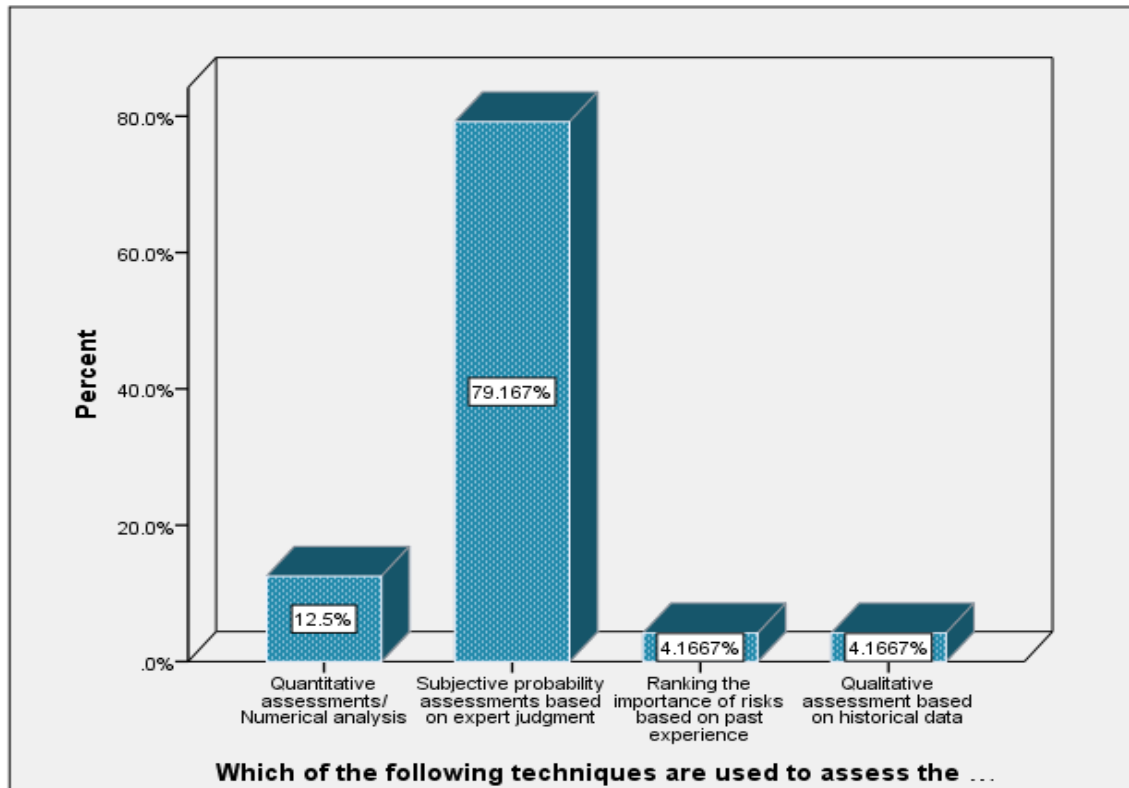
No	Statements Risk Analysis	mean	St. Deviation
1	Characteristics of the risk are considered before analyzing the identified risk.	3.88	0.680
2	There is a measurement system to analyze the risk.	3.79	0.884
3	Project documents are updated after assessment of the risk that might occur	3.75	0.794
	Total	3.806	

Source: Own survey, 2017

The mean value (3.88) which is rated as good as shown in the above table indicates that majority of the respondents responded that, Characteristics of the risk are considered before analyzing the identified risk. For the question asking if there is a measurement system to analyze the risk the mean response is (3.79) which imply majority of the respondents are in agreement with the statement and the project manager told that there is a trend of describing risks in monetary terms . Whereas the mean value (3.75) for item No 3 shows Project documents are updated after assessment of the risk that might occur.

From the overall mean result (3.80) and the interview held with the project manager it can be seen that greater number of the respondents rated that the practice of risk analysis in the project is good.

Fig 4.1 response for techniques used for risk assessment



Source: Own survey, 2017

The figure above shows subjective probability assessment based on expert judgment is chosen by most of the respondents as a technique used in the project to assess the probability of risk occurrence.

4.5. Responses on Risk Response

Table 4;10 Mean and St.Deviation for risk response processes.

		Statistics	
		There is a well-developed strategy within the project to respond to risk.	Factors such as budget, schedule and resources are considered while responding to risk.
N	Valid	24	24
	Missing	0	0
Mean		2.21	3.67
Std. Deviation		.869	.868

Source: Own survey, 2017

The mean value (2.21) which is a rating nearer to below average, in the above table for the question if there is a well-developed strategy within the project to respond

to risk, indicates that the project is not using/practicing a well-developed strategy to respond to risk. Regarding the consideration of budget, schedule and resources, while responding to risk the mean value is (3.67) which indicate the agreement of majority of the respondents on the consideration of budget, schedule and resources while responding to risk.

Table 4.11 Response for Risk Mitigation Strategy

The risk mitigation strategy that is usually used in the project:

	Frequency	Percent	Valid Percent	Cumulative Percent
Control/Reduction	17	70.8	70.8	70.8
avoidance	1	4.2	4.2	75.0
Valid Transfer	3	12.5	12.5	87.5
Acceptance	3	12.5	12.5	100.0
Total	24	100.0	100.0	

Source: Own survey, 2017

Based on the result in the above table 70.8 %choose control and reduction as a risk mitigation strategy followed by acceptance (12.5), transfer (12.5) and avoidance (4.2%).

The above result indicates that risk control/Reduction strategy is used as a risk mitigation strategy in the project most of the time when risk occurs.

4.6. Responses on Risk Monitoring and Control

Table 4.12 Mean and St.deviation of risk monitoring and control

	Based on the current status of the project, are risks monitored and controlled well?	Information available or the history of the project is used to supplement to control risk	Risks that occur within the project are controlled in a way that goes with the goal and objective of the project.
N Valid	24	24	24
Missing	0	0	0
Mean	1.88	1.83	1.92
Std. Deviation	.797	.702	.717

Source: Own survey, 2017

The ratings (1.88) and (1.92) for the questions if risks are monitored and controlled well and if these activities are done in a way that goes with the goal and objective of the project respectively shows there is little practice of risk monitoring and control and this little practice is not done in accordance with the goal and objective of the project.

Regarding the question asked to rate if the project uses information available and its history, to supplement the risk control practice, the average rating value is (1.83) which indicates the management does not supplements the risk control practice by using information available and the history of the project. These results were also confirmed during the interview held with the project manager.

4.7. Responses on General information about the overall practice of risk management

Six questions have been included in the study questionnaire in respect of project risk management.

Table 4.13 summarizes the results of these responses in terms of mean and SD.

Statements Risk Management	mean	St. Deviation
There is a policy or guideline that recommends how to manage unexpected Uncertainties	2.21	.680
The project has a defined or standard risk management process.	2.26	.864
Responsible person or department is assigned to handle risk when it occurs.	1.89	.590
Risk management is treated as a continuous process in the project	1.78	.905
Overall scale values	2.03	

Source: Own survey, 2017

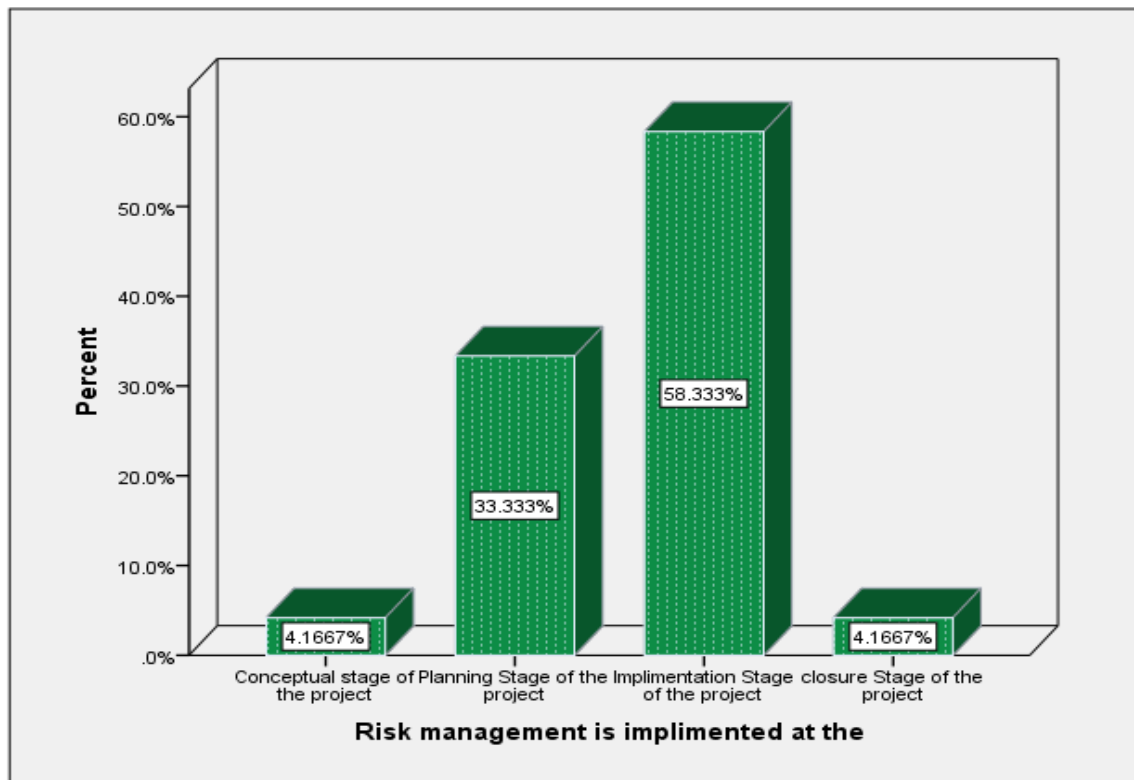
The table above reveals that the average response given by the respondents for the question designed to check the existence of guide line that recommends how to manage unexpected Uncertainties is (2.21) which shows that the existence of a guide line that recommends how to manage unexpected Uncertainties is below average. Regarding the question if the project had a defined or standard risk management process the average response (2.26) and the result obtained from

interviewing the project manager indicates that the project doesn't have a defined or standard risk management process.

The average result (1.89) obtained from the question designed to check the existence of responsible person or department is assigned to handle risk when it occurs shows the project has not assigned a responsible person or department to handle risk.

Regarding the question if the project treated Risk management as a continuous process the average response is (1.78) which shows the project doesn't treat risk management as a continuous process which is supported by the result obtained from the interview held with the project manager.

Figure 4.2 Response of implementation stage of risk management



Source: Own survey, 2017

The figure above shows the stage at which risk management is implemented in the project. It is shown that majority of the respondents (58.3%) agree that, risk

management is implemented at the implementation stage of the project followed by (33.3%) of respondents which says risk management is implemented at the planning stage of the project. This result coincides with the response obtained from the project manager during the interview.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter the summary of the major finding of the study, the conclusion that should be drawn from data analysis and recommendations, that the researcher propose about the risk management practice of the project to enhance effective implementation of the project by stakeholders should be discussed.

5.1. Summary of Basic findings

This study attempted to examine the risk management practices of Butajira Asphalt road construction project in terms of the four major risk management processes:

Based on the data analyzed in chapter four, using mean and percentage frequency of respondents for quantitative data, and narrative approach for qualitative data collected through interviews the researcher comes up with the following results.

According to the ratings of respondents obtained, the practice of developing an effective risk management plan in the project is rated below average and the finding reveals that there is a high rate of involvement of relevant stake holders in the planning and performing of managing risk. Moreover, the inclusion of environmental factors as an input to plan for uncertainties and inclusion of risk management plan in the project plan is recognized. The same finding revealed that consideration of an expert judgment or meetings while planning for risks that might occur in the project rated as good by majority of the respondents. Regarding the issue on giving trainings to enable stake holders and have knowledge about risk management, the finding shows this practice is weak in the project.

The results and findings discussed in chapter four indicate, the ratings of majority of the respondents are well above average for majority of the processes under risk identification but there is no practice of using SWOT analysis as a risk identification tool. The finding indicates that expert judgment is rated as the primary method used to identify risk by the project.

The findings obtained from the risk analysis process revealed that the project considers the characteristics of the risk prior to analysis and there is a risk measurement system that value risks in monetary terms. Whereas they rated, the practice of updating Project documents after assessment of the risk that might occur, as good. From the overall result and the interview held with the project manager on the process of risk analysis it can be seen that greater number of the respondents rated that the practice of risk analysis is good in the project.

Based on the result the average ratings of the respondents on the process of risk response are below average. Which means majority of the respondents disagree on the existence of a well-developed strategy with in the project to respond to risk, even though the project considers budget, schedule and resources while responding to risk.

Risk Control/Reduction strategy is chosen by most of the respondents as a risk mitigation strategy most of the time when risk occurs in the project.

Regarding the process of risk monitoring and control the findings in chapter four revealed that majority of the respondents rated below average which means they disagree that risks are not monitored and controlled well. In addition the respondents rated the project as below average in using its history and information available to supplement the risk control practice.

The ratings of the respondents on the general questions about risk management practice reveals that the existence of a guide line that recommends how to manage unexpected uncertainties is poor. In addition the rating given by the respondents indicates that neither the project had a defined/standard risk management process nor a responsible person or department is assigned to handle risk. Based on the findings the majority of the respondents responded that the project has not been treated risk management as a continuous process rather it is implemented during the implementation stage of the project.

5.2. Conclusion

The aim of this research was to examine the actual risk management practice of Butajira Asphalt road construction project, In order to address the primary aim of this research; the following key research conclusions can be discerned.

Firstly, the practice of developing an effective risk management plan in the project is a poor practice even though it is prepared with the involvement of stake holders, and the plan put in to consideration the environmental factors, while planning and performing of managing risk. In addition the project has a poor record in enabling its stake holders by giving training on how to plan and handle risks.

Secondly, this thesis revealed that risk identification and risk assessment are the most often used risk management elements ahead of risk response and risk documentation. The primary method used by the project to identify risk is expert judgment. Moreover physical inspection is preferably used in the identification process of risks and majority of the team members play a good role in the process of risk identification. However the project does not use SWOT analysis to identify risk, which helps to identify both positive and negative risks and enable to take advantage of the strengths and opportunities while focusing on the weaknesses and treats to the project.

Thirdly, the actions that are performed in the project to analyze risks were in a good status and done by considering characteristics of the risk before analyzing the identified risk. The project uses a measurement system to analyze the risk and the project has a good practice of updating Project documents after assessment of the risk that might occur. Subjective probability assessment based on expert judgment methods of risk assessment is used most frequently, ahead of quantitative/numerical and qualitative methods.

Fourthly, the project do not use a well-developed strategy to respond to risk and risk reduction/control is the most frequently used risk response method followed by risk transfer; and acceptance. The impact of the response on budget, schedule and resources is also considered well, while responding to risk.

Finally, the project has poor practices of risk monitoring and control and these little practices are not done in accordance with the goal and objective of the project. The project has difficulty in using the history and experience of the project to monitor and control risk.

Moreover, the project has a poor record in using a guide line that recommends how to manage unexpected uncertainties. The project doesn't have a defined/standard risk management process and the practice of assigning a responsible person or department to handle risk is also poor.

Risk management usage in the implementation stage of the project life cycle is higher than in the planning, conceptual or termination phases. This contrasts with the view that risk management application in the conceptual phase is the most important.

5.3. Recommendations

As the major objective of the study is to identify the actual risk management practice of Butajira Asphalt road construction project, the following recommendations are forwarded based on the findings mentioned above about the practice.

- Team training is one of the main processes that can contribute to the success of project. The visible need of Project risk Management training that exists in the Project needs to be addressed to increase the effectiveness of the team. Assigning professional project risk manager crucial for improving the practice of Project risk Management. Risk awareness and an appropriate level of risk training should be provided to all stakeholders, compatible with their functions and levels of responsibility for effective management of risk.
- The project should develop a well-developed guide line that recommends how to manage unexpected uncertainties which enables it to have a defined/standard risk management process.
- The project should assign a responsible person or department, whose primary responsibility is managing the overall activities related with risk management

activities. The projects should have risk management professionals who have adequate risk management experience and are proficient in all aspects of risk management.

- Risk management needs to be seen as a continuous process. It is essential that the incidence of risk be reviewed to see whether it has changed over time. Risk Management is a dynamic process which means new risk will be identified some will be terminated and control measures will need to be updated in response to changing internal and external events. The assessment of the impact and likelihood will also need to be reviewed in light of management actions.
- An important part of risk management is to identify and implement appropriate risk responses. A well-developed risk response strategy should also be planned within the project, as the action taken to respond to risks that occurred within the projects can have an impact on the projects as a whole and can also influence the condition of the risk.
- The monitoring and review process should be integrated into existing processes so that it adds value and supports the successful achievement of objectives and is not just seen as a 'bolt on'. Where objectives have not been achieved or are not on course to be achieved, the cause(s) should be investigated to inform and improve the risk assessment process.

Implementations of risk monitoring and control activities are vital to the successful management of project risks in any project. The poor practice of risk monitoring and control in the project should be improved and done in accordance with the goal and objective of the project.

- Risk register is the tool used for capturing important information about the risk or opportunity and is a continual process. The project should use Information available or the history of the project to supplement the process of risk monitoring and control

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APPENDIX A – Questionnaire

Questionnaire on Risk Management Practice of Butajira Asphalt road construction project

My name is Bereket Negash and I am studying project management (MA) at the University of Addis Ababa. As part of my degree program, I am conducting a study about risk management Practice in Butajira asphalt road construction project. I kindly invite you to take part in this survey by filling the questionnaire.

Your participation is strictly voluntary and all responses will be treated as anonymous. Do not ponder over whether your answer is right or wrong. Whatever you write will be treated with great confidentiality. The findings, if published, will summarize the responses of the sample as a whole; individual answers will not be identified.

Yours sincerely,

Please attempt to answer all the questions.

Part I: BIOGRAPHICAL INFORMATION

This section asks for information about you. This information will be used in the analysis of the data not to identify you.

1. how old will you be at the end of 2017

- 1) 19 – 30 years
- 2) 31 – 40 years
- 3) 40 – 50 years
- 4) above 50 years

2. Level of Education:

- 1) Diploma
- 2) Degree
- 3) Postgraduate
- 4) OTHER _____

3. Years of work experience

- 1) Below 2 years
- 2) 3-5 Years
- 3) 6-10 Years
- 4) 11-15 Years
- 5) Above 15 Years

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

- 1) Below 3 months
- 2) 4-6months
- 3) More than 6months

Part II: Please read each statement and chose the answer that best describes how you perceive the project applies project risk management:

RISK PLANNING

1. How do you rate the practice of using a systematic approach or careful planning to perform risk management in the project.

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

2. How do you rate the involvement of relevant stakeholders in the planning and performing of managing risk

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

3. How do you rate the consideration of an expert judgment or meetings while planning for risks that might occur in the project?
 - a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know
4. How do you rate the inclusion of environmental factors as an input to plan for uncertainties?
 - a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know
5. How do you rate the level of your project in enabling team members by giving training on how to handle uncertainties?
 - a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know
6. Please rate the incorporation of risk management plan in the project plan.
 - a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know

Risk identification

7. How do you rate the involvement of all team members within the project in playing a role in identifying risk?
 - a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know
8. How do you rate the use of the experience of the organization by the management to identify risk?
 - a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know
9. How do you rate the use of physical inspection to identify risk by the management?
 - a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know
10. How do you rate the use of SWOT Analysis to identify risk by the management?
 - a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know
11. Which of the following method is primarily used to identify risks within the project:
 - a) Expert Judgment

- b) Checklists
- c) Document Review
- d) Information gathering
- e) Assumption analysis
- f) Document Review
- g) None

RISK ANALYSIS

12. Please rate the consideration of characteristics of the risk before analyzing the identified risk.

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

13. Please rate the existence of a measurement system to analyze the risk.

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

14. How do you rate your project in updating project documents after assessment of the risk that might occur

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

15. Which of the following techniques are used to assess the probability of risk occurrence in the project?
- a) Quantitative assessments/ Numerical analysis
 - b) Subjective probability assessments based on expert judgment
 - c) Ranking the importance of risks based on past experience
 - d) Qualitative assessment based on historical data

RISK RESPONSE

16. Please rate the existence of a well-developed strategy within the project to respond to risk.
- a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know
17. How do you rate the consideration of factors such as budget, schedule and resources while responding to risk.
- a) Excellent (5)
 - b) Good (4)
 - c) Average (3)
 - d) Below average (2)
 - e) Poor (1)
 - f) Don't know
18. The risk mitigation strategy that is usually used in the project:
- a) Control/reduction
 - b) avoidance
 - c) Transfer
 - d) Acceptance

RISK MONITOR AND CONTROL

19. How do you rate the level of your project in monitoring and controlling risks based on the current result of the project?

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

20. How do you rate the use of information available or the history of the project to supplement to control risk

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

21. How do you rate the practice of your project in working in accordance with the goal and objective of the project while controlling risk?

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

General questions on the overall practice of risk management

22. Please rate the existence of a policy or guideline that recommends how to manage unexpected uncertainties in your project

- a) Excellent (5)
- b) Good (4)
- c) Average (3)

- d) Below average (2)
- e) Poor (1)
- f) Don't know

23. How do you rate the use of a defined or standard risk management process in your project?

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

24. How do you rate the practice of assigning responsible person or department to handle risk when it occurs?

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

25. How do you rate the practice of treating risk management as a continuous process in the project

- a) Excellent (5)
- b) Good (4)
- c) Average (3)
- d) Below average (2)
- e) Poor (1)
- f) Don't know

26. Risk management is implemented at the

- a) Conceptual stage of the project
- b) Planning stage of the project
- c) Implementation stage of the project
- d) Closure stage of the project

APPENDIX B – Interview Guide

PRACTICE OF RISK MANAGEMENT IN BUTAJIRA TOWN ASPHALT ROAD CONSTRUCTION PROJECT

- 1) Can you please tell me about risk management system in the project? Is there a standard risk management process which is being followed with in the projects?
- 2) Is there a standardized or formal documented process on how to manage uncertainties within the project? What is the current practice of risk management within the project?
- 3) Are team members within the project aware on how to manage risk in a way that doesn't affect the objective or goal of the project?
- 4) Is there a special department or assigned person to handle uncertainties that occur within the lifecycle of the project? At which stage of the project are risks managed in the projects?
- 5) Is planning done carefully on how to manage risk at your project? If yes, how do you plan and who is involved in planning process?
- 6) Are risks that might occur identified early while the project is at startup phase? And what methods are used to identify them?
- 7) Within the project are risks analyzed to assess its probability of occurrence and level of impact?
- 8) While taking action or responding to uncertain events within the project what factors are kept in consideration? Are factors such as schedule, budget and objective of the project considered?