ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF PROJECT MANAGEMENT

ASSESSMENT OF PROJECT RISK MANAGEMENT PRACTICE: THE CASE OF ADDIS ABABA CITY ROAD AUTHORITY

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ASSESSMENT OF PROJECT RISK MANAGEMENT PRACTICE: THE CASE OF ADDIS ABABA CITY ROAD AUTHORITY

A project work submitted to Addis Ababa University College of Business and Economics School of Commerce in partial fulfillment of the requirements for the Degree of Masters of Arts in project management

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This is to certify that the research project presented by Shewangizaw Zenebe entitled: "Assessment of Project Risk Management Practice at Addis Ababa City Road Authority" and submitted in partial fulfillment of the requirements for the degree of Masters of Art in Project Management complies with the regulation of the University and meets the accepted standards with respects to originality and quality.

Approval Board Committee

Examiner (Internal)…….. Signature ……...Date……..

Examiner (External)…….. Signature ……Date…….

Advisor…… Signature ……Date……..

Chair of Department or Graduate Program Coordinator

DECLARATION

I, Shewangizaw Zenebe, declare that this research project entitled “Assessment of Project Risk Management Practice: The Case of Addis Ababa City Road Authority” is the outcome of my own effort and study. All sources of materials used for the study have been duly acknowledged. This study has not been presented for a degree in any university.

Shewangizaw Zenebe

Signature: _____

Date: _____

Letter of Certification

This is to certify that Shewangizaw Zenebe has conducted this project work entitled “Practices of Project Risk Management Practice: The Case of Addis Ababa City Road Authority”

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

Atsede Tesefaye (PhD) _____

Signature and Date

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Acronyms and abbreviation

AACRA: Addis Ababa City Road Authority

BOFED: Bureau of Finance and Economic Development

E.C: Ethiopian Calendar

IRM: International risk management

PMI: Project Management Institute

PMO: Program Management Office

RMP: Risk Management Process

UAE: United Arab Emirate

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Abstract

The purpose of this paper is to assess project risk management practice at Addis Ababa City Road Authority; the study was descriptive by its type and data was obtained using purposive sampling methods; the sample size of the study was determined to be 40 respondents working actively on project from contractors, consultants and the Addis Ababa City Road Authority. Closed-ended questionnaires were administered to respondents while interview with three project managers. The questionnaires covered main aspects of risk management including the overall project risk management, risk identification, risk analysis and risk monitoring and controlling. The finding of the study indicated absence of risk management policy or guideline, lack of responsible person and department to manage risk, no standard risk management process. Moreover risk is managed by the project managers only rather than to be seen as a common prime activity for project manager and consultant and to have specialized risk management team. In line with this risk identification, risk analysis and risk monitoring and controlling aren't undertaken in a way to mitigate project risk that will happen. Somehow in the authority there is an attempt which has been undertaken intuitively to manage project risk rather than scientifically. Some recommendations were given amongst them were the authority shall give emphasis establishing the risk management system, recruiting and providing training for the staff.

Key words: AACRA, Risk management and Risk management process

CHAPTER ONE

1.1 Background of the study

According to Project Management Institute (PMI) 2017 all projects are risky since they are unique undertakings with varying degrees of complexity that aim to deliver benefits. They do this in a context of constraints and assumptions, while responding to stakeholder expectations that may be conflicting and changing. Organizations should choose to take project risk in a controlled and intentional manner in order to create value while balancing risk and reward.

A project is a temporary endeavor undertaken to create a unique product, service, or result. Moreover it is unique product, service, or result. Projects are undertaken to fulfill objectives by producing deliverables. Project management is accomplished through the appropriate application and integration of the project management processes identified for the project (PMI, 2017). Construction project management is the planning, co-ordination and control of a project from conception to completion (including commissioning) on behalf of a client, requiring the identification of the client's objectives in terms of utility, function, quality, time and cost; the establishment of relationships between resources; integrating, monitoring and controlling the contributors to the project and their output; and evaluating and selecting alternatives in pursuit of the client's satisfaction with the project outcome (Walker , 2015). The construction business, like any other business is risky however construction business includes more risks due to the involvement of many parties, such as owners, contractors, subcontractors, suppliers and many others. Furthermore, construction projects due to their uniqueness and built, is inherent in many risks (Euripides, 2005).

There are a number of risks which can be identified in the construction industry and which can be faced in each construction project regardless of its size and scope. Changes in design and

scope along with time frames for project completion are the most common risks for the construction sector as a result the further in the process, changes in scope or design are implemented, the more additional resources, time and cost, those changes require (Gould & Joyce, 2002).Too quick completion may be a result of insufficient planning or design problems which in fact shorten the completion time but on the other hand lead to a low quality of final product and increased overall cost. Being behind schedule generates greater costs for both investors and contractors due to non-compliance with contracted works (Gould & Joyce, 2002).

Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project. The objectives of project risk management are to increase the probability and/or impact of positive risks and to decrease the probability and/or impact of negative risks, in order to optimize the chances of project success (PMI, 2017).

1.2 Background of Addis Ababa City Road Authority

The founding of Addis Ababa City was linked with the establishment of the Addis Ababa City Road Authority and by the time the then officials made an attempt to construct road that can be counted in finger with few machineries and manpower according to the website of the authority but currently the authority totally changed the structure juxtaposed with the previous ones and has constructed a number of highway construction projects having mission and vision to upgrade the road coverage of the city. For this purpose the authority has been earmarked six billion Birr in Ethiopian fiscal year of 2011 for the construction of highway (BOFED, 2011).

1.3 Statement of the problem

According to Mansour & El-Sayegh (2015) most studies confirm that highway construction projects have higher risks than other construction projects because highway projects are spread

over a wider geographic area and face a threat from underground conditions. Highway projects consist of many risks and this is due to involvement of many contracting parties including designers, contractors, sub-contractor and suppliers (Euripides, 2005). Risks are the major cause of poor performance on highway construction projects, construction of highways involves various risk factors from designing and planning stages to completion of project. Due to these factors, there are delays in completion of project which involve large funds (Salunkhe, 2016).

Change is inherent in construction work. For years, the industry has had a very poor reputation for coping with the adverse effects of change, with many projects failing to meet deadlines and cost and quality targets. This is not too surprising considering that there are no known perfect engineers, any more than there are perfect designs or that the forces of nature behave in a perfectly predictable way (Smith et al, 2006)

Understanding risks allows parties to take steps to reduce their negative impacts, risk identification and assessment is a key risk management process (Mansour & El-Sayegh, 2015).

Addis Ababa City Administration Bureau of Finance and Economic Development during the Ethiopian fiscal year of 2011 earmarked six billion Birr for the construction of road, drainage, retaining wall and bridges. So as to accomplish its objectives AACRA has hired high way engineers and civil engineers. Some of the international standard roads and bridges are built by the external contractors while the rest are done by own force.

AACRA has utilized a significant amount of money to build standardized roads by modality of external contractors and own force with the premises of accomplishing on time, budget and quality however fails to achieve its vision and mission and repeatedly prone for frequent design change, claim, right of way problem, variation order, substantial schedule and cost overrun, compromised quality of work and dissatisfaction of customers (AACRA website, 2011)

As in habitants of Addis Ababa City everyone has observed the highway construction industry is growing very fast though there are also a number of problems that happened frequently and exposed the authority for additional cost, schedule, compromised quality and dissatisfaction of customers therefore it is mandatory to establish the risk management system to mitigate frequently happening problems to go one step forward (BOFED, 2011)

1.4 Research questions

The study regarding assessment of project risk management practice in highway construction projects tried to address the following research questions:

- How is risk management practiced in construction project at AACRA?
- What actions are taken to identify risk that arises in the projects?
- What actions are performed to analyze risks that occur in the projects?
- What practice is applied to monitor and control risks in the projects?

1.5 General objective

The general objective of this study is to assess the risk management practice at Addis Ababa City Road Authority.

1.5.1Specific objectives of the study

- To discover how risk management is practiced
- To identify how risk is identified
- To assess how risk is analyzed
- To discern how risk is monitored and control

1.6 Significance of the study

The findings and recommendations of the study will serve as a reference for project owners, implementers, policy makers, researchers and other stakeholders while implementing and evaluating project risk.

1.7 Scope of the study

Due to the time limitation of the research and scarcity of data availability on time the study delimited only highway construction projects constructed by four contractors focusing on project risk management practice, risk identification, analysis and monitoring and control moreover respondents were selected based on their accessibility and willingness rather than selecting randomly.

1.8 Definition of terms

Project Risk - An uncertain event or condition that, if it occurs, has a positive or a negative effect on at least one project objective (PMO, 2017)

Risk- Is an uncertain event that if occurs, has a positive or negative effect on the project objectives (PMO, 2017)

Uncertainty- Is about a future event that may or may not happen and the unknown magnitude of the impact on project objectives if it does happen. Thus, a "risk" is characterized by its probability of occurrence and its uncertain impact on project objectives (PMO, 2017)

Risk Identification - Determining which risks might affect the project and documenting their characteristics (PMO, 2017)

Risk Analysis - Prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and magnitude of impact (PMO, 2017)

Risk Monitoring and Control - Tracking identified risks, monitoring residual risks, identifying new risks, executing risk response action plans and evaluating their effectiveness throughout the project life cycle (PMO, 2017)

1.9 Organization of the paper

The research is organized into five chapters which are described briefly in the following manner: The first chapter is an introductory part containing introduction, background of the study, background of the authority, the problem statement, research question, objective of the study and definition of terms followed by significance of the research and scope and limitation of the study. Chapter two briefly discusses literature relevant to the study which includes theoretical and empirical evidence related to the research topic. Chapter three discusses about the research design and methodology which was applied in the study. In Chapter four discusses the results of the data obtained from the questionnaire survey were analyzed and presented. Finally, chapter five is all about the summary of the findings, conclusions and recommendations.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURES

2.1 Introduction

This chapter contains the theoretical and empirical details of the research. It consists of a comprehensive review of the existing body of literature on project risk, risk management, risk awareness, risks in the construction sector and the overall risk management process.

2.2 Theoretical review

2.2.1Risk and risk management

Risk means different things to different people. Both upside and downside can be included. David Hillson, known as the Risk Doctor, has simplified the definition of risk by calling risk "uncertainty that matters. The effect is a deviation from the expected can be positive or negative. Uncertainty, again, is defined in the standard as "the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood." A more basic definition would be to say that uncertainty means lack of certainty (Haapio & Siedel, 2013).

There are a number of risks which can be identified in the construction industry and which can be faced in each construction project regardless of its size and scope. Changes in design and scope along with time frames for project completion are the most common risks for the construction sector. The further in the process, changes in scope or design are implemented, the more additional resources, time and cost, those changes require. Project completion ahead of time may be as troublesome as delays in a schedule. Too quick completion may be a result of insufficient planning or design problems which in fact shorten the completion time but on the other hand lead to a low quality of final product and increased overall cost. Being behind

schedule generates greater costs for both investors and contractors due to non-compliance with contracted works (Gould & Joyce, 2002).

According to Szafranko (2001) internal risks are relatively more controllable and will vary between projects. Examples of internal risks include resource availability, experience in the type of work, the location of the project and the conditions of contract. Internal risks have been separated into two subgroups: global risks, which affect individual work packages; and local risks, which affect individual work packages within a project while external risks are those which are relatively uncontrollable, including inflation, currency exchange rate fluctuations and legislative changes**.**

In essence, decisions are made against a predetermined set of objectives, rules or priorities based upon knowledge, data and information relevant to the issue although too often this is not the case. Frequently decisions are ill-founded, not based on a logical assessment of project specific criteria and lead to difficulties later. It is not always possible to have conditions of total certainty; indeed in risk management it is most likely that a considerable amount of uncertainty about the construction project exists at this stage (Smith et al, 2006)

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 (IRM, 2002)

Smith et al. (2006) provide a comprehensive description of the concept of RM and how it can be used in practice. According to the authors, risk management cannot be perceived as a tool to predict the future, since that is rather impossible. Instead, they describe it as a tool to facilitate

the project in order to make better decisions based on the information from the investment. In this way, decisions based on insufficient information can be avoided, and this will lead to better overall performance. In the literature, RM is described as a process with some predefined procedures.

Risk management contributes to a better view of possible consequences resulting from unmanaged risks and how to avoid them. (Konnur, 2016) Another benefit of working with risk management is increased level of control over the whole project and more efficient problem solving processes which can be supported on a more genuine basis. It results from an analysis of project conditions already in the beginning of the project (Cooper et al, 2005).

Project risk management is usually associated with the development and evaluation of contingency plans supporting activity-based plans, but effective project risk management will be instrumental in the development of base plans and contingency plans. Really effective risk management will strongly influence design and may significantly influence motives and parties. It will certainly influence basic timing and resource allocation plans. Planning and risk management in this sense are integrated and holistic (Ward, 2002)

The practice of risk management can certainly play an important role in ensuring that the outcomes will be positive ones. However, a lack of risk management will likely result in increases to a project's cost and schedule (Stewart et al).

2.2.2 Use of the Risk Assessment

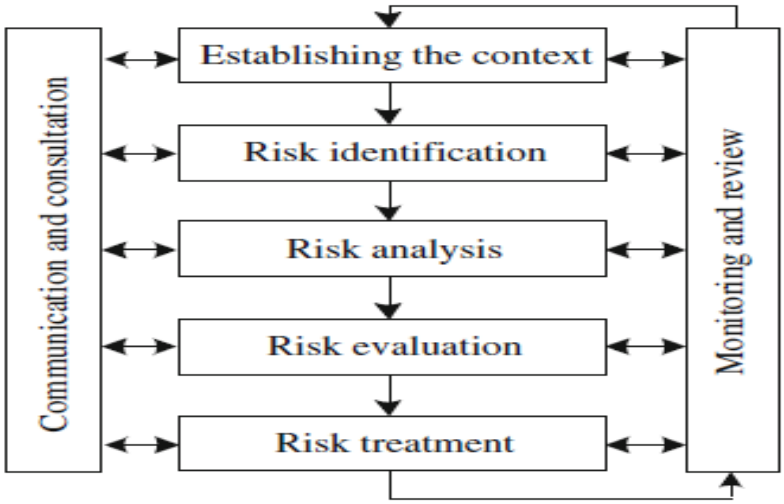
The risk assessment has two main objectives: to provide insights about the risks linked to the operation of the master's programme and how various measures can influence these risks, and in this way to provide support for decisions on how to further develop the programme. The assessment does not prescribe what to do, but provides decision support (Aven & Zio, 2018).

2.2.3 Risk Management Process

Risk management process involves the systematic application of management policies, processes and procedures to the tasks of establishing the context, identifying, analyzing, assessing, treating, monitoring and communicating risks(Cooper et al, 2005).

Risk management is an ongoing process that continues through the life of a project. It includes processes for risk management planning, identification, analysis, treatment, monitoring and control. Many of these processes are updated throughout the project lifecycle as new risks can be identified at any time. It's the objective of risk management to decrease the probability and impact of events adverse to the project. On the other hand, any event that could have a positive impact should be exploited(Cooper et al, 2005).

Fig2.1An overview of project risk management process



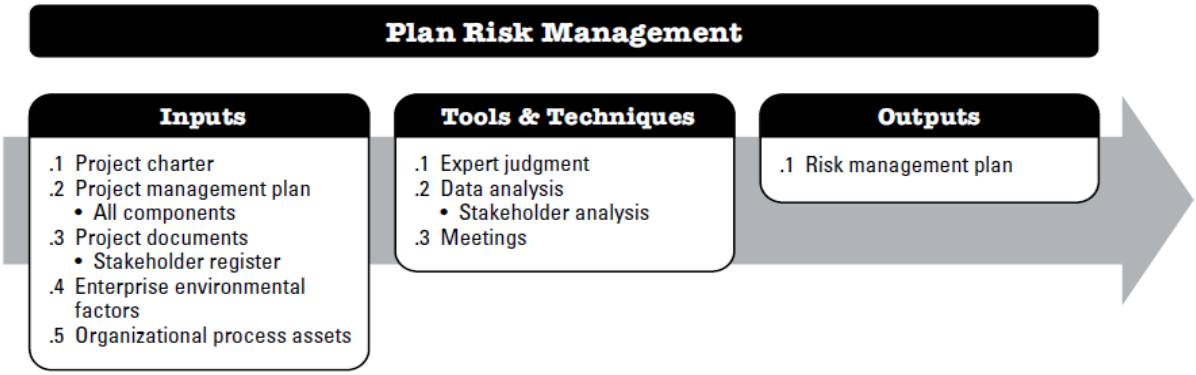
Source: Comcover, 2016

According to the PMI (2017) project risk management is sub divided in five interwoven variables described in the following manner:

2.2.3.1 PLAN RISK MANAGEMENT

According to PMI (2017) plan Risk Management is the process of defining how to conduct risk management activities for a project. The key benefit of this process is that it ensures that the degree, type, and visibility of risk management are proportionate to both risks and the importance of the project to the organization and other stakeholders. This process is performed once or at predefined points in the project. The inputs, tools and techniques, and outputs of the process are depicted as follow:

Fig2.2 Plan risk management



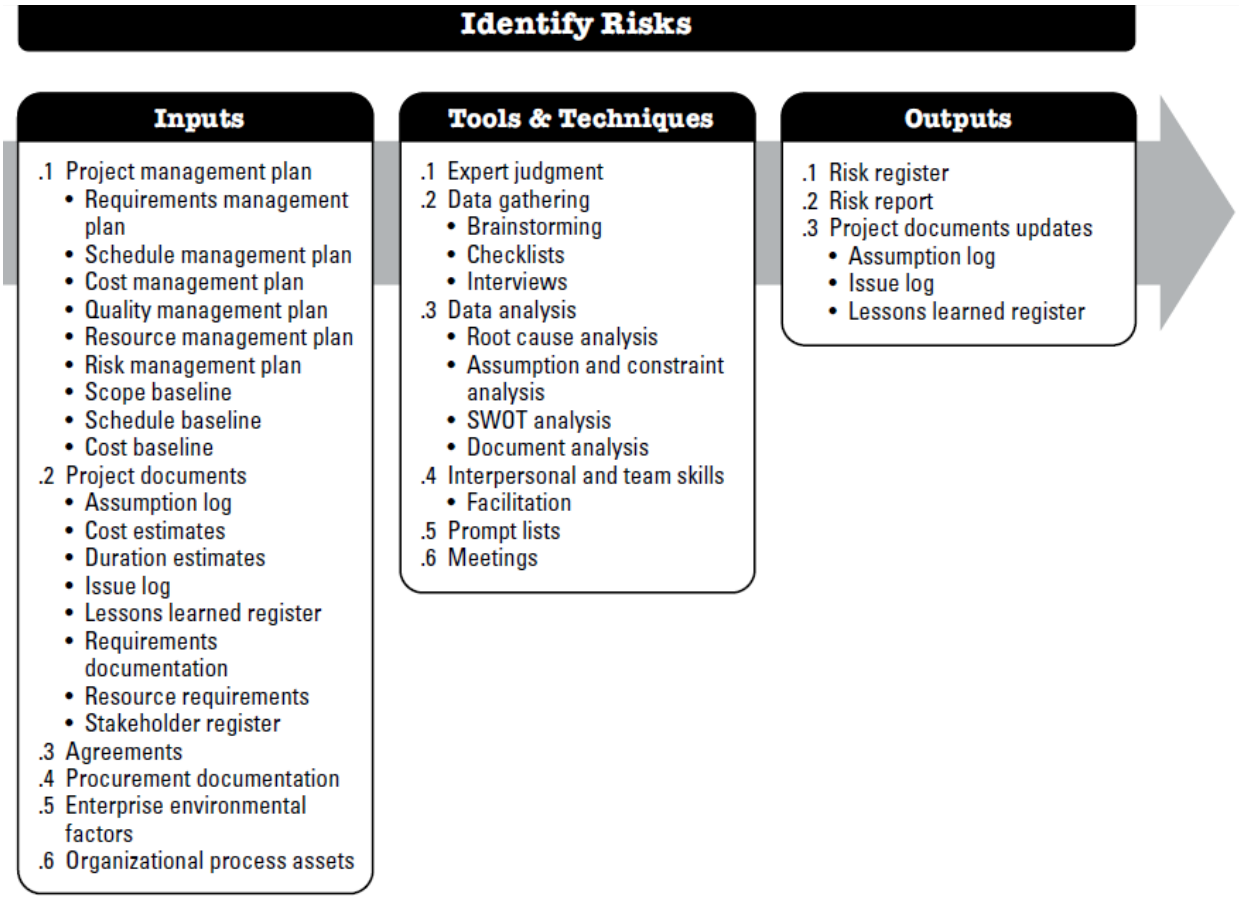
Source PMI, 2017

2.2.3.2 Risk identification

Identifying the sources and nature of risk and the uncertainty associated with the activity or phenomena under consideration is often considered as the first and major step in the risk assessment process. This step calls for a complete description of the universe of risk-based events that might occur, and attempts to answer the question, “What can go wrong?” The comprehensiveness of this risk identification step can be complemented by also addressing the following four sources of failure and their causes (Haimes, 2009):

- ❖ Hardware failure
- ❖ Software failure
- ❖ Organizational failure
- ❖ Human failure

Fig2. 3 Risk identifying



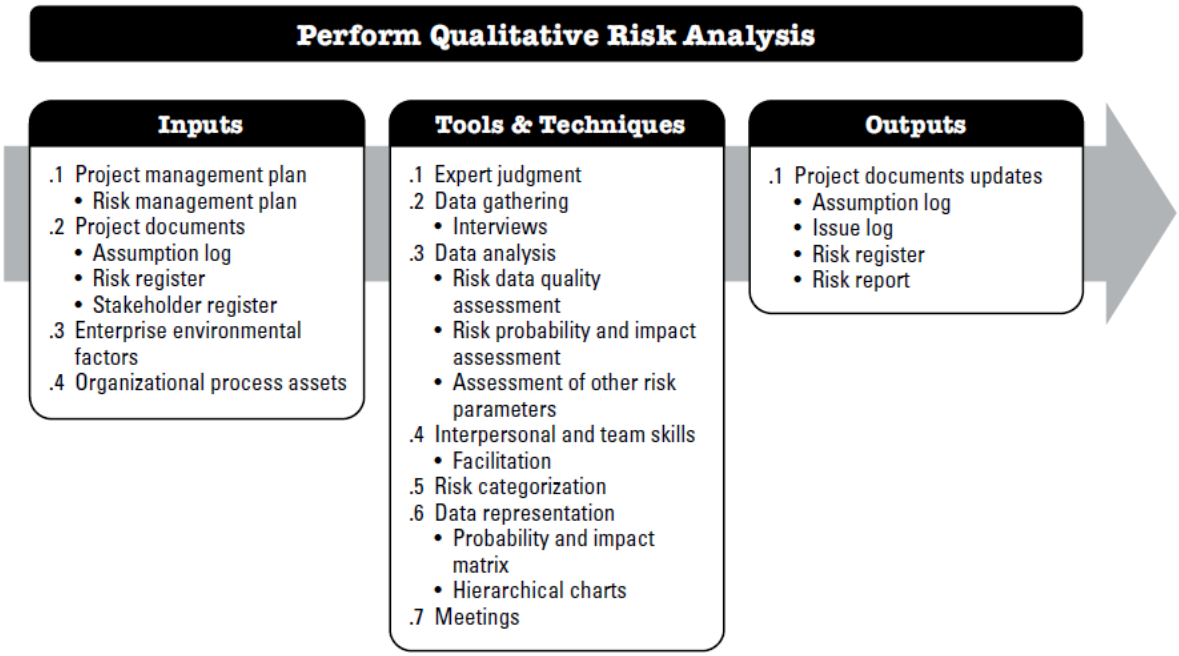
Source PMI, 2017

At the stage of identification we should get the statement of the factors, which are possible to occur in the whole cycle of the project. The most frequently mentioned methods/tools used to identify risk factors are the following: the brainstorming, the Delphic technique, the checklists, the experts' evaluation, the internal audit in a company, the periodic document reviews (Dziadosz & Rejment, 2015), etc.

2.2.3.3 Risk Analysis

Risk analysis involves developing an understanding of risk and impacts both positive and negative. Risk analysis provides input for risk evaluation and decisions on the most appropriate risk treatment strategies and methods. Risk analysis can also provide input for making decisions where the options involve different types and levels of risk assumption, mitigation, reduction, and avoidance (Borghesi & Gaudenzi, 2013)

Fig2.4 Qualitative risk analysis



Source PMI, 2017

2.2.3.3.1 Qualitative and Quantitative Analysis

In order to measure risk it is possible to use quantitative and qualitative analysis. Qualitative analysis is preferable where the level of risk is relatively low, and therefore obtaining the data necessary for data driven analysis could be too costly. Moreover, qualitative analysis is recommended when ample information about risks is shared by many persons from different functions, where there is a variety of risk perceptions and backgrounds (Borghesi & Gaudenzi,

2013). For those situations that fall between qualitative and quantitative risk analysis there is a method that is called semi-quantitative analysis. Semi-quantitative analysis is characterized by the involvement of both quantitative tools and qualitative approaches. It is often identified as the best trade-off between subjective perceptions and rigorous, objective techniques, which provide a good description of likelihood and consequences, calculating the risk level with appropriate data and statistical information (Borghesi & Gaudenzi, 2013).

Quantitative approaches are suitable in the event that likelihood and consequences can be quantified, for example using significant statistical databases. Often one is faced with a lack of sufficient data to apply this technique with a high level of confidence (Borghesi & Gaudenzi, 2013)

2.2.3.4 Risk response

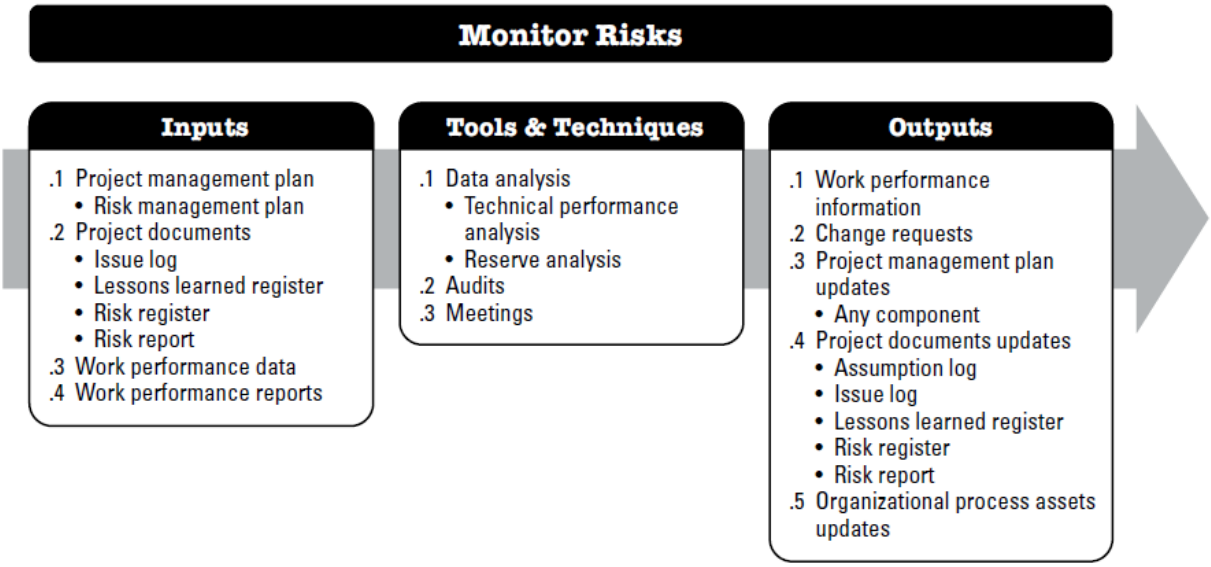
According to Agumba & Renault (2016) risk response is a central component in the RMP that determines what action (if any) will be taken to address risks evaluated in the identification, qualification, and quantification stages. A risk response is determined by proposing several alternatives to eliminate or mitigate an anticipated risk and assign an optimum alternative as a response.

2.2.3.5 Risk monitoring and control

According to the PMI sixth edition monitor Risks is the process of monitoring the implementation of agreed-upon risk response plans, tracking identified risks, identifying and analyzing new risks, and evaluating risk process effectiveness throughout the project. The key benefit of this process is that it enables project decisions to be based on current information about overall project risk exposure and individual project risks. This process is performed

throughout the project. The inputs, tools and techniques, and outputs of the process are depicted in figure below.

Fig2. 5 Risk monitoring



Source: PMI, 2017

In order to ensure that the project team and key stakeholders are aware of the current level of risk exposure, project work should be continuously monitored for new, changing, and outdated individual project risks and for changes in the level of overall project risk by applying the Monitor Risks process (PMI, 2017)

2.2.4 Risk response strategies

As cited by Mullai (2006) the principal risk management strategies are classified as avoidance/elimination, reduction, transfer, and retention and discussed for ease of understanding as follow.

2.2.4.1 Risk avoidance/elimination

It is a strategy where the level of overall project risk is significantly negative and outside the agreed-upon risk thresholds for the project, an avoid strategy may be adopted. This involves

taking focused action to reduce the negative effect of uncertainty on the project as a whole and bring the project back within the thresholds. An example of avoidance at the overall project level would include removal of high-risk elements of scope from the project. Where it is not possible to bring the project back within the thresholds, the project may be canceled. This represents the most extreme degree of risk avoidance and it should be used only if the overall level of threat is, and will remain, unacceptable (PMI, 2017).

2.2.4.2 Risk reduction

According to Mullai (2006) this strategy of risk reduction involves reduction, but not a complete elimination, of the frequency of occurrence of undesirable events and/or the severity of their consequences.

2.2.4.3 Transfer/share

According to the PMI (2017) whenever the level of overall project risk is high but the organization is unable to address it effectively, a third party may be involved to manage the risk on behalf of the organization. Where overall project risk is negative, a transfer strategy is required, which may involve payment of a risk premium. In the case of high positive overall project risk, ownership may be shared in order to reap the associated benefits.

2.2.4.4 Risk retention

According to Mullai (2006) here are various reasons why certain risks are to be retained. In some situations, risks, however undesirable they could be, cannot be avoided, reduced or transferred, as this can be economically or practically impossible. The decision makers may have no other alternative than to retain these risks. In certain circumstances, no active response may be a solution.

2.3 Empirical review

As cited by ISMAIL (2014) in his empirical thesis the construction industry aim is to control project to ensure that projects finish on time, within cost and achieve other project objectives. Unfortunately, time overrun is a very frequent phenomenon and is associated with nearly all projects in the construction industry. Similarly, cost overrun is a major problem in project development and is a regular feature in construction industry. The situation of a construction project in which budgetary estimate exceeds estimation, budget exceeds budgetary estimate, and settlement exceeds budget is a universal phenomenon. This trend is more severe in developing countries where time and cost overruns sometimes exceed 100% of the anticipated cost of the project. The projects that had faced time and cost overruns problem were reported in numerous countries.

The Mansour & El-Sayegh, 2015 defined internal risks as those that are project-related and usually fall under the control of the project management team, while external risks are those that are beyond the control of the project management team. Externals risks had minor effects on the UAE highway construction industry. The research shows clearly that internal risks threaten the project much more than external risks. Because the UAE has a very safe political situation, political risks are never significant in any project

In most situations, contractors perceive risk based on their intuition, experience and judgment. Risk reduction is found to be the most popular risk response method. After risk reduction, the other favored methods are risk elimination, risk retention and risk transfer. Large companies prefer risk transfer because they are in a better position to hire specialty contractors or purchase insurance for risky work packages (Azhar et al, 2014).

The main barriers preventing implementation of risk management in Alabama are lack of knowledge and doubts about the suitability of risk management techniques; sophisticated nature of these techniques compared to project sizes; and human/organizational resistance. (Azhar et al, 2014).

As cited by Kishk & Ukaga in their study in undated year, to increase the chances of a proposed project succeeding, it is necessary for the organization to have an understanding of potential risks, to systematically and quantitatively assess these risks, anticipating possible causes and effects, and then choose appropriate methods of dealing with them. To ensure that any potential risks are managed effectively, the risk process needs to be explicitly built into the decision-making process.

Risk management is thus an important tool to cope with such substantial risks in projects by: (a) assessing and ascertaining project viability; (b) analyzing and controlling the risks in order to minimize loss; (c) alleviating risks by proper planning; and (d) avoiding dissatisfactory projects and thus enhancing profit margins (Baah & Chileshe, 2016)

According to Junior & Carvalho (2011) findings in their study the risk manager showed a positive coefficient meaning that when the company has the position of risk manager, the project has a greater chance of being perceived as a success. The perception is that having a risk manager has a greater impact on the perception of success of having a risk manager has it has higher chance of perception of success than not having a risk manager. Moreover they also emphasized the presence of a project risk manager, constituted the second significant variable to understand the relationship between risk management and project success. This finding, in practice, suggests that project managers should assign a specialized professional to deal with risk management activities.

According to Subramaniyan (2017) Construction industry plays an important role in growth of the economy. The risk is very high in construction business. In construction management, risk of the project should be closely monitored. It should be properly managed through well trained, qualified and experienced personnel. So that only construction project can achieve its goal apart from many physical, financial and social hazards.

According to Irfandhi (2016) empirical study of risk management information technology; the processes in risk management begin with identifying vulnerabilities and threats to information resources, risk assessment, and risk control identification that might be done to reduce the risk to an acceptable level. If the risk management is applied properly, the chance of the success of the project is done can be increased. This was proven through Junior's and Carvalho's research (2013) in Brazilian. Their study found that the presence of risk management and risk manager influence the success of the project.

Construction risk management practices have been mostly found to exhibit dynamism and continuity across a project's life cycle. The author has defined a risk management practice as potential for complications and problems with respect to the completion of a project and the achievement of a project goal. In addition, the impact or consequences of this future event must be unexpected or unplanned (Mwangi, 2018).

2.4 Conceptual framework

Based on the theoretical and empirical literature cited in the study the following conceptual framework of study being developed for the purpose of the study in the following manner:

Fig 2.6 Conceptual framework

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design used, type and source of data, data gathering instrument, sampling techniques and sample size, method of data analysis and, validity, reliability and ethical consideration.

3.2 Research deign

Here in the study descriptive research design being employed and this involved in gathering data to describe the overall phenomenon. The thesis used qualitative and quantitative approach so as to get a thorough and full-fledged understanding of the subject matter being studied.

3.3 Target population

The target population of this study was composed from the client organization namely Addis Ababa City Road Authority having, four contractors and three consultants having a total of 115 population employees.

3.4 Research Population and sampling

3.4.1 Sample Design

Here in the research the nonrandom sampling techniques applied while selecting sample respondents from contractors, consultants, and the client's organization.

3.4.2 Sampling Techniques

Since time limitation and availability of data was given due attention in times of large number of target population, the non-probability sampling techniques of purposive sampling is feasible to be chosen as it is easy, less cost and fast.

3.4.3 Sample Size

Out of the total target population of 115 employees took 40 samples focusing on population like project manager, resident engineer, design engineer, site manager and quantity surveyor of contractors, consultants and the client organization who have experience on risk management..

3.5 Data collection and instrument procedure

Data collection is simply how research information is gathered. To conduct this research study, used two general approaches for data collection, such as primary and secondary data collection method and applied SPSS software version 20 for analysis of data gathered from sample respondents.

3.5.1 Primary Data Collection

Primary data was collected directly from original source. Primary data for this research was collected through the help of questionnaire and interview as a method.

3.5.2 Secondary Data Collection

Secondary data collected through documents including journals, reports, plan, manual from libraries and internet.

3.6 Data Gathering Instrument

In order to collect and get original information questionnaire and interview was prepared and administered based on the review of related literature which had paramount significance to the

subject of the study. The reviewed literatures were developed in a way to give an insight on risk management practice within the process related regarding to the project. Consequently questionnaires and interview were designed focusing on the practice of project risk management. Alemu's (2016) published Addis Ababa University MA thesis questionnaire and interview was adopted and modified in a way to go with this research paper moreover the reliability was tested and found good.

3.7 Data analysis

SPSS software version 20.0 was used for the analysis of the data collected from field and also implemented descriptive analysis using frequency, percentage, mean and standard deviation.

3.8 Validity and reliability

Researchers must demonstrate instruments are reliable since without reliability, research results using the instrument are not replicable, and replicablity is fundamental to the scientific method. Reliability is the correlation of an item, scale, or instrument with a hypothetical one which truly measures what it is supposed to. Since the true instrument is not available, reliability is estimated in one of four ways namely internal consistency, split-half reliability, test-retest reliability and inter-rater reliability (Garson, 2013).

Before the analysis the questionnaires reliability was checked by the Cronbach's-Alpha test coefficient using SPSS software and have got the result of .710.

Different theories underpinning if Cronbach's Alpha is >= 0.7, then it is safe. Therefore, based on the test, the results for the items are expected to be reliable and acceptable.

3.8.1 Cronbach's Alpha test coefficient values

Table 3.1: Cronbach's alpha test

Item type	Cronbach's alpha coefficient test
Risk identification	**0.785**
Risk analysis	**0.761**
Risk monitoring and control	**0.767**

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.

3.9 Ethical Considerations

Questionnaires and interview were distributed based on complete willingness of the authority and as well the respondents likewise the respondents were oriented and made practical making them free from any form of risk. Moreover the purpose of the study being achieved was clearly communicated to respondents including keeping the confidentiality of the response.

CHAPTER FOUR

4. DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter discusses analysis and interpretation of data obtained from 40 questionnaires completed by project manager, design engineer, resident engineer, quantity surveyor and site engineer participating actively in the execution of highway construction of Addis Ababa City Road Authority. To assess what it looks like the existing project risk management practice of Addis Ababa City Road Authority I employed both questionnaire and interview.

4.2 Response rate

Forty respondents filled and submitted the questionnaire on time. Beside to this an open ended question or interview was prepared and interviewed three managers and got all the necessary information. The forty questionnaire distributed were received that means

4.3 Demographic characteristics of the study participants

This section of the questionnaire covered the respondent's age, sex, educational background, duration of work experience and experience working on project and presented as follow.

4.3.1 Gender

Table 4.1: Gender of respondents

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	26	65.0	65.0	65.0
	Female	14	35.0	35.0	100.0
	Total	40	100.0	100.0	

Source: Own survey, 2019

As far as gender is concerned the table indicates that the number of male respondents by far greater than the number of female respondents and described 65% (26) male and 35% (14) female. This indicated that the existence of gender diversity in the sample respondents.

4.3.2 Age

Table 4.2: Age of respondents

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30	11	27.5	27.5	27.5
	30-40	15	37.5	37.5	65.0
	40-50	8	20.0	20.0	85.0
	50-60	6	15.0	15.0	100.0
	Total	40	100.0	100.0	

Source: Own survey, 2019

As you have seen it from the above table 37.5% (15) of the respondents were in the age range of 30-40 , 27.5% (11) respondents were in the age range of 20-30 , 20.0% (8) in the age range of 40-50 while 15.0%(6) respondents were in the age range of 50-60. In terms of age there was a mix of all age categories this enabled the research to capture the necessary data.

4.3.3 Level of education

Table 4.3: Education level of respondents

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Degree	28	70.0	70.0	70.0
	MA/MSC/MBA	12	30.0	30.0	100.0
	Total	40	100.0	100.0	

Source: Own survey, 2019

Regarding the educational qualification of the respondents out of the total of the forty respondents, 70% (28) the respondents representing have degree while 30% representing 12 respondents have postgraduate degree.

4.3.4. Total year of experience

Table 4.4: Total year of experience worked

	Items	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below 2 years	9	22.5	22.5	22.5
	3-6	8	20.0	20.0	42.5
	7-10	12	30.0	30.0	72.5
	11-15	4	10.0	10.0	82.5
	above 15 years	7	17.5	17.5	100.0
	Total	40	100.0	100.0	

Source: Own survey, 2019

As to the work experience out of forty respondents 30.0% (12) of them have 7-10 total year of experience, 22.5% (9) have got the experience of below 2 years, and 20% (8) have got experience of 3-6, 17.5 % (7) have got above fifteen years whereas 10.0 % (4) respondents have got the work experience of 11-15. There was a good mix of work experience and this enabled the research to get adequate information or data.

4.3.5 Project experience

Table 4.5: Project experience of respondents

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below 2 years	9	22.5	22.5	22.5
	3-5	10	25.0	25.0	47.5
	6-9	12	30.0	30.0	77.5
	10-13	9	22.5	22.5	100.0
	Total	40	100.0	100.0	

Source: Own survey, 2019

As table 4.5 30.0% (12) of the respondents have direct on project experience of 6-9 years, 25% (10) respondents had on project experience of 3-5 years, 22.5 (9) of respondents had the project experience of 10-13 years while 22.5% (9) respondents had on project experience below 2 years.

4.4 RISK MANAGEMENT PRACTICE AT AACRA

Table 4. 6: The existence of policy and related issues

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	17	42.5	42.5	42.5
	Disagree	11	27.5	27.5	70.0
	Uncertain	12	30.0	30.0	100.0
	Total	40	100.0	100.0	
The project has a defined or standard risk management process					

Valid	Strongly disagree	25	62.5	62.5	62.5
	Disagree	12	30.0	30.0	92.5
	Uncertain	2	5.0	5.0	97.5
	Agree	1	2.5	2.5	100.0
	Total	40	100.0	100.0	
Responsible person or department is assigned to handle risk					
Valid	Yes	2	5.0	5.0	5.0
	No	28	95.0	95.0	100.0
	Total	40	100.0	100.0	
Risk management is treated as a continuous process in the project					
Valid	Strongly disagree	25	62.5	62.5	62.5
	Disagree	14	35.0	35.0	97.5
	Uncertain	1	2.5	2.5	100.0
	Total	40	100.0	100.0	62.5

Source: Own survey, 2019

As the above table showed, out of the total of forty respondents, 42.5 % (17) of the respondents strongly disagree the existence of policy, 30% (12) of respondents disagree the existence of policy or guideline to manage risk while 27.5% (11) respondents were uncertain of the existence of the policy or guideline. This finding clearly described that the absence of risk management policy or guideline to manage risk even though the authority has had a long years of establishment and has been implementing huge highway construction projects. In an interview done with client organization confirmed the response of the questionnaire by revealing the absence of the risk management policy or guideline how to manage risk.

The above table indicated that 62.5% (25) of the respondents strongly disagree to the question, 30 % (12) respondents replied disagree, 5% (2) of the respondents replied being uncertain while 2.5 (1) respondents agree. As a researcher what is inferred from this result is that as the projects didn't have a defined or standard risk management to manage risk. The interview done with project managers also confirmed the absence of standard risk management process.

As to the above table out of the forty respondents 50% (20) strongly disagree, 45% (18) disagree, 5% (2) were uncertain of the existence of the responsible person or department to handle risk and uncertainties. What was interpreted and inferred from this analysis was that the absence of responsible person or department to manage risk explicitly shown in the authority. In the same manner like the questionnaire the interview done with consultants disclosed the absence of responsible person or department to handle risk however there was a department established recently to mitigate problems of right of way.

As in the table the result of the analysis illustrated out of the total of the forty respondents 62.5 % (25) of the respondents strongly disagree, 35 %(14) disagree whereas the rest 2.5 %(1) replied uncertain of the issue raised. As a researcher it was possible to conclude this result of the study as lack of continuous treatment of risk management process and this confirmed by majority of the respondents as clearly depicted in the analysis table mentioned above. The interview with client organization disclosed that the risk management wasn't considered as a continuous process.

Table 4.7: **Uncertainties that occur within the project are mostly handled by:**

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Project manager	27	67.5	67.5	67.5
	The consultants	13	32.5	32.5	100.0
	Total	40	100.0	100.0	
Mean: 1.33					
S.D : 0.474					

Source: Own survey, 2017

As the result of the analysis in the table showed out of forty respondents 67.5% (27) of them replied uncertainties were managed by project manager while 32.5% (13) replied uncertainties as managed by the consultants. It was possible to conclude based on the result of the analysis as uncertainties were managed by project manager rather than by the consultants. Unlike the questionnaire response the interview held with client organization revealed that as uncertainties were managed by consultants.

Table 4.8: Result of risk management being implemented at the:

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Conceptual stage of the project	30	75.0	75.0	75.0
	Planning stage of the project	9	22.5	22.5	97.5
	Implementation stage of the project	1	2.5	2.5	100.0
	Total	40	100.0	100.0	
Mean: 1.28					
S.D: .506					

Source: Own survey, 2019

As the result of the analysis showed that out of the forty respondents 75% (30) of them replied as risk management was implemented at the conceptual stage of the project, 22.5% (9) of the respondents replied as risk management was implemented at the planning stage of the project while 2.5% (1) respondents replied as risk management was implemented at the implementation stage of the project. In line with this question response the respondents had good theoretical understanding of risk management to be undertaken in all stage of the project rather than in one stage of the project. Unlike the response of the questionnaire the interview with client organization disclosed that risk management was implemented at the implementation stage of the project.

Table 4.9: S**ummary of descriptive statistics of the Risk Management Practice**

No.	Items	N	Mean	Std. Deviation
1	There is a policy or guideline that recommends how to manage unexpected uncertainties	40	1.87	.853
2	The project has a defined or standard risk management process	40	1.48	.716
3	Responsible person or department is assigned to handle risk	40	1.55	.597
4	Risk management is treated as a continuous process in the project	40	1.40	.545
5	Uncertainties that occur within the project are mostly handled by	40	1.33	0.474
6	Risk management is implemented at the	40	1.28	.506
	Valid N (list otherwise)	40		
	Grand mean	40	1.48	0.299

Source: Own survey, 2019.As it's depicted in the table the average response obtained for the question pertaining to project risk management practice was below the average and this clearly showed the absence of the risk management practice in the authority. The standard deviation was positive

and smaller than the mean and this indicted that the data was more concentrated around the mean and this was the healthiest in statistical analysis.

4.5 Response on risk identification

Table 4.10: Result of response on risk identification

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	21	52.5	52.5	52.5
	Disagree	14	35.0	35.0	87.5
	Uncertain	5	12.5	12.5	100.0
	Total	40	100.0	100.0	
Mean: 1.60					
S.D: 0.709					

Source: Own survey, 2019

As illustrated in Table 4.10, 52.5% (21) of the respondents strongly disagree that team as members didn't play proactive role in risk identification ,35% (14) of the respondents disagree of the participation team members in identifying risk in the project while 12.5% (5) of the respondents were uncertain whether they were involved or not. The result of the analysis indicated that by far the majority of the respondents approved as team members didn't play key role in the process of risk identification. The response of the interview with contractors also reaffirmed the response of the questionnaire.

Table 4.11: Result of whether which method used to identify risk in project

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Expert judgment	20	50.0	50.0	50.0
	Checklists	16	40.0	40.0	90.0
	Document review	4	10.0	10.0	100.0
	Total	40	100.0	100.0	
	Mean : 1.60				
	S.D : .672				

Source: Own survey, 2019

Out of the total of the forty respondents in the table 4.11, 50 % (20) of the respondents replied that expert judgment was a tool used to identify risk within the projects, 40% (16) respondents answered that checklist was used as mechanism to identify risk while 10% (4) respondents described as they use document review as a tool or mechanism to identify risk in the project. This result indicated that majority of the respondents believed that expert judgment was employed as a technique to identify risks that might occur and secondly checklist was also used as a tool in the identification process while in the third manner document review was used as a tool to identify risks. Similar to the response of the questionnaire the interview response done with client organization revealed that expert judgment was used as method to identify risk.

Table 4.12: Source of risk that project encounters

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Technical	23	57.5	57.5	57.5
	Financial	12	30.0	30.0	87.5
	Human	4	10.0	10.0	97.5
	Other please specify	1	2.5	2.5	100.0
	Total	40	100.0	100.0	
	Mean:1.58				
	S.D: 0.781				

Source: Own survey, 2019

As illustrated in the table 4.12, 57.5 % (23) of the respondents replied as technical issues were source of risk that the projects usually challenged with, 30% (12) of the respondents answered as financial issues, 10% (4) respondents replied that human factors are the source of risks that project encounter while 2.5% (1) respondent answered other source of risks rather than the ones mentioned above are the source of risks. What is inferred from this result was that technical factors were considered as major source of risk selected by majority of the respondents and then financial risk was given due attention, human risk were considered as a third source of risk within the projects while little attention or preference was given by a respondent to the choice of other. Therefore technical risks, financial risks and human risks are chosen most from one to up to there in respective manner. The interview response done with consultants also confirmed the questionnaire response.

Table 4.13: Descriptive statistics summary of risk identification response

No.	Items	N	Mean	Std. Deviation
1	All team members within the project play a role in identifying risk	40	1.60	.709
2	The following method is primarily used to identify risks within the project	40	1.60	0.672
3	Sources of risk that the project usually encounters	40	1.58	.781
	Valid N (list otherwise)	40		
	Grand mean		1.59	0.437

Source: Own survey, 2019

The average mean obtained regarding the above questions was below the average and this result indicated as risk identification activities weren't not undertaken in the authority; this also confirmed by the result of the interview. The standard deviation was positive and smaller than the mean and this indicted that the data was more concentrated around the mean and this was the healthiest in statistical analysis.

4.6 Response on risk analysis

Table 4.14: Whether characteristics of risk being considered before risk analysis

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	25	62.5	62.5	62.5
	Disagree	8	20.0	20.0	82.5
	Uncertain	6	15.0	15.0	97.5
	Strongly agree	1	2.5	2.5	100.0
	Total	40	100.0	100.0	
Mean : 1.60					
S.D: 0.928					

Source: Own survey, 2019

Out of the forty respondents, 62.5% (25) strongly disagree as there're was no the practice of considering the characteristics of risk being considered before analyzing the identified risk, 20% (8) respondents disagree in the same manner, 15% (6) respondents were uncertain of the issue raised while 2.5% (1) respondent strongly agree the practice of considering risk characteristics before analyzing the identified risk. What was concluded as a researcher was Addis Ababa Road Authority didn't take into account the characteristics of risks before analyzing the identified risk. The response of the interview held with client organization revealed that as risk characteristics didn't take into consideration before analyzing.

Table 4.15: Result of the existence of measurement system to analyze risk

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	27	67.5	67.5	67.5
	Disagree	9	22.5	22.5	90.0
	Uncertain	3	7.5	7.5	97.5
	Strongly agree	1	2.5	2.5	100.0
	Total	40	100.0	100.0	
Mean: 1.48					
S.D: 0.847					

Source: Own survey, 2019

Out of the total of forty respondents 67.5% (27) strongly disagree the existence of measurement system to analyze the risk, 22.5% (9) of respondents disagree in the same manner, 7.5% (3) respondents uncertain of the measurement system to analyze the risk while 2.5% (1) respondent strongly agree about the existence of measurement system to analyze the risk. What was concluded as a researcher was Addis Ababa Road Authority does not have measurement system

to analyze the risk. The response of interview with client organization approved the absence of measurement system to analyze risk.

Table 4.16: Result of whether project documents are updated after risk assessment

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	21	52.5	52.5	52.5
	Disagree	16	40.0	40.0	92.5
	Uncertain	2	5.0	5.0	97.5
	Agree	1	2.5	2.5	100.0
	Total	40	100.0	100.0	
Mean : 1.58					
S.D :0.712					

Source: Own survey, 2019

Out of the total of forty respondents 52.5% (21) of respondents strongly disagree the practice of project documents being updated after assessment of the risk that might occur, 40% (16) also dis agree the activity being implemented, 5% (2) respondents were uncertain of the issue of project document being updated after the assessment of the risk that might occur while 2.5% (1) respondent agree on the practice of project documents being updated after assessment of the risk that might occur. What was concluded as a researcher was Addis Ababa Road Authority didn't update project documents after assessment of the risk that might occur. Likewise the result of the questionnaire the interview responses done with consultants indicated the as project documents didn't updated after the assessment of the risk.

Table 4.17: Result of which techniques applied to analyze probability

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Quantitative assessments	25	62.5	62.5	62.5
	Subjective probability assessment based on expert judgment	12	30.0	30.0	92.5
	Ranking the importance of risk based on past experience	3	7.5	7.5	100.0
	Total	40	100.0	100.0	
	Mean: 1.45				
	S.D: 0.639				

Source: Own survey, 2019

As depicted in the table 4.17 , out of the total of forty respondents 62.5% (25) respondents replied as they were undertaking quantitative assessment, 30% (12) respondents replied as they were undertaking subjective probability based on expert judgment while 7.5% (3) respondents replied as they are undertaking ranking the importance of risk based on past experience. What was concluded as a researcher from the result was Addis Ababa Road Authority implementing mostly the techniques of quantitative assessment than subjective probability assessment based on expert judgment and ranking the importance of the risk based on past experience in respective order. An interview held with consultants disproved the existence scientific techniques to assess the probability of the risk that will occur in the project on behalf of the consultant side.

Table 4.18: Descriptive statistics summary of risk analysis response

No.	Items	N	Mean	Std. Deviation
1	Characteristics of the risk are considered before analyzing the identified risk	40	1.60	.928
2	There is a measurement system to analyze the risk	40	1.48	.847
3	Project documents are updated after assessment of the risk that might occur	40	1.58	.712
4	Which of the following techniques are used to assess the probability of risk occurrence in the project?	40	1.45	.639
	Valid N (list otherwise)	40		
	Total	40	1.52	0.518

Source: Own survey, 2019

The average response obtained for the question was below the average and this indicated that the authority didn't undertake risk analysis and this was confirmed by the interview held with project managers. The standard deviation was positive and smaller than the mean and this indicted that the data was more concentrated around the mean and this was the healthiest in statistical analysis.

4.7 Response on risk monitoring and control

Table 4.19: Result project are risks monitored and controlled well

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	21	52.5	52.5	52.5
	Disagree	15	37.5	37.5	90.0
	Uncertain	4	10.0	10.0	100.0
	Total	40	100.0	100.0	
	Mean: 1.58				
	.D : 0.675				

Source: Own survey, 2019

As illustrated in the table 4.19, 52.5% (21) of respondents strongly disagree as risks were monitored based on the result of the project, 37.5% (15) of the respondents disagree in the same manner the practicability of the question being raised while 10% (4) respondents being uncertain of the issue of the whether risks were monitored and controlled well or not .

As a researcher based on the result of the analysis come to conclusion that the authority wasn't monitoring and controlling project risks very well. The interview response held with client organization also indicated that as project risks were not controlled and monitored.

Table 4.20: Project monitor, control and review process to ensure standard and procedure

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	25	62.5	62.5	62.5
	Disagree	10	25.0	25.0	87.5
	Uncertain	4	10.0	10.0	97.5
	Agree	1	2.5	2.5	100.0
	Total	40	100.0	100.0	
	Mean:1.53				
	S.D: 0.784				

Source: Own survey, 2019

Out of the total of the forty respondents 62.5% (25) respondents strongly disagree the implementation of project monitor, control and review process for risk management to ensure as it complies with standard and procedures, 25% (10) respondents disagree the issue raised in the same manner like the first response, 10% (4) respondents were uncertain of whether the project monitor, control and review process for risk management to be undertaken to ensure complies with standard and procedure or not while 2.5% (1) respondent agree the application of project monitoring , control and review process for risk management to ensure that it complies with standard and procedure. Based on the result of the analysis it was possible to conclude that there wasn't the practice of project monitor, control and review the process for risk management to ensure that it complies with standard and procedures. The interview with consultants result also confirmed the absence of standard and procedure to undertake project risk, monitor, and control and review process.

Table 4.21: Result of availability of information or past history

Items		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	23	57.5	57.5	57.5
	Disagree	14	35.0	35.0	92.5
	Uncertain	3	7.5	7.5	100.0
	Total	40	100.0	100.0	
	Mean: 1.50				
	S.D : 0.641				

Source: Own survey, 2019

Out of the forty respondents 57.5% (23) of respondents strongly disagree the availability of information or history of the project being used to supplement or control risk, 35% (14) respondents disagree in the same manner like the first response regarding to the question being raised while 7.5% (3) respondents were uncertain of the issue whether it was undertaken or not. As a researcher based on the result of the analysis came to conclusion that the authority didn't implement neither the availability of the information or past history of the project to supplement and control of risk. Interviews held with the contractors disclosed limited use of available information or history of the project to supplement to control risk.

Table 4.22 : Result of risk occur controlled with goals and objectives

	Items	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	27	67.5	67.5	67.5
	Disagree	11	27.5	27.5	95.0
	Uncertain	1	2.5	2.5	97.5
	Agree	1	2.5	2.5	100.0
	Total	40	100.0	100.0	
	Mean:1.40				
	S.D:0.672				

Source: Own survey, 2019

Out of the total of the forty respondents as illustrated in the above table 67.5 % (27) respondents strongly disagree, 27.5% (11) disagree the existence of controlling risk in a project in a way that complies with goal and objective of the project, 2.5% (1) respondents was uncertain of the issue whether it was undertaking or not while 2.5% (1) respondents was agree on the idea of controlling risk within in a way that goes with the goal and objective of the project. Therefore it was possible to conclude that the result majority of the respondents unanimously disagree the existence of risk controlling approach that is implemented to control risk complies with the objectives and goal of the projects. The interview response with client organization the project managers unveiled the absence of the activity to be implemented like the questionnaire response.

Table 4.23: Descriptive statistics summary of risk monitoring and controlling response

No.	Items	N	Mean	Std. Deviation
1	Based on the current result of the project are risks monitored and controlled well	40	1.58	.675
2	The Project monitor, control and review the process for risk management to ensure that it complies with standards and procedures	40	1.53	.784
3	Information available or the history of the project is used to supplement to control risk	40	1.50	.641
4	Risks that occur within the project are controlled in a way that goes with the goal and objective of the project	40	1.40	.672
	Valid N (list otherwise)	40		
Grand mean		40	1.50	0.50

Source: own survey, 2019

The average response obtained for the risk monitoring and controlling was below the average and this indicated as risk monitoring and controlling was not undertaken properly and this result was confirmed by the interview being held with contractors. The standard deviation was positive and smaller than the mean and this indicted that the data was more concentrated around the mean and this was the healthiest in statistical analysis.

CHAPTER FIVE

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter discussed the summary of the findings; conclusions generated from the analysis & interpretation and finally suggest the recommendations that might help to improve the Addis Ababa City Road Authority in regard to risk management practice.

5.2 Summary of key findings

This study attempted to examine the risk management practices of Addis Ababa City Road Authority highway construction project in terms of the three major risk management processes:

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

- According to the score of the respondents regarding risk management practice, the finding clearly described that the absence of risk management policy or guideline to manage risk even though the authority has had a long years of establishment and has been implementing huge highway construction projects
- Projects didn't have a defined or standard risk management to manage risk
- There was lack of responsible person or department to manage risk in the authority however there was Right of Way Department established recently to mitigate problems of right of way.
- There was lack of continuous treatment of risk management process
- Uncertainties were managed by project manager rather than by the consultants.

- Regarding risk management implementation stage; the respondents had good theoretical understanding of risk management to be undertaken throughout all stages of the project rather than to be undertaken in one stage
- Regarding risk identification the result of the analysis indicated that by far the majority of the respondents approved as team members didn't play key role in the process of risk identification.
- Concerning to the techniques of identifying risk the majority of the respondents believe that expert judgment was employed as a technique to identify risks that might occur and secondly checklist was also used as a tool in the identification process while in the third manner document review was used as a tool to identify risks.
- As to the source of risk projects pass through, technical factors are considered as major source of risk selected by majority of the respondents and then financial risk was given due attention, human risk was considered as a third source of risk within the projects while little attention.
- Concerning to the risk analysis the authority didn't take into account the characteristics of risks before analyzing the identified risk.
- The majority of the respondents replied as authority didn't have measurement system to analyze the risk.
- The result of the analysis indicated that the authority didn't update project documents after assessment of the risk that might occur.
- The authority was implementing mostly the techniques of quantitative assessment rather than subjective probability assessment based on expert judgment and ranking the importance of the risk based on past experience in respective order.

- Pertaining to the issue of monitoring and control of risk the result of the analysis indicated that the authority wasn't monitoring and controlling project risks very well.
- There wasn't the practice of project monitor, control and review the process to ensure that it complies with standard and procedures
- The respondents denounced the availability of information or past history of project to monitor and control risk
- The respondents unanimously disagree the existence of risk controlling approach that was implemented to control risk complies with the objectives and goal of the projects.

5.3 Conclusions

As the major objective of the study was to assess the actual project risk management practice at Addis Ababa City Road Authority, the following conclusions were forwarded based on the findings mentioned above about the practice followed in projects.

The study unveiled the absence of the risk management policy or guideline to manage risk and uncertainty likewise the project didn't have defined or standard risk management process to go through to manage risk. There was no a responsible person or department to manage risk and that was why risk was not treated as a continuous process in the construction of projects. Moreover risk was managed by the project managers only rather than to be seen as a common prime activity for project manager and consultant and to have specialized risk management team. On the other hand the respondents have good theoretical background as risk is implemented throughout all stage of the project rather than in one stage of project. On the other hand the research clearly described the absence of risk identification, analysis and monitoring and control activities to be undertaken to manage project risk.

5.4 Recommendation

Since the existence of risk management policy or guideline has a paramount significance in today's dynamic world to manage risk and uncertainties of project, it's advisable for Addis Ababa City Road Authority to establish the risk management system to cope up with risk to accomplish projects on time, on budget and to the fullest satisfaction of customers. In line with the establishment of the risk management system a department which is responsible for the risk management activities should be opened and work proactively. The authority should have the courage to participate the experts in identifying risk through the application of the techniques of expert judgment, checklist, and document review, cause and effect brainstorming, assumption analysis and …etc.

The authority's expert should have the skill of analyzing the identified risk through the use of qualitative methods of Delphi techniques, meeting, fault tree analysis, event tree, probability matrix and the application of quantitative methods of fault tree analysis, event tree, mathematical model, data gathering and representation…etc. The authority should develop tools and techniques to monitor and control risk. Above all the authority's top level managers should take into account the dynamic world and the nature of the construction industry for the importance of having risk management system in the organization.

5.5 Limitation and future research direction

This research paper only focused on project risk management out of the twelve project management body of knowledge areas and recommended that other knowledge areas like procurement management and stakeholder management to be included. As to the scope of the study it was limited to risk identification, risk analysis and monitoring and control. Therefore a wider research incorporating all the risk management process should be undertaken.

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Appendix A

Addis Ababa University College of Business and Economics School of Commerce

Masters of Art in Project Management

Dear Participants!

My name is Shewangizaw Zenebe; I am a MA student in Project Management at Addis Ababa University School of Commerce. As part of my MA thesis work, I am undertaking Assessment of Project Risk management Practice at AACRA. I kindly request you to participate in this research study by completing the attached questionnaire. In order to ensure that all information will remain confidential please do not include your name anywhere in the questionnaire. I also sincerely request you to respond to the questions as honestly as possible and return the completed questionnaires. Knowing that your time is precious please, take few minutes of your time to complete the questionnaire.

In case if you come across a question or dilemma please do not hesitate to contact me either through my cellphone 0911966992 or via shewan96@yahoo.com.Thank you in advance for your cooperation.

Questionnaire

- Part I includes demographic of general information, part II includes close-ended questions while, part III includes open ended question where it allows you to elaborate the practice in your own words.
- Please attempt to answer all the questions.

Part I: General Information

Respond to the questions by ticking on the box only once that you prefer best

1. Age 20-30years ☐ 40 -50years ☐ 50-60years ☐ Above 50 years ☐

2. Sex Female ☐ Male ☐

3. Level of Education: Diploma ☐ Degree MA/MSC/MBA ☐

4. Years of work experience:

Below 2 years ☐ 3-6years ☐ 7-10years ☐ 11-15 Above 15years ☐

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

Below 2 years ☐ 3-5years ☐ 6-9years ☐ 10-13years ☐ Above years 13 years ☐

Part II: Please indicate your opinion by marking a circle on the appropriate number for the five point scale questions and circle the letter of your choice for the multiple choice questions that best describes how you perceive the project applies project risk management where: Strongly Disagree = 1, Disagree = 2, Uncertain = 3, Agree = 4 and Strongly Agree = 5.

GENERAL QUSTIONS ABOUT PROJECT RISK MANAGEMENT

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
1	There is a policy or guideline that recommends how to manage unexpected uncertainties	1	2	3	4	5
2	The project has a defined or standard risk management process	1	2	3	4	5
3	Responsible person or department is assigned to handle risk	1	2	3	4	5

4	Risk management is treated as a continuous process in the project	1	2	3	4	5

5. Uncertainties that occur within the project are mostly handled by:

A. the project manager

B. the consultant

C. the client

D. a specialized risk management team

E. all teams participating in the project

6. 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

RISK IDENTIFICATION

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
7	All team members within the project play a role in identifying risk.	1	2	3	4	5

8. 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. Other, please specify

9. Sources of risk that the project usually encounters:

A. Technical B. Financial C. Human D. Other, please specify

RISK ANALYSIS

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
10	Characteristics of the risk are considered before analyzing the identified risk	1	2	3	4	5
11	There is a measurement system to analyze the risk	1	2	3	4	5
12	Project documents are updated after assessment of the risk that might occur	1	2	3	4	5

13. Which of the following techniques are used to assess the probability of risk occurrence in the project?

A. Quantitative assessments

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 MONITOR AND CONTROL

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
14	Based on the current results of the project are risks monitored and controlled well					
15	The Project monitor, control and review the process for risk management to ensure that it complies with standards and procedures					
16	Information available or the history of the project is used to supplement to control risk					
17	Risks that occur within the project are controlled in a way that goes with the goal and objective of the project					

Appendix B

Interview

INTERVIEW GUIDE FOR THE PROJECT MANGER

Dear Interviewee!

First of all I would like to thank you for your willingness to respond to my questions. My name is Shewangizaw Zenebe, I am a Masters of Art student in Project Management at Addis Ababa University School of Commerce. As part of my MA thesis work, I am undertaking assessment of project risk management practice in Addis Ababa Road Authority. This interview is made so as to have more in depth on the matter under study.

Thus, I kindly request you to answer all the questions assuring you that all responses will be used only as an input for this study.

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. Do 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 life cycle 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. Are risks analyzed to assess its probability of occurrence and level of impact?

8. While taking action 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?

9. What challenges until now has the project faced due to unmanaged risk?

10. Do you think managing risk and project success are related? If yes, how?