St. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

MASTER OF PROJECT MANAGEMENT PROGRAM

EFFECTS OF PROJECT RISK MANAGEMENT PRACTICES ON SUCCESS OF BULIDINDING CONSTRUCTION PROJECT IN ADDIS ABABA ; IN CASE OF BAMACOM ENGINERING P.L.C

BY

MEKDELAWIT ALEMAYHU

JULY, 2023

ADDIS ABABA, ETHIOPIA

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MEKIDELAWIT ALEMAYHU

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ADVISOR:

ASS.PROF. YILIKAL WASSIE

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APPROVED BY

BOARD OF EXAMINERS

_____   _____

Dean, Graduate Studies   Signature

_____   _____

Advisor   Signature

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External Examiner   Signature

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Internal Examiner   Signature

Declaration

I hereby declare that Effects of Project Risk Management Practice on Success of Bamacon engineering construction Projects is project which wholly was the work of Mekdelawit Alemayhu I have carried out the present study independently with the guidance and support of the research advisor,. ASS.PROF. YILIKAL WASSIE Any other contributors or sources have either been referenced in the prescribed manner or are listed in the acknowledgements together with the nature and the scope of their contribution. And the study has not been submitted for award of any Degree or Diploma Program in this or any other Institution.

Mekdelawit Alemayhu   Advisor: Yilkal Wassie (Ass.Prof)

Signature: _____   Signature: _____

Date: _____   Date: _____

ENDORSEMENT

This thesis has been submitted to St. Mary's University School of Graduate Studies for examination with my approval as a university advisor.

_____   _____

Advisor   Signature

St. Mary's University Addis Ababa   **July, 2023**

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First of all, may all praise be to my God the one and only, for blessing me with good health and for giving me the strength, patience and guidance to endure and complete this project. I would like to thank Ass.Prof. Yilikal Wassie for giving me constructive idea during the research. My gratitude also goes to all of my families for day to day support in the course of this thesis work and last but not least I would like to extend my gratitude to Bamacon engineering plc 'and also especially my uncle Tesfaye Damtie for his material support.

I would also like to extend my gratitude to all of my friends who supported me during the completion of this project.

Acronyms

PRM   Project Risk Management

PM   Project Management

PMBOK   Project Management Body of Knowledge

RM   Risk Management

RI   Risk Identification

RA   Risk Analysis

RP   Risk Prioritization

RRM   Risk Response and Monitoring

RMTT   Risk Management and Techniques

PSF   Project Success Factor

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Abstract

This study is sought to establish the extent of application of project risk management practices such as risk identification, risk analysis and ranking, risk response and monitoring and use of risk management tools on Bamacon engineering construction projects and the Influence of these practices on the success of these projects. This study adopted the case study of the Bamacon engineering plc. Which has implemented 15 projects which constituted this study's targeted population. Primary data were collected for the purpose of this study. It was collected using self-administered structured questionnaires and also secondary data were used. Descriptive statistics were used to analyze the data by way of percentages, means, variance, standard deviation, correlation analysis and multiple regression analysis. The regression analysis showed that the variables risk identification, risk analysis, risk ranking, risk response and monitoring , and risk monitoring tools and techniques have a significantly influence on the project success. Findings from the study revealed that, risk management practices have been applied in projects. From the analysis of the data collected, it was proved that risk management has a positive correlation with project success. When used consistently, risk management practices increased the chances of project success. Due to the moderate application of risk management practices on uncertainty projects the study concluded that, there's need to create more awareness on project risk management practices. The finding revealed that risk management practices are applied to the projects. Additional tools and risk management practices need to be developed and tested to determine which tools works best under different scenarios and environments. This will ensure that risk management improves project performance and success.

 Key words: *identification, analysis, prioritization, response and monitoring, tools and techniques, success factor.*

CHAPTER ONE

INTRODUCTION

Many definitions had been given to risk , risk management and project risk ,project risk management by different authors, due to the fact that word that have different meaning from different perspective and orientations. Risk is defined as, it is uncertain event or condition that, if it occur has positive or negative effect on a project objectives (PMI, 2000). Risk is present in all project sectors. Project risk is also defined as, it a combination of probabilities that cause an event appeared and the outcomes that the event produces risk and uncertainty appear in various shape. Compared with many other industries, the construction industry is subject to more risks due to the unique features of construction activities and complexity. According, construction industry construction risk management is the process of evaluating and implementing procedure to reduce the influence of risk in the construction project (Willammalsam 2021). The construction industry in Ethiopia is challenged by several problems so an effective risk management tool and techniques needed.

This chapter is introductory part of the entire study. It provides some insights about the ground and assumptions where the study is conducted. It states background, statement of the problem, objectives, significance, scope, limitation, definition of key terms, and organization of the study. Accordingly, it begins with background of the study.

1.1Background of the Study

Risk management (RM) is a concept that is becoming very popular in many companies. Many companies often implement risk management in their projects to increase productivity and increase profits as well improve business performance (Ahmadi et al., 2017). The construction industry the pillar for the success of economic development in developing countries. The rapid economic development has increased the demand for the construction of infrastructure and facilities around the globe. None of any company in the glob is free from the risk. Specially, the construction work by nature is so risky they need attention in each phase of activates in day to day progress of the project implementation. The construction industries in developing countries are different in many ways from their counterpart in developed countries. Material used in

construction is usually not available in developing countries and the leads to need to import goods from other countries with high cost activity with also bring with it financial risk, such as exchange rate fluctuation (smith, 2009).

Every construction project earthier it is small, medium or large projects involves risk, varying in influence. Project risk management enables to identify, analyzing, and responding to risk involved in the project as their stages. Risk management involves maximizing the probability and consequence of the positive events and minimizes the probability and consequence of adverse events to the project objectives.

According to Project Management Institute's (PMI) and Project Management Body of Knowledge (PMI 2004) a project risk is an event or uncertain condition that, if it occurs, produces positive or negative effects on at least one aspect of the project, such as cost, scope, quality, and so on. Project management includes the processes concerned with conducting risk management planning, identification, analysis, responses, monitoring and control on a project (PMI, 2004).project success is commonly acknowledged as when it completed by their allocated time, budget, and in accordance specification and also stakeholders satisfaction. According, many construction projects fail to achieve their time, budget and quality goals Moreover the consequences of risk in construction industries of developing countries.

The construction industry in Ethiopia is challenged by several problems and thus making efforts in developing the construction industry is very difficult and complex. The underlying problems of the construction sector in Ethiopia is that the sector is not viewed and planned in an integrated manner, but rather, operates with fragmented, unrelated and often conflicting components.an effective use of project management techniques such as risk and value management are considered as a key supporting processes and to add to them quality, cost, time and change controls (Hiassat, M.A. 2013).as case study on construction project the project risk management practice considered as low in many aspects in developing countries due to same reasons. Therefore the construction industry really needs to know and exercise the influence level of risk management in order to make some improvement for effectiveness of the project in the future. Finally, the study assess the influence level of risk management in BAMACON engineering plc.to examine the gap and to recommend on the area of improvement needed. This helps to the organization to give more attention on the influence of risk management leads for the success of the projects.

1.2 Statement of the problem

The project based organization needs to increase their performance by continues growth of the project management techniques. The construction industry is one of a sector increasing the performance of economic transform. But it has been seen that as one of the pillar risky industry when comparing with other sectors. Delaying on the completion, upward revelation of project cost, poor quality in the progress of the project and others are the main problem of construction project in Ethiopia. This shows there is lack of risk management in the construction project performance in Ethiopia. Risk management includes identification, assessment monitoring and sharing the response of the risk.as the observation and influence show the current status of risk identification, assessment, monitoring ,and sharing in is not practice and modeled. Risk management in construction project is the benefit of risk management along with barriers and recommends to over the barrier to risk management (Tummalaet al.2007; shen2007). Construction industries in developing counters are different in many ways from their counterpart of developed countries.

According to (Moutawa, Mohamed, Ibrahim&bakry, 2017) developing nation like Egyptian construction industry faces most of the problem and all challenges in the industry. Those authors sited considering the critical role of the construction industry play in Egypt and other developing countries and poor level of performance of the industry in the countries, improving the overall performance of construction industry ought to be high priority action.

The level of Ethiopian construction project risk management practice in terms of adapting general project management producer, project function, tools and techniques are unsatisfactory (Ayalew, Dakhi, Lafanaj, 2016). But in the future to show that the risk management practice must be developed for the success of the project the identification, assessing and responding the risk for their case might lead to the reduction of possible elimination and subsequent practice improvement in overall project performance or developing risk management techniques in each phase of the construction projects performance leads the positive influence for the project success.

Researchers show that significant number of construction project in Ethiopia are under failed category due to ineffective project risk management processes.so this study aims to assess the influence of risk management practice on the success of the construction project.

The study mainly focus on the assessing the BAMACON engineering plc in Addis Ababa Ethiopia in what level the risk management practice involved and impose the project in to the needed performance of the project success and also to put the net dedication of risk level interims of time, cost, and quality and practice the risk management techniques.

1.3. Research Question

1 Does the project risk management practices have been applied in bamacon engineering construction project?
2 Does the risk identification practice affect the project success in bamacon engineering construction?
3 Does the risk analysis practice affect the project success in bamacon engineering construction?
4 Does the risk prioritization practice affect the project success in bamacon engineering construction?
5 Does the risk monitoring and response practice affect the project success in bamacon engineering construction?

1.4 Objective of the study

1.4. 1General objective of the study

To examine the influence of risk management practice on the construction project success

1.4.2. Specific objective of the study

1. To assess the project risk management practices applied in BAMACON Engineering construction project.

2. To examine the influence of risk identification practices on the success of BAMACON construction project

3. To explain the influence of risk analysis practices on the success of BAMACON construction project

4. To determine the influence of risk prioritization practices on the success of BAMACON construction project

5. To determine risk monitoring and response practice affect the project success in BAMACON construction project

1.5 Significance of the study

The significance of the study provided some insight about the influence of risk management practice on the construction project success. The successful project management practice examine the relationship between the cascading influences on the construction project and also helps to develop successful risk management program that helps to the construction projects. This study will also help for project managers to understand the effectiveness of project risk management practice in ensuring on project success.

1.6. Scope of the study

The scope of the study is limited to assess the effects of project risk management practice in building construction project those are constructing by bamacon engineering plc. Only on the site project located of in Addis Ababa. This is because the shortage of time, it is difficult to address other construction project without building construction project that are constructing in Addis Ababa. And also it is difficult to collect sufficient data and to give as more empirical result and finding result may not be represent the overall construction industry

1.7 Limitation of the study

This study has a number of limitations that can be addressed in future research. The data used in this study limits generalization to _other construction sector projects. A confirmatory analysis using a large sample gathered across the all construction sector is required for greater generalization of the effects of project risk management practices to the success of projects. Finally, since there are various risk management practices and tools available, further research is needed to find out what works best in what circumstances and environments.

1.8. Organization of the study

The study is organized into five chapters. Chapter one presents introduction of the study. Chapter two presents the literature review. Chapter three presents the research methodology. Chapter four

presents the results and discussion. Chapter five presents the conclusions and recommendations. Finally, the references used in the study are listed at the end. Questionnaire use is also included in the Appendix part.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

The second chapter of this Research paper is review of related literature which contains both theoretical and empirical parts which are used as a guide line throughout conducting the study. The first part is theoretical review which includes theories of published books and previous researches related with this study. The second part is empirical review. It has summary of some selected previous researches on the area of project management. In addition, this chapter also contains discussion on current situation of Ethiopian projects risk management and conceptual framework of the study.

2.1. Theoretical Review

The construction industry is subject to more risk and uncertainty than most other industries almost every construction projects carry with them enormous risks. The construction industry has embraced project management (PM), which entails risk management (RM) as one of its essential knowledge areas. . PMBOK lists risk management as one of nine focuses in project management and explains it as a systematic process of identifying, analyzing and responding to project risks. It includes maximization of the probability and consequences of positive events and minimization of the probability and consequences of events adverse to project objectives

Construction industries in general as well as construction project activity are risky (Zavadskas et al. 2010a). Risk can be explained as an event that has an impact on objectives, may have a positive or negative outcome and takes place in micro, and macro environment (Bahamid&Doh 2017) explains the essence concept of RMP The risk management process involves the systematic application of management policies, processes and procedures for contextual tasks, identification, analysis, evaluation, treatment, monitoring and risk communication (Bahamid&Doh, 2017). Bazin (2017) described the Risk Management Process (RMP) is the important principle of risk assessment and risk management in the project. It includes the following key steps: identification, evaluation and analysis and response. All stages of the risk management plan should be included in the risk decision for the effective implementation of the

process in the project. Construction projects are initiated in complex and dynamic environments resulting in circumstances of high uncertainty and risk (Adedokun et al., 2013; Hamzaoui et al., 2015; Zhen-Yu & Lin-Ling, 2008).

A number of other studies have been done in PRM in different sector; Risk and uncertainty are inherent in all construction work no matter what the size of the project (Carr &Tah, 2001; Jha&Devaya, 2008). Unexpected risk involves the threat of uncontrollable, unpredictable and unanticipated events, which are especially considered by the management of large-scale projects, since these unexpected risk events (Hamzaoui et al., 2015; Huang, Huang, & Hsieh, 2013). These risks have a direct influence on project success. Many projects tend to exhibit cost overruns and schedule delays (Koushki, Al- Rashid, &Kartam, 2005; Mahamid, 2011; Sarkar, 2012). Enormous researches conducted in different part of the world revealed that risks have resulted significant cost and time overrun of the projects (Aridity, Akan, &Gurdamar, 1985; D. W. M. Chan &Kumaraswamy, 1997; Floricel& Miller, 2001).

Risk management is directly associated with performance of construction projects. Aarthipriya et al., (2020) showed that there is existence of impact between risk identification and risk assessment on the project success, planned budget, schedule time, and complying with technical specifications.

2.2. Project Risk Management Practices

Recent development in the field of project risk management has enabled better understanding of the overall risk management concept by introducing risk management processes nine phases (Chapman, 2007), or five phases as per Tummala and Burchett (2009) instead of the three phases of identification, analysis, and mitigation. PMBOK (2014) identifies 6 steps in project risk management which include, risk manage planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning and risk monitoring and control. Dey (2000) identified 4 steps in managing project risks in the public sector to include identifying risk factors; analyzing their effect; responding to risk; and controlling the responses. Other researchers (Wang and Chou, 2003; Baker et al., 2009; Kangari, 2015; Shen et al., 2001; Chio et al., 2004; Shang et al., 2005) identified the following process of project risk management; risk identification; risk analysis, systems risk approach, risk exposure, risk prioritization, risk

response, risk contingency planning, risk monitoring, risk continuous reassessment, and the application of total quality management tools

2.2.1 Risk Identification

Risk identification entails understanding and determining the potential unsatisfactory outcomes likely to affect a project. Risk identification is associated with the use of the following techniques: expert judgment, brainstorming, Delphi technique and interviews. (Kululanga&Kotcha, 2010). In risk identification the project team initially considers a range of potential events - stemming from both internal and external sources

2.2.2 Risk Assessment and Analysis

Risk analysis involves the assessment of the likelihood and impact of risks to determine their magnitude in order that the range of forces that could produce an adverse effect are known, the assets that could be affected are recognized, the features that increase the risk likelihood are identified and the extent to which the risk manifest itself. Tools associated with this stage include the use of probability/impact matrixes, strength/weakness/opportunity/threat analysis, and top ten risk item tracking technique (Kululanga&Kotcha, 2010 and Cervone, 2006).After the risks have been identified, it can be evaluated regarding its impact on the projects and the probability of its occurrence. This step is very critical to evaluate and expect the probability of occurrence of the risk and the impact of this risk and its effect on the different components of construction projects.

Table 2.1: Various risk assessment techniques.

Qualitative	Quantitative
1. Direct judgment	5. Probability analysis
2. Ranking options	6. Sensitivity analysis
3. Comparing options	7. Scenario analysis
4. Descriptive analysis	8. Simulation analysis

(Ward and Chapman, 1997)

2.2.2.1 Qualitative Risk Analysis

Qualitative risk analysis assesses the risk according to its probability of occurrence and its impact in order to enable the decision makers to prioritize the risks which have a high probability of occurrence and big impact on the project and response to them accordingly. In qualitative risk analysis, risk management acts to define the characteristics of each risk (Kuismanen et al, 2002). The qualitative assessment involves the identification of: (1) Risks' hierarchy which is based on the probability of risk's occurrence and its impact on the project and employees, (2) Risks' scope, and (3) Risk occurrence factors (Lowe, 2002). According to (Kindinger& Darby, 2000):

Steps of risk analysis are;-

- List activities, tasks, or elements that make up the project.
- Identify applicable risk factors.
- Develop risk-ranking scale for each risk factor.
- Rank risk for each activity for each risk activity.
- Document the results and identify potential risk reduction actions

2.2.2.2 Quantitative Risk Analysis

In quantitative risk analysis, the risk is assessed numerically by estimating the probability that a project will success in meeting the planned budget and time schedule. Quantitative Risk Analysis process involves evaluation of the impact of all identified and quantified risks. The results of quantitative Risk Analysis process are more objective than those from qualitative risk analysis if enough data are available for the decision maker. In addition the personal judgment and previous experience are factors that affect this process. (Ahmed et al, 2001).

Quantitative risk analysis suggested statistical techniques that are most easily used with specialized software (Office of Project Management Process Improvement, 2003). According to (Abu Rizk, 2002), the quantitative risk analysis contains assigning probabilities or likelihood to different factors of risks and the impact of these factors in order to define the severity for each factor (Abu Rizk, 2002).

2.2.3 Risk Prioritization or Ranking

Risk prioritization involves itemizing all identified project risks in a particular hierarchy of project risk significance for a particular project (Kululanga&Kotcha, 2010 and Cervone, 2006).

Risks are assessed both quantitatively and qualitatively and measured in terms of impact and likelihood. Impact is the potential loss should the risk materialize. Likelihood (risk exposure) is the probability that an adverse event, which could cause materialization of the risk, may occur

2.2.4 Risk Management Response

Risk response focuses on the identified and quantified project risks. Risk responses include, eliminating the risk by avoiding it usually by treating the root causes; accept the risk but have a contingency plan in place; shift risk to a third party by transferring it, for example, through insurance; and reducing the likelihood of its occurrence by mitigation (Cervone, 2006). Risk response strategies are the approaches made in dealing with the risks identified and quantified. The strategy(s) most likely to be effective should be selected for each risk (PMBOK, 2004).

2.2.5 Risk Monitoring

Risk monitoring and continuous reassessment involves monitoring known risks, identifying new risks, reducing risks, and evaluating the effectiveness of risk reduction. The main output at this stage has been associated with corrective actions and project change requests. Continuous reassessment involves periodic reviews of project risk status to identify new risks, and to examine changes in probabilities or impacts and changes in the contractor's project risk responses (Kululanga&Kotcha, 2010 and Cervone, 2006).

2.3. Risk Management Tools and Techniques

Raz et al (2002) identifies 5 PRM practices which include; systematic risk identification through documentation reviews and information gathering techniques such as interviews and SWOT analysis; probabilistic risk analysis, including the assessment of likelihood that a risk will occur and the consequences if it occurs; detailed planning for uncertainty to reduce the probability and/or the consequences of an adverse risk event to an acceptable threshold; methodic trade-off analysis resulting in a detailed risk response plan and appointing a risk manager. PMBOK, 2004 identifies tools and techniques for risk identification to include; documentation reviews, interviewing, brainstorming, cause and effect diagrams, checklist analysis, Failure Mode and Effect Analysis (FMEA) and The fault Tree Analysis (FTA). The output of these techniques is the risk management plan and the risk register.

2.4. Project Success

As Kerzner (2009: P7) stated, project success is defined as the completion of an activity within the constraints of time, cost, and performance. This was the definition used for the past twenty years or so. He forwarded the today's definition of project success in such a manner that has been modified to include completion;-

- within the allocated time period

- within the budgeted cost

- at the proper performance or specification level

- with acceptance by the customer/user

- with minimum or mutually agreed upon scope changes

- without disturbing the main work flow of the organization

- Without changing the corporate culture.

According to Khakina (2006) the success of a project is defined by three transaction metrics: time, budget and quality. Success will not only focus on completion but completion within the time, budget and quality constrains. Chen and Chen (2007) identified different sets of success for different project objectives. He pointed out that, these factors contribute to different facets of project success. These success factors are planning effort in project designing, planning during construction, goal commitment, project team motivation, technical capabilities and scope.

Most projects in Ethiopia face various challenges including delays in completion, upward revaluation of project costs, poor quality workmanships and premature termination of the projects.

2.5. Empirical Review

As it is waved throughout the theoretical review part, impact of risk and project risk management is essential for accomplishing projects with their desired plans. Unfortunately, different factors are seen by scholars and researchers that risk and project risk management are influence for the success of the project. As a result, different studies were conducted in this area. Among the many

researches some studies with critical issues in the area of Project risk Management are reviewed as follow : The risk management process involves the systematic application of management policies, processes and procedures for contextual tasks, identification, analysis, evaluation, treatment, monitoring and risk communication (Bahamid&Doh, 2017). Bazin (2017) described the Risk Management Process (RMP) is the important principle of risk assessment and risk management in the project. It includes the following key steps: identification, evaluation and analysis and response. Risk management has become an important part of the management process for any project.

According to, Lawrence (2015) indicated a strong connection between risk management and project performance in construction industry. He found that risk management practices at planning stage had an effect on project performance. Adeleke et al., (2018) have investigated the impact of risk management on project performance. The results demonstrate that adopting risk management practices has a significant positive impact on project performance. They also show a positive impact from the presence of a risk manager on project success. The results of their study showed that adopting Project Risk Management Practices has a significant positive impact on project success. They also show a positive impact from he presence of a risk manager on project success

Many others research are done in RM as yet, there does not appear to be any study that has considered the impact of PRM on the success of projects in Ethiopian banks. Majority of the studies that are done in Ethiopia regarding project risk management practice are done on construction risk management. The studies reviewed laid more emphasis on the impact of risk management on the construction project success.

2.6. Research gap
Developing countries have poor level of performance of the industry in the countries, improving the overall performance of construction industry ought to be high priority action. Ethiopian construction project risk management practice in terms of adapting general project management producer, project function, tools and techniques are unsatisfactory.so some gaps of Ethiopian construction projects like delaying on the completion, upward revelation of project cost, poor quality in the progress of the project and others are the main problem of construction project shown in Ethiopia.

2.7. Conceptual Framework

The study will be overseen by the concept of that project risk management activities including risk management tools and techniques influence the success of a project. These practices include carrying out comprehensive risk identification, risk analysis, risk ranking, and risk response risk. This is achieved by efficient and effective application of risk management tools and techniques to influence the success of the project

Figure 2.1 Conceptual framework
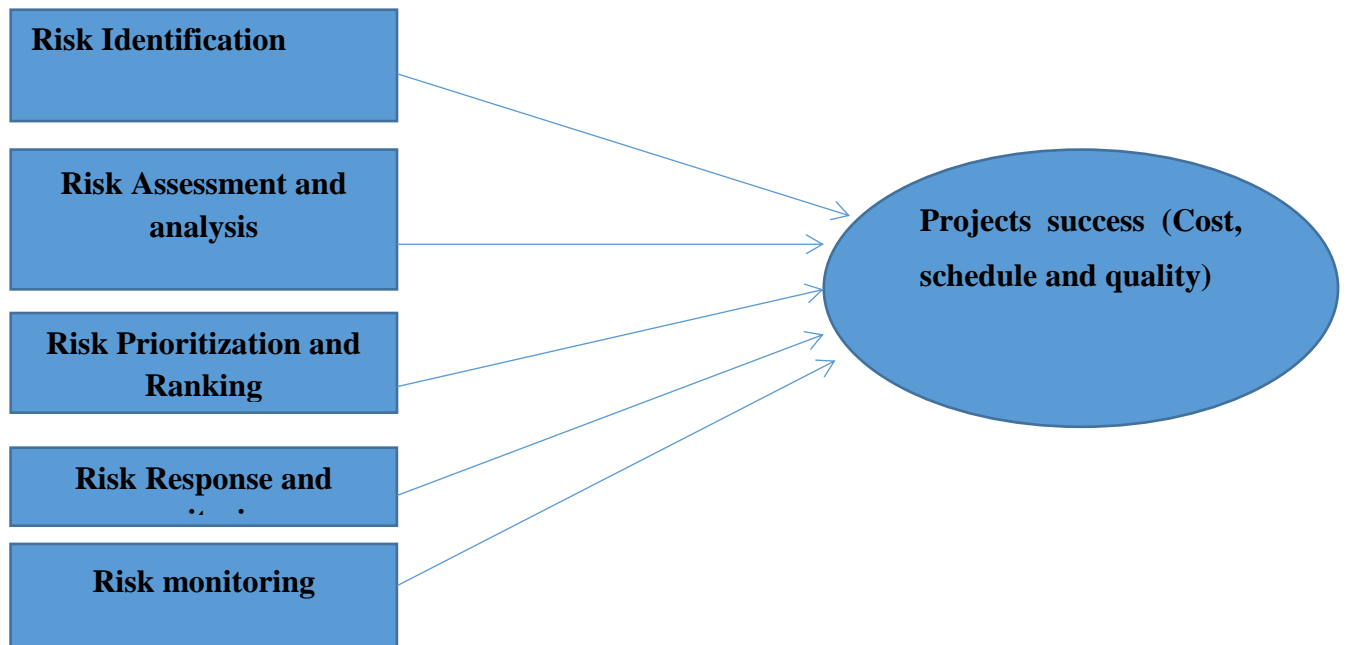
(Source: Own Survey, 2023)

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

Introduction

The third chapter of the research is methodology. This study aims to reflect the influence of risk management and project success in construction sector by looking in depth in to Bamacon engineering plc as case unit. The methodology assesses the influence of risk management for the success of the internal project of BAMACON Engineering plc. in adds Ababa. This chapter describes the research design, description of study variable, the study area and target population, sampling technic and sample size, data collection and method of analysis. Validity reliability and ethical consideration are described in this chapter.

3.1. Research Approach and Research Design

Research approach, is a strategy utilized in research work (Saunders, 2009).the research approach are two types, those are Qualitative research approach and also quantitative research approach. Qualitative research approach is related to investigate the soft side of the research to explore the main idea of the research. They are more subjective approach in practical. Quantitative research is related to investigate the hard part or numerical measurement and statistical analysis of the data to understand and explain phenomena (Ary, et al., 2002). They also used to test hypothesis or theories in the study. The main objective of this research method is to seek evidence about a characteristic or a relationship and to use of statistical inference to generalize obtained results from the population (Patrick, 2008).

Research design means that a framework of research method and techniques chosen by the researcher. Different possible types of research designs that can be undertaken while conducting research. These are; - Exploratory, Descriptive and Explanatory studies. An exploratory study;- explores that to find out about new lights from research study by answering the research question and clarify the general understanding of research problems. Descriptive studies;- describe the aim of persons, occurrences and situations and give detail answer about the

Research problems. Lastly, explanatory studies; - seeks to explain the subjective matter of the research and try to answer research question   and also shows the relationship of the between variable in order to explained problems.

 In the current study the, structure is case study, since case study needs rich explain about the project to emphasize detail contextual analysis in the practical world and also the relationship which risk management to assess to the company. For the purposes of this research report they was uses qualitative approach of researches. Both the explanatory and descriptive approaches were followed. Therefore, in these was chosen to employ descriptive and explanatory research approaches in order to give an adequate answer of the association between the influence of risk and project risk management and the success of projects in the BAMACOM Engineering plc. Project in Addis Ababa. The time line of the researcher was cross- sectional, if the study information be organized about the influence of risk management in the organization without any challenge the researcher was compare many different variables at the same time. And the research approach is mixed (qualitative and quantitative research) since it is done using the questionnaire survey, Interview and bases on theoretical consideration and existing knowledge.

3.2 Description of study area and Target Population

The study area of this research is on construction project in Addis Ababa. The construction project is limited to building construction in BAMACOM engineering plc The aim of this study is to understand and to examine the effects of risk and risk management for the successes of construction project and to provide improvement recommendation based on the knowledge area of project risk management practice in the selected organization. The target population of this study is the project manages, senior engineers, and each department in the construction these have educational background with engineering like, project manager, site engineer, office engineer, sanitary engineer, electrical engineer, contractor, and others .this population is selected from the total population since they have good experience and also project management knowledge. Bamacon engineering construction plc. Has implemented currently 15 (fifteen) projects. In project office of the construction there are 186(One Hundred eighty six) employees.

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3.4 Sample and Sample Technique

In this study the total population was taken as from all employees in the Bamacon engineering plc. who are work in the in construction project or all department in the organization those are engineering department, finance department, operational department, and others .the sample size of the study will conduct from the head office of Bamacon engineering plc. To get detail information about the effect of risk management for the success of all brunches in Bamacon engineering plc. Due to small number of the target population, the proposed study chooses to consider the entire population in the study, i.e. to conduct census survey, rather than sampling form. This is on the basis of the suggestion that if the target population is smaller (e.g. 200 or less) census survey is very appropriate since virtually all population would have to be sampled in small populations to achieve a desirable level of precision (Israel, 2013). Hence, since the study covers all members of the projects census were used to conduct the research.

3.4.1. Sampling size determination

The sample size that represents the targeted population was determined based on Taro Yamane Method. The Taro Yamane method was formulated by Tara Yamane in 1967 to determine the sample size from a given population.

n= N/ (1+N (e) 2)

Where:

n - Signifies the sample size

N - Signifies the population under study

e - Signifies the margin error = (0.05)

In this case, N = 186 (total employees of the company in the Fifteen projects)

n = 186/ (1 + 186 (0.05) 2) = 127 (confidence level of 95%)

3.5 Data Collection

Both primary and secondary sources of data/information used for the purpose of conducting this particular research. Primary data is the information that the researcher finds out by him/herself regarding a specific topic having the likely advantage that the data is collected with the research's purpose in mind, whereby ensuring the resulting consistency of the information with the research questions and purpose (Biggam, 2008). The primary data was gathered through a well-developed questionnaire from the entire population of the construction project management. As far as the secondary source is concerned, journals, books, procedures and guidelines, circulars and policy papers, annual reports, magazines and working papers, produced by the company are used to extract any sort of essential information to strengthen the study findings.

Primary data was collected for the purpose of this study. It was collected using self-administered structured questionnaire developed based on review of literature on project risk management and project success. Each section of the questionnaire contained both closed and open ended questions. For most of the sections, those censuses were invited to score their responses using a Likert-style rating scale, with a score of 1 to 5. The Likert scale was used since it is a psychometric scale commonly used in research that employs questionnaires.

3.6 Data sources

In this study the sours of data was used both primary data and secondary data source which are important to collect all necessary information. The primary data were collected using the research questioner and providing to the project managers. The questioner were sent through telegram or email address to the assigned teams of top management .the management distributed the questioner, the assigned management be collected and also the researcher was obligated to administer an interview to respondent. In addition to the relevant the theoretical document carried out as secondary data source.

3.7 Instrument of Data Collection

The studies were mainly uses questionnaires instruments to collect the detail information from selected respondents. The questioner was closed-ended questions and those questions are developed by referring the different journals, PMI PMBOK, researches, internets and other guide and customizing similar questioners.

3.8 Data analysis method

In order to get the detail finding of the research descriptive statics is the major techniques of analyzing the study and the data is coded ,the coded data processed through statically software package (SPSS).The data were collected is coded and analyzing be use graphs, table and percentage to provide summaries of the respondent and study. The data were qualitatively analyzed by comparing result with the theoretical and empirical literatures.

3.9 Reliability and Validity analysis

Reliability and validity are both about how well method measures something; reliability refers the consistency of measure or whether the same findings was acquired again if the research is undertaken at another time by another researcher. If this is so, then one can say the instrument employed is reliable (Lincon and Guba, 1985).in order maintain reliability of the data triangulation method was adopted. Hence, the researcher conducted interviews to four of randomly selected project manager.

Reliability test is more to do with the consistency of how a set of variables is measured. Reliability refers to the absence of random error, enabling subsequent researchers to arrive at the same insights if they conducted the study along the same steps again (Yin, (2003).

The Cronbach Alpha coefficient is an indicator of internal consistency of the scale. A high value of the Cronbach Alpha coefficient suggests that, the items that make up the scale hang together' 'and measure the same underlying construct. A value of Cronbach Alpha above 0.70 can be used as a reasonable test of scale reliability (Gaur A. and Guar S., 2009). Hence, all the independent and dependent variables 'Cronbach Alpha value was above the minimum required value of 0.70 to see the internal consistency of the measures

Cronbach's alpha for items under each variables was conducted and the result is presented in the table 3.1 below

Table 3.1 Cronbach's alpha

Variable	Cronbach's Alpha	N items
Risk Identification	.842	6
Risk Analysis	.735	4
Risk Prioritization	.791	4
Risk Response and monitoring	.844	10
Risk management Tools	.806	3
Success factor	.912	3
		30

(Source: Own survey, 2023)

3.10. Ethical consideration

In the context of research, according to Saunders, Lewis and Thornhill (2001:130), ethics refers to the appropriateness of your behavior in relation to the rights of those who become the subject of your work, or are affected by it. The data was collected from willing respondents without showing any unethical behavior or forceful action. The results or a report of the study was used for academic purpose only and response of the participants was kept confidential and analyzed in aggregate without any change by the researcher.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

Introduction

This chapter aims to show the presentation, analysis and interpretation of the data which was collected from respondents. To analyze the collected data in line with the overall objective of the research, statistical procedures were carried out using SPSS software. To determine the actual practice of project risk management practices at Bamacon Engineering plc. in Addis Ababa, the researcher has collected the data through questionnaire.

The chapter starts by describing the nature of the study sample or profile of the respondent using descriptive statistics. Next to that variable descriptive statistics are presented. Multiple linear regressions were also employed that focuses on identifying the most important underlying factors of project success. Cronbach's alpha was more than 0.7 which is used to test goodness and internal consistency of the measure.

4.1 Response Rate

As implied in the preceding part of this study, the entire population of was considered in the study. The data was collected from Bamacon Engineering plc. In Addis Ababa. Out of the total population of 139 respondents, 127 respondents have been successfully responded by completing the questionnaire, thus achieving a response rate of 91.3%. The response rate was considered statistically sufficient for further analysis.

4.2 Descriptive Statistics

Descriptive analysis refers to the elementary transformation of raw data in a way that describes the basic characteristics such as central tendency, distribution and variability (Zikmund et al., 2010).

4.2.1 Descriptive Analysis of Application of PRM to the Projects

The respondents were questioned to indicate the application of project risk management practices to their projects including risk identification, risk analysis and ranking, risk response and monitoring and use of risk management tools and techniques. The researcher wants to check

whether the risk management practice was extensively used in the project or not. This was done in order to determine which risk management practice was extensively used in the project.

Table 4.1: Application of project risk management practice

	N	Mean	SD
Risk Identification	127	3.2850	.53808
Risk Analysis	127	3.3225	.51093
Risk Prioritization	127	3.3130	.56017
Risk Response and monitoring	127	3.3523	.42154
Risk Response and monitoring	127	3.3523	.42154
Risk management tools and techniques	127	3.3969	.64598
Valid N (listwise)	127		

 (Source: own survey, 2023)

It can be seen that the application of the five risk management practices was relatively moderate. Risk management tools and techniques risk monitoring was the predominant risk management practice recording a mean score of 3.3969 and 3.3523 as compared to the least used practice of using risk identification with a mean score of 3.2850 for the projects.

From the table above, respondents of the projects felt that PRM practices were well applied to their projects with a mean score range of 3.3969 to mean score 3.2850.

4.2.2 Descriptive Analysis of Project Success

The success or failure of the project is measured against the time, cost and technical performance (Quality) dimensions. From the analysis shown on below table it's shown the factors that determine the success of a project. These factors include meeting quality specifications, completing the project within budget and completing the project on schedule among others. Further the researcher sought to establish whether there existed any relationship between PRM and project success by correlating data's. The respondents were required to indicate the level of project success factors to their projects.

Table 4.2: project success

	N	Mean	SD
Projects are completed within quality specifications.	127	3.2061	.66469
Projects are completed within budget.	127	3.2672	.64240
Projects are completed within time.	127	3.2824	.65954
Valid N (listwise)	127		

(Source: own survey, 2023)

From the analysis above, the respondents indicated that completing project with time was the most important success factor for their project with a mean of 3.2824 followed by completing the project on budget with a mean of 3.2620. Completing project with expected quality was the least with a mean of 3.2061.

4.3 Factors Influencing the Project Performance of Bamacon engineering plc.

4. 3.1 Normality Test

According to Yi (1988) one of the first thing that should be taken care of before delving in to the main part of the analysis is to check whether the data are normally distributed or not. For this checking, Yi (1988) suggests that, the standardized skewness distribution result and a Kurtosis result must be between the ranges of +2 or -2.

Table 4.3 Normality Test

	N	Skeweness		Kurtosis	
	Statistic	Statistic	Stderor	Statistic	Stderoe
Success Factor	127	-.222	.212	-.513	.420
Risk Identification	127	-.149	.212	-.431	.420
Risk Analysis	127	-.620	.212	.203	.420
Risk prioritization	127	.133	.212	-.726	.420
Risk response and monitoring	127	-.117	.212	-.486	.420
Risk management Tools	127	.132	.212	-.690	.420
Valid(Listwise)	127				

(Source: Own survey, 2023)

The result in the above table indicates that all the variables are with skewness and kurtosis which is between the ranges of +2 or -2.

4.3.2 Multi-Collinearity

In order to enhance the regression analysis, collinearity statistics was tested. VIF (variance Inflation Factor) measures multi-collinearity, that is whether the independent variables are highly correlated or not. If correlated, their significance on the dependent variable was affected. As the

value of VIF shown in Table 4.11, it is not five and above and tolerance was above 0.1 the variables are not highly correlated and hence the regression analysis will see clearly the significance of the coefficients on the dependent variable, Cohen (1988).

Table 4.4 Multi collinearity test

Collinearity statistics	VIF
Risk identification	4.034
Risk analysis	1.605
Risk prioritization	2.191
Risk response	3.440
Risk management tool	2.117

(Source: own survey, 2023)

a. Dependent Variable: project success

The results of this analysis indicate how well a set of independent variables is able to predict the dependent variable. Furthermore, it shows how much unique variance in the dependent variable is explained by each of independent variables (Pallant, 2010). The Multiple regression analysis assumes that the relationship between a single dependent variable and each independent variable is linear.

4.3.3 Regression of RMP with Quality
Table 4.5 regression of RMP with quality

Model	R	R Square	Adjusted R Square	Std. Error of R Square the Estimate
1	.845	.714	.703	.36249

 (Source: Own survey, 2023)

a. Predictors: (Constant), identification, assessment, ranking, response, tools and techniques

b. Dependent Variable: project success

Table 4.3.4 Estimation Result of Regression Function

Coefficients [a]

Model	Unstandrdizecoeffc		Standardizacofecient	t	Sig.
	B	Stderor	Beta		
1(Constant)	-.991	.260		-3.811	.000
Risk Identification	.235	.094	.190	2.502	.014
Risk Analysis	.289	.103	.222	2.811	.006
Risk Prioritization	.287	.111	.242	-2.580	.011
Risk Response and monitoring	.581	.157	.368	-3.698	.000
Risk management tools and techniques	-.127	.072	-.123	-1.773	.079

 (Source: Own survey, 2023)

a. Dependent Variable: success

$$Y = \beta 0 + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \beta 4 X4 + \beta 5 X5 + £$$

$$Y = -0.991 + 0.235 X1 + 0.289 X2 + 0.287 X3 + 0.581 X4 + 0.127 X5$$

Where Y is the dependent variable (project success), Xi is the risk identification independent variable,

X2 is the risk analysis independent variable, X3 is risk ranking independent variable,

X4 is risk response and monitoring independent variable while X5 is RM tools and techniques independent variable.

According to the regression equation established, taking all factors (risk identification, analysis, ranking, response and tools and techniques) constant at zero, the project success was 0.991.

The data findings analyzed also show that taking all other independent variables at zero, a unit increase in risk identification will lead to a 0.235 increase in project success. A unit increase in risk analysis will lead to a 0.289 increase in project success; a unit increase in risk prioritization will lead to a 0.287 increase in project success; a unit increase in risk response and monitoring will lead to a 0.581 increase in project success while a unit increase in RM tools and techniques will lead to a 0.127 increase in project success.

Among the five constructs, the multiple linear regression analysis of standardized coefficients revealed that risk identification, risk analysis, risk prioritization, risk response and risk management tools and techniques was a significant predictor of project success at 5% significance level. The effect of all independent variables was positive: risk identification (Beta= .190, P=.014), risk analysis (Beta=.222, P=.006), risk prioritization (Beta=.242, P=.011), risk response and monitoring (Beta=.368, P=.000) and risk management tools and techniques (Beta=.123, P=079). The standardized Beta coefficient for risk management tools and techniques was higher than other variables and lower risk prioritization which indicates that risk management tools and techniques is very important factor in predicting project success and risk prioritization is with little importance in predicting the dependent variable.

4.3.4 Regression of RMP with schedule
Table 4.7: Regression of RMP with schedule

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.829	.687	.675	.37628

(Source: Own survey, 2023)

a. Predictors: (Constant), identification, assessment, ranking, response, tools and techniques

b. Dependent Variable: project success

The model in the above table 4.9 shows how much of the variance in the measurement of project time is explained by the model. Based on this, model coefficient of determination or R^2 obtained indicates that 67.5% (adjusted R square of 67.5% with estimated standard error .37628) of the variation in the measurement (project budget) function can be explained by identification, assessment, ranking, response and tools and techniques. The R^2 was high which indicates that the independent variables are highly determining the level of project quality

Table 4.8 Variable

Model	Unstandardized coeffc		Standardize coeffc	t	Sig.
	B	Stderor	Beta		
1(Constant)	-.773	.270		-2.866	.005
Risk Identification	233	.097	.190	2.399	.018
Risk Analysis	.195	.107	.151	1.826	.070
Risk Analysis	.195	.107	.151	1.826	.070
Risk Prioritization	.338	.115	.287	2.929	.004
Risk Response and monitoring	.613	.163	.392	3.760	.000
Risk management tools and techniques	.157	.074	.154	2.113	.037

(Source: own survey, 2023)

a. Dependent Variable: success

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + £$

$Y = -0.773 + 0.233 X_1 + 0.195 X_2 + 0.338 X_3 + 0.613 X_4 + 0.157 X_5$

Among the five constructs, the multiple linear regression analysis of standardized coefficients revealed that the five RMP was a significant predictor of project time at 5% significance level. The effect of all independent variables was positive: risk identification (Beta= .190, P=.018), risk analysis (Beta=.151, P=.070), risk prioritization (Beta=.287, P=.004), risk response and monitoring (Beta=.392, P=.000) and risk management tools and techniques (Beta=.154, P=037). The standardized Beta coefficient for risk management tools and techniques was higher than other variables and lower risk prioritization which indicates that risk management tools and techniques is very important factor in predicting project success and risk prioritization is with little importance in predicting the dependent variable.

4.3.5 Regression of RMP with Budget
Table 9: Regression of RMP with Budget

Model Summary b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.885	.784	.775	.30481

(Source: Own survey, 2023)

a. Predictors: (Constant), identification, assessment, ranking, response, tools and techniques. Dependent Variable: project success

The model in the above table 4.11 shows how much of the variance in the measurement of project budget is explained by the model. Based on this, model coefficient of determination or R^2 obtained indicates that 77.5% (adjusted R square of 77.5% with estimated standard error .30481) of the variation in the measurement (project budget) function can be explained by identification, assessment, ranking, response and tools and techniques. The R^2 was high which indicates that the independent variables are highly determining the level of project quality.

Table 4.10 Variables level with project quality

Model	Unstandardized coefficient		Standardized coefficient	T	Sig.
	B	Stderor	Beta		
1(Constant)	-.930	.219		.070	.945
Risk Identification	.166	.079	.941	4.346	.000
Risk Analysis	.394	.086	.097	.711	.480
Risk Prioritization	.335	.093 .	.340	2.133	.038
Risk Response and monitoring	481	.132	-.811	-4.055	.000
Risk management tools and techniques	.111	.060	-.508	-3.042	.004

(Source: Own survey, 2023)

a. Dependent Variable: success

$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \pounds$

$Y = -0.930 + 0.166X1 + 0.394X2 + 0.335X3 + 0.481X4 + 0.111X5$

Among the five constructs, the multiple linear regression analysis of standardized coefficients revealed that the five RMP was a significant predictor of project budget at 5% significance level. The effect of all independent variables was positive: risk identification (Beta= .139, P=.037), risk analysis (Beta=.313, P=.000), risk prioritization (Beta=.292, P=.000), risk response and monitoring (Beta=.316, P=.000) and risk management tools and techniques (Beta=.112, P=067). The standardized Beta coefficient for risk management tools and techniques was higher than

other variables and lower risk prioritization which indicates that risk management tools and techniques is very important factor in predicting project success and risk prioritization is with little importance in predicting the dependent variable.

4.4. Risk Management Practices in Bamacon engineering plc

A risk management practice in the projects involves identifying, understanding and determining the potential unsatisfactory outcomes likely to affect a project. After identifications of these undesired events the risks are analyzed based likelihood and influence of the risks. After risks are analyzed, they ranked/prioritized depending on their significance to a particular project.

The study sought to establish the application of project risk management practices such as risk identification, risk analysis, risk ranking, risk response and monitoring and use of risk management tools on Bamacon projects and the influence of these practices on the success of these projects.

The study revealed that the application of the aforementioned risk management practices was moderately applied to the Bamacon projects. The analysis of application of the risk management practices was moderate with an average mean score of between 3.2710 and 3.4457. Risk prioritization and risk tools and techniques was the predominant risk management practice compared to the least used practice of using risk identification rating of 3.2710. Hence the Bamacon engineering plc has applied the risk management practice to its projects.

Though risk management practices are applied, they are not as expected as per the response of the respondents.

4.5. Overall Project Success

There are a number of factors that determine the success of a project. These factors include meeting quality specifications, completing the project within budget and completing the project on schedule among others.

The project is successful with overall mean of 3.2519.The respondents indicated that completing the project within time and completing the project within budget was the most important success

factor for their project with a mean of 3.2824, and 3.2672. Completing the project within specification or quality was the least important with a mean of 3.2061.

Hence, 69.31% of the respondents agreed that completing the project within budget is crucial for project success, 67.32%% of the respondents agreed that completing the project with schedule is essential for project success. 65.03% of the respondents agreed as the projects are completed within specified quality standard. Overall 67.22% of the projects are successful by budget, time and functionality.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMEDATIONS

Introduction

This chapter presents the summary of the research findings; conclusion and recommendations. The conclusions were drawn from the findings of the study in line with the study objectives by looking into the influence of project risk management practices on the success of the construction projects.

5.1 Summary of Findings

The question whether risk management contributes to project success is considered relevant by many from both academic and practitioners 'communities. Delays in completion, upward revaluation of project costs, poor quality workmanships and premature termination of major projects are common phenomena in Ethiopia. This phenomenon is also reflected in Bamacon engineering plc. Were projects have not been completed on time, budget/cost or meet quality and design specifications.

The purpose of this study was to evaluate the influence of project risk management practices such as risk identification, risk analysis and ranking, risk response and monitoring and use of risk management tools and techniques on the projects and to see the influence of these practices on the success of these projects. Success in project is indicated by its performance in the achievement of project time, cost and quality.

The study adopted projects of Bamako engineering plc. which has implemented 15 project sites which constituted this study's targeted population. The projects had been implemented over the 4 years period from July 2020/2021 to May 2022/2023. Primary data was collected for the purpose of this study. It was collected using a self-administered structured questionnaire. Secondary data's are also used for the purpose of this study. Each section of the questionnaire contained both closed and open ended questions. For most of the sections, those surveyed were invited to score their responses using a Likert-style rating scale, with a score of 1 to 5.Descriptive statistics were used to analyze the data by way percentages, means, variance, standard deviation,

correlation analysis and multiple regression analysis. The projects are implemented by various project implementation teams who have consistently used various project risk management practices; as such the projects have recorded varied successes in meeting the project objectives. The project has a risk management section to advice on risk management. It's expected that these actions will/have led to accelerated project success.

Out of the targeted186 Employment 139 respondents are actively participated to fill the questionnaire, but from those respondent only 127 successfully responded by completing the questionnaire, thus achieving a response rate of 91.3%. The projects are consisted of a budget of Birr 95,380,788,418.00 which is considered to as extremely large-scale investment projects. The period of implementation of these projects ranged between 36 to 48 months. These projects which were typically complex attracted a lot of public attention because of substantial influences on community, the construction business and technological advancement.

On project success the study established that majority of projects had completed within time with a mean and standard deviation of 3.2824 and 0.65954 respectively. Most projects were also completed within budget with a mean of 3.2672 and standard deviation of 0.64240. On quality, projects meet technical specification with mean of 3.2061 and standard deviation of 0.66469. When we compare these three project success factors, completing the project within budget was high and low with quality.

Descriptive statistics were used to analyze the data by way of percentages, means, variance, standard deviation, correlation analysis and multiple regression analysis. This was aimed at ascertaining whether there is a functional relationship between project risk management and project success. Besides using correlation analysis to determine the influence of project risk management practices on project success, the study also developed a multiple regression model for the relationship between these practices with project success as the dependent variable and risk identification, risk analysis, risk ranking, risk response & monitoring and RM tools and techniques as the dependent variable.

While there are plenty of risk management practices, tools and techniques available, many project implementation teams did not often use them. Some of practices which were not applied included appointment of project risk manager, developing a risk register for the project and

continuously reviewing this register, ranking of the risks to ensure more effort is focused on high risks among others. This notwithstanding, analysis of the data collected revealed that some risk management practices were widely used. Risk response and monitoring and risk analysis recorded the highest mean score. Some of the widely used project risk management practices included risk identification through analysis of the internal and external environment, brainstorming, interviewing and expert judgment.

Project risk management seems to be effective in contributing to project success. From the analysis of the data collected, it was proved that risk management has a positive correlation with project success. Projects which had consistently applied risk management practices produced less surprises as all the stakeholders had been prepared on the uncertainties in the project implementation. The project implementation teams had also taken steps to reduce the influence and the likelihood of the unavoidable events in the project implementation. Multiple regression analysis on risk management practices and project success produced a positive result implying that application of risk management practices to projects contribute to project success Thus we can conclude that the higher the use of project risk management practices the higher the project success.

5.2 Conclusions

The objectives of this study was to establish the influence of project risk management practices on the success of projects by establishing the extent of application of project risk management practices in projects at the Bamacon engineering plc and determining the relationship between project risk management practices and the success of projects implemented by the Bamacon engineering plc After considering the results from the study, the following conclusions can be deduced. First, risk management practices are mostly applied to complex, huge investment, high uncertain and more risky projects. The higher the uncertainty, the higher is the risk and the higher is the extent of the use of risk management practices. While this is so, even low uncertainty projects suffer delays, project budget overruns and poor quality products and their success is not guaranteed.

These projects too can benefit from risk management application that will improve their success rate. Most projects had applied risk management practices such as risk identification and risk

response and monitoring. Risk identification and prioritization and use of risk management tools and techniques recorded a low mean score as compared to risk analysis and risk response strategies. Despite this high mean score, most of the projects recorded delays, project budget overruns implying that risk management should be viewed as a project management process with the five variables consistently applied. Risk analysis and ranking allows project managers to emphasis more on high probability, high influence risks. Other risk management practices which were not applied on these projects included appointing a project risk manager and continuously reviewing the risk matrix/register throughout the life of the project.

The regression model confirms that application of risk management practices (independent variables) were consistently applied on a project increases the rate of the project success (dependent variable)

5.3 Recommendations

The finding of this study has implications for Construction sector projects. Construction sector projects just like any other projects should be completed on time, on budget and in good quality. In order to achieve this goal, attention must be placed in consistently applying risk management practices to increase the rate of project success. The following are the recommendations of this study.

> Since risk identification, risk assessment, risk ranking, risk response and risk monitering has significant effect on project success, application of these practices is very important. Hence, these practices should be applied for all projects.

> . The engineering plc is need to create more awareness on project risk management practices. Additional   tools and risk management practices need to be developed and tested to determine which tools works best in different scenarios and environments. This will ensure that risk management improves project performance and success

> For effective project risk management; relevant inputs, tools and techniques should be applied in the process of risk planning (inputs such as project charter, stakeholder register& tools and techniques such as analytical techniques), risk identification (inputs such as human resource management plan and quality management plan & tools and techniques such as checklist analysis, documentation review and SWOT analysis). risk

analysis(inputssuch as risk management plan, enterprise environmental factors, schedule management plan, cost management plan, risk register and organizational process assets & tools and techniques such as expert judgment, modeling technique, data gathering and representation technique), risk response(tools and techniques such as strategies for positive risks or opportunities and contingent response strategies), risk monitoring and control(tools and techniques such as technical performance measurement, risk reassessment, risk audit, reserve analysis, variance and trend analysis).

➢ Project risk management must become part of the culture in project management activity and routine component in any project plan and review activity.

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QUESTIONNAIRE

St. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF PROJECT MANAGEMENT

Dear respondent,

I am graduate student at St. Mary's university school of graduate studies. Currently, I am conducting a research study on —The influence of project risk management practices on success of constriction projects'' in partial fulfillment of Master of Arts in project management. The purpose of this questionnaire is to gather data for the proposed study, and hence you are kindly requested to assist the successful completion of the study by providing the necessary information. Your genuine, frank and timely response is vital for the success of the study and thank you in advance for your kind cooperation to fill this questionnaire. Your experience and educational background in the construction industry will greatly contribute to the success of my study and I believe this kind of study was an input for the development of Ethiopian construction industry. Please note that you are not required to give your name in this questionnaire

 For further information

Name;-Mekdelawit Alemayhu

+251-924485672

Gmail makialex09@gmail.come

Thank you for your interest in participating in the research and for your time and kind cooperation!

Dear participant, this questionnaire booklet has five parts:

Part 1: About the respondents

1. Educational Background: _____

2. Educational Background Qualification: Diploma ☐   Degree ☐   Masters ☐

Job Title (Position): _____ 1. Office Project manager ☐   2. Site project manager ☐

   3. Engineer ☐   4. Project professional ☐   5. Other ☐

3. Experience (in years): _____

4. Age: _____

  i.   **Close Ended Questions Instruction**: For the closed ended questions in table forms, please use the following keywords to answer. And put a tick mark **(√)** on the space provided.

- ✓ SA= Strongly agree
- ✓ A= Agree
- ✓ N=Neutral
- ✓ DA=Disagree
- ✓ SDA=Strongly Disagree

Part 2: Project details and project success

Indicate the level of the following project success factors were to your project by putting—√—mark on your choice

No.	Project success factors	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Projects are completed within quality specifications					
2.	Projects are completed within budget					
3.	Projects are completed within schedule					

Part 3: project risk management practice

Kindly indicate the extent to which the following project risk management practices are applicable and applied in your project(s) by putting ―√―mark on your choice.

No.	Risk management practice	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
3.	**Risk Identification**					
3.1	Risk identification process was carried out at the inception of the project to identify both internal and external factors affecting the project					
3.2	Identified risks are analyzed to determine their influence					

3.3	There is awareness about the importance of project risk management in your organizations management and project management team					
3.4	Effectively managing risk is important to the construction performance and success of the construction your project.					
3.5	The effective management of risk is central to your construction project performance.					
3.6	Various tools and techniques were					
	used to identify these risks, including; review of documentation, brainstorming, interviews expert judgment etc.					
4	**Risk Analysis**					
4.1	The construction project has formal risk analysis practice					
4.2	Project risk analysis is done periodically					

4.3	For all the risks identified the likelihood and influence of the risk was assessed					
	Effective risk analysis improves the performance of your construction project.					
5	**Risk Prioritization**					
5.1	The risks identified were ranked depending on their significance to the project					
5.2	The risks were ranked from low/negligible risks to major/critical risks					
5.3	Risk prioritization is seen by top management					
6	**Risk Response and Monitoring**					
6.1	Risk response help to react more quickly to risks and, therefore, decrease the negative effects of risk					
6.2	Risk response strategy is developed for prioritized risks					
6.3	risk response plan and strategy is continuously					

	updated					
6.4	The project had open and effective communication channels between us the contractors, suppliers, client and other project stakeholders					
6.5	The risk management plan developed from analysis of risks affecting the project was communicated to all stakeholders					
6.7	The strategies used for managing risks including taking insurance.					

Part 3

General section

1. In your opinion, what measures would you consider important for improving project risk management practices in order to enhance the success of your project
……………………………………………………………………………………………

 2. What recommendations would you make that will improve project management in construction project?
………………………………………………………………………………………