



ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
SCHOOL OF COMMERCE

THE ROLE OF RISK MANAGEMENT PRACTICES ON
PROJECT SUCCESS IN ADDIS ABABA CITY
ADMINISTRATION

By: Amdework Brhane Araya

June, 2024

Addis Ababa

ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
SCHOOL OF COMMERCE

**The Role of Project Risk Management Practices on Project Success
in Addis Ababa City Administration**

A Project Work Submitted to Addis Ababa University School of
Commerce in Partial Fulfillment of the Requirements of Degree
of Masters in Project Management

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May, 2024

Addis Ababa, Ethiopia

DECLARATION

I, Amdework Brhane Araya hereby declare that the research titled The Role of Project Risk Management Practices on Project Success in Addis Ababa City Administration is entirely my original work. The research was conducted under the guidance oversight of Solomon Markos (PhD).I affirms this research paper has not been previously submitted either partially or in its entirety to any other educational institution in order to obtain a degree. It is solely presented to fulfill the requirements of the academic program at Addis Ababa University School of Commerce.

Declared by Amdework Brhane

Signature



CERTIFICATE

This is to certify that Amdework Brhane has successfully completed his project work entitled The Role of Project Risk Management Practices on Project Success in Addis Ababa City Administration. The project work was carried out under my guidance and supervision in partial fulfillment of the requirements for the degree of Masters of Art in Project Management at the Addis Ababa University College of Business and Economics, School of Commerce.

I hereby approve and endorse this project work as the university advisor

Name: Solomon Markos (PhD)

Signature_____

Date_____

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ACKNOWLEDGEMENT

First and foremost, I would like to express my sincere appreciation and heartfelt gratitude to my advisor, Solomon Markos PhD, for his unwavering guidance, invaluable comments, and constructive suggestions throughout the course of my thesis work. His expertise and support have been instrumental in shaping the direction and quality of this research.

I would like also to express my profound gratitude to the Addis Ababa City Administration Mega Projects Office for their cooperation and assistance during the research process. Their willingness to collaborate and provide valuable insights and information has significantly enriched the findings of this study.

I would like to acknowledge and thank my parents, brothers, sisters, friends, and especially my son Adonay Amdework and my daughter Makiba Amdework for their unreserved support and encouragement throughout the thesis work. Their moral support has been a constant source of motivation and inspiration.

Lastly, I would like to extend my heartfelt thanks to the experts of the Addis Ababa city administration mega projects office, project site managers, project team members, consultants, and experts from the Addis Ababa Transport Authority and Health Bureau. Their willingness to participate fill out questionnaires, and provide valuable information and support have been crucial in undertaking this study and ensuring its success.

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Abstract

The purpose of this research was to examine the role of project risk management practices on mega projects success in Addis Ababa city administration. Explanatory research design was employed to conduct the study. Data were collected from 66 project managers and project team personnel from contractors, consultants involved in mega projects, and the client organization of the Addis Ababa city administration mega project office and other stakeholders (end users) were selected using simple random sampling method to fill out the questionnaire. A total of six top and middle level managers were selected using purposive sampling technique for an interview. The quantitative data was analyzed using descriptive, correlation and regression analysis. The result of the study shows that there was poor project risk analysis practice, risks were not adequately identified, the practice of risk response in the mega projects was moderately high, the practice of project monitoring and control in Addis Ababa City administration's mega projects lacks continuity and effectiveness and there is statistically significant relationship between risk identification, risk response, risk monitoring and evaluation and project success. However, there was no statistically significant impact on project success. To sum, the overall result of the analysis shows the projects were not reaching the desired level of success. Finally, an attempt was made to suggest some recommendations related to improve application of risk management process to enhance project success.

Key words: Risk, project success, risk management process, risk identification, risk response

List of Abbreviations

ISO	International Organization for Standardization
MPO	Mega projects office
PMI	Project Management Institute
SWOTS	Strengths, Weaknesses, Opportunities and Threats
SPSS	Statistical Packages for Social Science

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CHAPTER ONE

1. Introduction

1.1 Background of the Study

Project is a temporary endeavor with a defined endpoint and a unique approach to achieving its objectives (Project Management Institute, 2004). Projects are undertaken with the purpose of attaining specific goals and objectives within defined constraints. However, it is important to acknowledge that not all projects achieve success. While some projects meet or even exceed expectations, there are others that fail to deliver the desired outcomes (Turner & Müller, 2003). Successful projects are those that achieve their intended objectives, meet stakeholders' expectations and deliver desired outcomes. Project success can be measured in terms of meeting project scope, schedule, budget, quality standards, stakeholder satisfaction, and overall project performance (Yong and Mustafa, 2017).

The successful accomplishment of project goals relies on the integration and implementation of project management practices including initiation, planning, implementation, monitoring and controlling, and closing phases (PMI, 2008). However, despite the application of these practices and tools, projects are susceptible to risks that can lead to challenges such as delays in completion, compromised quality and cost overruns, ultimately resulting in poor project performance (Macharia, 2017).

According to the Project Management Institute (PMI, 2013) risk in a project refers to uncertain events or conditions that can impact one or more objectives. Scholars such as Miles and Wilson (1998) and Mullins et al. (1999) define risk as the exposure or probability of experiencing a loss. These risks can have positive or negative effects on various aspects of the project such as cost, scope, and quality. (PMI 2004). For Shenhar, Raz, & Dvir (2002) project risks are undesired events that can range from delay, excessive expenditures and unsatisfactory project results for the organization, society, or environment. Unmanaged risks are therefore threats to project delivery. Failure to adequately deal with risks or fail to properly manage it has been shown to cause cost and time overruns in construction projects (Awuah & Young, 2021). Therefore, managing projects to achieve their goals is very demanding

Risk management refers to the comprehensive set of systematic approaches and strategies implemented by an organization to minimize the probability and potential negative impacts of uncertainties, threats, and hazards (PMI, 2013). It encompasses the process of identifying, assessing, and addressing project risks through effective measurement and response strategies (Chapman and Ward, 2011). Moreover, project Risk Management is a crucial aspect of project management, encompassing planning, identification, analysis, response planning, and monitoring and control of risks (PMI, 2004). The relationship between risk management and project success has been a topic of interest since the 1970s (Alter and Ginzberg, 1978).

Many studies have examined the relationship between project risk management practices and project success. For example, in their research on construction projects Zou et al. (2006) found a positive correlation between risk management effectiveness and project success. Similarly, Chapman and Ward (2003) highlighted the importance of proactive risk management in achieving project success and avoiding costly failures. In the same vein, Dosumu & Aigbavbo (2018) confirms that effective risk management plays a crucial role in shaping the outcome of a construction project with the potential to yield positive or negative impacts. When implemented properly, robust risk management protocols can result in increased capital value, enhanced competitive advantage, greater market profit margins, and improved shareholder equity. Conversely, inadequate risk management practices such as utilizing incorrect risk management tools, insufficient utilization of essential management processes, and poor quality of assessment and management, can significantly jeopardize the success of a construction project (Dosumu & Aigbavbo, 2018).

Similarly, Senesi et al. (2015) conducted a study to assess the practice of project risk management in construction companies. Their findings revealed that when project managers neglect to implement efficient project risk monitoring and control measures construction companies experience significant financial losses. These losses have the potential to escalate up to 85% of the total project cost. Another study by Khan & Gul (2017) reveals that insufficient monitoring and control of risks can lead to a series of interconnected issues within a project such as accidents, exceeding budgeted costs, schedule delays, design flaws, reduced customer satisfaction, poor quality of work, and ultimately project failure

Numerous studies conducted in various contexts have consistently demonstrated that construction project delays are a global phenomenon. Notably, developing countries tend to experience a higher frequency of delays compared to developed countries. Researchers such as Sambasivan and Soon (2007), Alaghbari et al. (2007), and Aziz (2013) have confirmed this pattern through their investigations. In line with these findings, Ethiopia experiences frequent occurrences of construction project delays, cost overruns, and premature termination of major projects (Asnakew,2017).

Therefore, effectively managing risk in complex environment in particular appears to be an important element towards enabling project success (Hillson& Simon, 2007; Zwikael & Ahn, 2011). It helps to tackle the challenges posed by an uncertain world and assists in achieving project objectives (Hillson, 2017) and 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).

1.1.1 Description of the study area

Addis Ababa the capital city of Ethiopia is strategically located in the central part of the country. With a population of approximately 5,704,000 people, it serves as the political, economic and cultural hub of Ethiopia. Being one of the world's high-altitude capital cities, Addis Ababa sits at an average elevation of 2,400 meters above sea level with peaks reaching up to 3,200 meters at Entoto Hill. This unique geographical positioning gives the city a distinct climate and landscape.

Addis Ababa holds significant diplomatic importance, as it hosts international organizations such as the African Union (AU) and the United Nations Economic Commission for Africa (UNECA). The presence of these institutions further elevates the city's global profile and fosters international cooperation.

In recent years Addis Ababa has experienced rapid growth solidifying its position as one of Africa's fastest-growing cities. To support this growth and improve the quality of life for its residents the city has undertaken numerous mega projects aimed at transforming its infrastructure. These projects driven by a commitment to modernization and sustainable development primarily focus on enhancing transportation systems, improving overall infrastructure and stimulating economic growth. The ultimate objective is to attract investors,

boost tourism and ensure a higher standard of living for the city's inhabitants. Some of the major mega projects in Addis Ababa include the Adwa zero kilometer museum, Zewditu memorial hospital expansion, Addis Africa international convention and exhibition center , Akakikaliti industry village, Females' rehabilitation center, Semit and Bethel shopping center, Addis Ababa transport bureau head office, Addis Ababa leadership academy and Yeka II parking center.

1.2 Statement of the Problem

Addis Ababa the capital city of Ethiopia is currently undergoing significant development with the construction of several mega projects. These projects encompass a wide range of sectors including infrastructure, culture, and healthcare and are aimed at transforming the city and enhancing the quality of life for its residents. Currently Addis Ababa city government mega project construction office(MPCO) were carrying out twelve mega projects. Among the notable projects underway are the Adwa zero kilometer museum, Zewditu memorial hospital expansion, Addis Africa international convention and exhibition center , Akakikaliti industry village, Females' rehabilitation center, Semit and Bethel shopping center, Addis Ababa transport bureau head office, Addis Ababa leadership academy and Yeka II parking center (MPCO,2023).

These projects hold great significance for the growth and progress of Addis Ababa. They represent ambitious undertakings that have the potential to shape the city's future. However, with such ambitious endeavors there are inherent risks and challenges that must be effectively managed to ensure the success of these projects since risk management practices has a positive correlation with project success (Adeleke, Nasidi & Bamgbade, 2016). Proper project risk management practices are essential to mitigate potential obstacles and ensure the timely completion and success of these mega projects (Raz et al,2002).However, the completion of construction projects on time, with allocated budget, with quality standard and with stakeholders' satisfaction remained the deep-rooted problem of the construction industry in Ethiopia (Adamu, 2022 and Meskerem ,2020).

Despite attempts by researchers, like Meba Tesfaye (2022), Million Abera (2018) and Elzabet Seyoum (2021), and Kassahun Bishaw (2020), etc. to investigate how risk management influences project success. On top of this, very few researchers such as Fasi INuguse(2022) and Tinsea Semaghegn (2023) have also made an attempt to assess the risk management practice in mega projects in Addis Ababa City Administration in particular. The researcher is initiated to

study the role of project risk management practices on project success in Addis Ababa city administration. First the research findings by Fasil Nuguse (2022) and Tinsea Semaghegn (2023) revealed that majority of the research participants had a low level of knowledge regarding risk management. Based on this information the researcher had interview with senior managers of the office of the mega projects. During the interview with the senior managers of the office of the mega projects the managers told me that capacity building in the form of training was given to stakeholders. There for the researcher is initiated to study whether there is improvement after the training or not. The second, reasons for conducting this study is the recognition that risks vary across projects mainly because each project possesses unique characteristics (Gould and Joyce, 2002).Every individual project exhibits its own set of risk factors and risk structures influenced by various aspects such as its location, technical complexity, construction methods, management approach, design considerations, materials used, subcontractor involvement, etc. The third and the main reason that motivates the researcher to study the issues is none of the above researchers have attempted to investigate the effect of risk management practice on project success and one of the recommendations of the second researcher Tinsea Semaghegn (2023) clearly specifies there is a need for further investigation into the assessment of the impact of project risk management in construction projects particularly focusing on the construction of Mega projects. To this end the researcher is initiated to study the role of project risk management on project success in Addis Ababa city administration.

Hence, the objective of the study is to examine the role of project risk management practices on mega projects success in Addis Ababa city administration. Accordingly, it is intended to answer the following basic questions.

1.3 Basic Research Questions

1. Does risk identification affect the successful completion of mega projects in Addis Ababa?
2. Does risk analysis affect the successful completion of mega projects in Addis Ababa?
3. Does risk response affect the successful completion of mega projects in Addis Ababa?
4. Does risk Monitoring and control affect the successful completion of mega projects in Addis Ababa?

1.4 General Objective of the Study

The objective of the study was to examine the role of project risk management practices on mega projects success in Addis Ababa city administration.

1.4.1 Specific objectives

The specific objectives of the research are:

1. To assess the effect of risk identification on the successful completion of mega projects in Addis Ababa.
2. To assess the effect of risk analysis on the successful completion of mega projects in Addis Ababa.
3. To assess the effect of risk response on the successful completion of mega projects in Addis Ababa.
4. To assess the effect of risk monitoring and control on the successful completion of mega projects in Addis Ababa.

1.5 Significance of the Study

The findings of this study provide valuable insights into the influence of risk management practices on project success. By examining the relationship between risk management and project outcomes, this research contributes to the existing knowledge in the field. Additionally, the results have practical implications for the Addis Ababa City Administration mega project office as they can guide improvements in risk management practices. Furthermore, this study lays the groundwork for future research endeavors exploring the role of risk management practices in project success. Overall, these findings contribute to enhancing understanding and implementation of effective risk management strategies in project management..

1.6 Scope of the Study

The study was geographically delimited to Addis Ababa City Administration projects specifically focusing on mega projects undertaken by the Addis Ababa City Administration mega projects construction office. Moreover, the topical scope of the study involves examining the risk management practices utilized in mega projects within Addis Ababa City Administration and investigating how the successful implementation of these practices relates to the overall success of the projects. Furthermore methodologically it was delimited to explanatory design which includes specific data collection methods and analysis techniques. Other research designs or methodologies are not considered within the scope of this study.

1.7 Definition of terms

Project: is a temporary endeavor with a defined endpoint and a unique approach to achieving its objectives (Project Management Institute, 2004).

Project risk management: The risk management process is a fundamental principle for understanding and effectively handling risks within a project (Smith et al. ,2006)

Project success: The accomplishment of a given construction project against the contractual cost, time, and quality standards (Atkinson, R, 1999).

Client: The organization for whom the construction project is being undertaken (FIDIC, 2006).

Contractor: A natural or juridical person under contract with an owner to construct the construction projects (FIDIC, 2006).

Consultant: The legal representative of the client who designed the project, supervises the construction works, and carries out contract administration (FIDIC, 2006).

Stakeholder: An organization or individual who is actively involved in projects and whose interests may be negatively or positively affected during the completion or execution of particular projects (Singleton, 2007).

1.8 Organization of the Study

The study was organized into five chapters. Chapter one included the introduction, background of the study, statement of the problem, research objectives and questions, significance of the study, scope and organization of the study. Chapter two consisted of a comprehensive literature review, incorporating both theoretical and empirical discussions. Chapter three focused on the research design and approach, including data types and sources, the method of data collection and data analysis methods. Chapter four presented the findings and discussions based on the analysis. Finally, Chapter five encompassed the summary, conclusions and recommendations derived from the study.

CHAPTER TWO

2. Review of Related Literature

2.1 Introduction

This chapter presents a comprehensive review of the existing theoretical and empirical literature concerning project risk management and its association with project success. It critically evaluates the research conducted by other scholars that is relevant to the current study. The literature review is organized into several subsections, each focusing on different aspects of project risk management and its impact on project success. By examining and analyzing the work of previous researchers this study aims to identify key concepts and findings that are applicable to the present research objectives.

2.2 Risk Management

Risk is a natural part of project management and it is crucial to establish a risk management plan to effectively handle it. This methodology referred to as risk management carries the same level of importance as project planning in ensuring that the project is completed on schedule, within the allocated budget and with the desired level of quality. However the diverse range of interpretations and definitions of risk management has made it difficult to establish a universally accepted explanation. Authors offer their unique perspectives on the meaning of risk and its management. The understanding and approach to risk management depend on factors like profession, project nature, and business type, leading to variations across different contexts and disciplines (Hillson & Murray-Webster, 2004). According to Cooper et al. (2005) the fundamental aspect of the risk management process involves the systematic application of management policies, processes and procedures. This process encompasses a range of critical tasks including establishing the project's context, identifying and analyzing risks, assessing their potential impact, devising appropriate treatment strategies, continuously monitoring the risks and effectively communicating them to stakeholders. In other words, risk management involves a structured approach that involves understanding the context, identifying and analyzing risks, evaluating their impact, implementing appropriate measures to mitigate or manage them, continuously monitoring the risks, and effectively communicating relevant information about risks to stakeholders.

Project management institute (PMI) defines project risk management as a systematic process that aims to increase the likelihood and impact of positive events while reducing the likelihood and impact of negative events (PMI, 2013) . It involves various essential activities such as planning for risks, identifying potential risks, analyzing their impact and likelihood, developing response plans to address them, and continuously monitoring and controlling risks throughout the project lifecycle (PMI, 2004).For Smith et al. (2006) the risk management process is a fundamental principle for understanding and effectively handling risks within a project. It encompasses three primary phases: identification, assessment and analysis, and response (PMI, 2004). The risk management process encompasses essential components such as planning, identification, analysis, response planning and monitoring and control. While there may be slight variations in how authors define the extent of the process the core principles of risk management remain consistent across different perspectives.

Smith et al. (2006) offer a comprehensive perspective on the concept of risk management and its practical application. They emphasize that risk management should not be viewed as a means to predict the future; as such predictions are inherently impossible. Instead, they describe risk management as a tool that enables projects to make more informed decisions based on the available investment information. By utilizing risk management, the aim is to prevent decisions based on inadequate information, ultimately leading to improved overall project performance. The primary motivations behind risk management lie in achieving a clear understanding and awareness of potential risks within a project.

In simpler terms risk management facilitates a better understanding of the potential consequences that may arise from unaddressed risks and provides insights on how to prevent or mitigate them. By effectively managing risks, organizations gain a clearer perspective on the potential challenges and can take proactive measures to avoid or minimize their impact. Engaging in risk management also brings the advantage of attaining a higher level of control over the entire project and fostering more efficient problem-solving processes. This is achieved by establishing a solid foundation of risk-related information and analysis (Thomas, 2009).

The risk management process in project management refers to the systematic approach of identifying, assessing, prioritizing, and managing risks throughout the project lifecycle. It involves various activities and steps aimed at proactively addressing potential threats and

opportunities that may impact project objectives (PMI,2004). According to PMI, the risk management process encompasses the following essential stages:

2.2.1 Risk Identification

Risk identification in risk management is the process of systematically identifying and documenting potential risks that could impact a project or organization. According to the Project Management Institute (PMI), risk identification involves "determining which risks might affect the project and documenting their characteristics It is a crucial step in the risk management process as it lays the foundation for further analysis and mitigation strategies (PMI, 2017) .It serves as the basis for effective risk management, and it is crucial to identify project objectives and their associated risks as early as possible, typically during the project appraisal phase(Yan, 2006). By identifying risks at an early stage, proactive actions can be taken to address them. This involves employing various techniques such as expert judgment, brainstorming, the Delphi technique, and interviews (Kululanga & Kotcha, 2010). During the risk identification process the project team first examines a wide range of potential events that may arise from both internal and external sources. Once a risk is identified, appropriate measures can be implemented to mitigate or manage its impact on the project(Yan, 2006).

2.2.2 Risk Analysis/ Assessment

Risk analysis is the second phase of the Risk management process where the gathered data concerning potential risks are examined and evaluated. Risk analysis and assessment in risk management involve evaluating and understanding the identified risks in order to determine their potential impact, likelihood, and prioritize them based on their significance. According to the Project Management Institute (PMI,2017), risk analysis is the systematic use of available information to determine how often specified events may occur and the magnitude of their consequences. It involves assessing the characteristics of identified risks, analyzing their potential impact on project objectives, and quantifying their likelihood and severity. Risk assessment, on the other hand, involves evaluating the identified risks in terms of their potential impact, likelihood, and urgency. It aims to determine the level of risk associated with each identified risk, allowing for informed decision-making and the development of appropriate risk response strategies.

Risk analysis includes determining the probabilities of adverse events occurring, defining the boundaries of associated uncertainties and quantifying the potential impact of risk event outcomes (Edwards & Bowen, 1998). It involves collecting data and information about the potential risks that have been identified. In this stage, the identified risks are subjected to analysis and evaluation to determine their potential impact on the project. The objective is to prioritize the risks by selecting and shortlisting those with the most significant impact from the initial list of identified threats. Supporting this idea Cooper et al (2005) state that the risk analysis phase includes the short listing of risks that have the highest impact on the project. These risks are derived from the threats that have been identified during the earlier stage of risk identification. While some researchers distinguish between risk assessment and risk analysis as separate processes for the purpose of this paper they will be considered as one process.

There are two methods used to analyze project risks. Quantitative and qualitative methods are commonly employed in project risk management for risk analysis (Gehner, Halman, & de Jonge, 2006; PMI,2017) Quantitative risk analysis involves the use of numerical data and statistical techniques to assess risks. It aims to quantify the potential impact and likelihood of risks using numerical values. This analysis is typically done for larger and more complex projects, as it demands a significant investment of time and effort to complete (Turner,2009). Techniques such as Monte Carlo simulation, decision tree analysis, and sensitivity analysis are commonly employed in quantitative risk analysis. On the other hand, qualitative risk analysis focuses on subjective assessment and evaluation of risks based on expert judgment, experience, and qualitative criteria. It involves evaluating risks based on their characteristics, such as likelihood, impact, urgency, and overall risk rating. Qualitative techniques such as risk matrix, risk probability and impact assessment, risk categorization, and risk scoring are commonly used. By utilizing both quantitative and qualitative methods, project risk management teams can gain a comprehensive understanding of risks, considering both objective and subjective factors. This allows for a more robust risk analysis process and facilitates informed decision-making.

2.2.3 Risk Response

The third phase of project risk management involves implementing risk responses to the identified and evaluated risks. Risk response strategies are the methods used to address the risks

that have been identified and assessed. The choice of response strategy depends on the specific types of risks that are present (Winch, 2002). According to Iso/IEC (2009), PMI (2000), and Smith et al. (2006), there are four primary risk response strategies: risk avoidance, risk reduction, risk transfer, and risk retention.

2.2.3.1 Risk Avoidance

Risk avoidance is a strategy used in project risk management to address potential risks. It involves making changes to the project management plan in order to eliminate or reduce the threat posed by adverse risks. This can be achieved by taking steps to isolate the project objectives from the potential impact of the risk or by adjusting the project's scope, schedule, or objectives to minimize the risk's consequences (PMI, 2004).

It is important to recognize that projects are exposed to numerous potential risks any of which can significantly impact their overall success (Potts, 2008). This underscores the importance of implementing risk management practices early on in the project's lifecycle rather than dealing with the aftermath of a risk event (PMI, 2004). When a risk is identified as having a significant negative impact on the entire project it becomes crucial to reevaluate the project's objectives. In other words if a risk is deemed to have a substantial effect on the project the most effective solution is to avoid it by modifying the project's scope or in extreme cases considering project cancellation.

2.2.3.2 Risk Reduction

Identifying problems that can cause damage becomes easier when there is a comprehensive understanding of the entire project. To mitigate risk it is necessary to modify the areas that are vulnerable (Potts, 2008). Risk reduction can be defined as the process of implementing measures and actions to decrease the probability or impact of potential risks in a project or organizational setting (PMI, 2004). Risk reduction involves taking actions to minimize the likelihood of an event occurring.

2.2.2.3 Risk Transfer

Risk transfer refers to the act of transferring the responsibility of managing a risk from one party to another. It entails shifting the potential adverse consequences and ownership of the risk

response to a third party often accomplished through contractual arrangements or insurance policies.. When a risk can be better managed by another entity with greater capability or capacity the optimal approach is to transfer the risk. According to Potts (2008) it is advisable to transfer the risk to those who possess the expertise to handle it efficiently. Depending on the nature of the risk potential recipients for risk transfer can include the client, contractor, subcontractor, or designer. However, it is important to note that risk transfer does not eliminate the risk but rather shifts its management to a more suitable party (PMI, 2004). This may result in higher costs and additional work commonly referred to as a risk premium (Potts, 2008).

In situations where risks fall outside the control of project management, such as political issues or labor strikes, transferring the risks and their associated negative impacts becomes a viable option (Darnall and Preston, 2010). Additionally, rare and unpredictable catastrophes in a specific environment may necessitate risk transfer (Winch, 2002). It is crucial to understand that risk transfer does not eliminate the risk entirely instead it involves transferring responsibility for its management to a third party. In many cases, a risk premium or compensation is paid to the party assuming the risk (PMI, 2004). Tools for risk transfer include insurance, performance bonds, fixed-cost contracts, warranties, defect liability periods, and guarantees.

2.2.3.4 Risk Retention/Acceptance

In the real world, it is not possible to take advantage of every opportunity or completely eliminate all threats in a project. However, it is crucial to be aware of these risks and opportunities by documenting and identifying them. Risk retention refers to the conscious or unconscious decision of an organization or individual to accept the risk without transferring it to another party. Instead, they choose to bear the potential consequences of the risk themselves (PMI, 2004). This approach becomes necessary when other risk response strategies are not feasible or when the risk is too significant to respond to effectively (Mhetre et al., 2016).

When employing risk retention the organization or individual consciously accepts the risk and handles its consequences as they arise without making changes to project plans or implementing other response strategies (Cooper et al., 2005). It is important to emphasize that the risk response stage should be iterative allowing for adjustments as needed, and supported by an effective control process to ensure proper execution (Klemetti, 2006).In summary, risk retention involves

the deliberate decision to accept and manage risks internally when other response strategies are not practical or suitable. It requires a thoughtful approach to dealing with the potential consequences of the risks involved.

2.4 Risk Monitoring and Control

Risk monitoring is an ongoing process that involves continuously tracking and observing identified risks throughout the project lifecycle. It includes monitoring the status of risks, potential changes in their likelihood or impact, and evaluating the effectiveness of implemented risk response strategies. The project manager should regularly assess and review risks to ensure they are being managed appropriately (PMI, 2004). Continuous monitoring helps in detecting new risks and allows for the removal of past risks from the risk register (Winch, 2009). It is an essential phase of the risk management process as it involves collecting and tracking information about identified risks (Winch, 2002).

Risk monitoring and control encompass a variety of methods and approaches, including the practice of conducting risk reassessment. This involves continuously identifying any newly emerging risks that may arise during the project's duration. Monitoring the overall project status is crucial to identify any changes that may introduce new risks. Conducting status meetings with risk owners helps in discussing and managing risks effectively. Updating the risk register is another important aspect of risk monitoring and control (PMI, 2004). By effectively managing the entire risk management process including risk monitoring the project can be evaluated and lessons learned can be recorded in a risk register. This facilitates future projects and allows for continuous improvements based on the advantages and disadvantages identified (PMI, 2004).

2.5 Risk Management Tools and Techniques

There are many tools and techniques used in managing risk in projects. These includes the risk register, probability and impact matrix, SWOT analysis, the Delphi technique, and Monte Carlo simulation (PMI, 2017). Risk management tools and techniques play a crucial role in effectively managing risks within projects and organizations. These tools and techniques aid in the identification, assessment, analysis, and response planning of risks and enabling informed decision-making.

One such tool is the risk register, which serves as a centralized repository for capturing and documenting identified risks, including their potential impacts, likelihoods, and corresponding

response plans. It facilitates the tracking and monitoring of risks throughout the project lifecycle (PMI, 2017).

Another valuable tool is the probability and impact matrix which involves assigning ratings to risks based on their probabilities and impacts. This matrix helps prioritize risks by highlighting those with higher severity levels allowing project teams to focus their attention on addressing the most critical risks first (PMI, 2017).

The third tool is SWOT analysis. SWOT analysis an established technique, examines the internal strengths and weaknesses of a project or organization as well as external opportunities and threats. By considering these factors, risks can be identified and evaluated comprehensively providing a holistic view of the risk landscape. SWOT analysis also assists in developing effective risk response strategies (Hillson& Murray-Webster, 2017).

The Delphi technique involves gathering expert opinions and input through structured questionnaires or interviews. It facilitates the assessment of risks by aggregating expert knowledge and achieving consensus on various risk factors such as likelihoods, impacts and potential response actions (Hillson& Murray-Webster, 2017). Additionally, Monte Carlo simulation is a quantitative risk analysis technique that utilizes probabilistic inputs to model the project. By generating multiple iterations and simulating various possible outcomes, it provides a probabilistic assessment of project risks and uncertainties, aiding in risk management decision-making (PMI, 2017).

2.6 Project Success

A thorough examination of the project management literature reveals a lack of consensus on a standardized definition for project success (Baccarini, 1999). Despite its importance in project management there is no universally agreed-upon understanding of what constitutes a successful project. One perspective on project success includes meeting the traditional constraints of cost, schedule, and performance objectives (Khakina, 2006 &Prabhakar, 2008). This perspective is often referred to as the "iron triangle" or "triple constraint" of project management. The idea is that a project is deemed successful if it is completed within the allocated budget, meets the scheduled deadlines, and achieves the desired performance or quality standards.

The other perspective as highlighted by Pinto and Slevin (1987) suggests that project success goes beyond meeting cost, schedule, and performance requirements. It includes more complex criteria such as client satisfaction. This perspective acknowledges the importance of achieving client satisfaction as a vital factor in determining project success (Pinto & Slevin, 1987). It encompasses more complex criteria such as client satisfaction. Additionally, Baker, Murphy, and Fisher (1983, 1988 cited in Prabhakar, 2008) highlight that achieving client satisfaction, along with the final outcome, significantly influences the perceived success or failure of projects (Prabhakar, 2008). The project management institute provides a widely acknowledged definition of project success which states that it refers to the extent to which a project achieves its objectives (PMI, 2017). This definition emphasizes the alignment between project outcomes and intended objectives. Moreover, project success can be evaluated by examining stakeholder satisfaction and the realization of expected benefits. When stakeholders perceive that the project has provided value, met their needs and fulfilled their expectations it contributes to overall project success.

2.6.1 Success Criteria

Project success criteria are predetermined objectives or performance measures utilized to evaluate the extent to which a project has achieved its intended objectives and fulfilled stakeholder expectations (PMI, 2017). Additionally, success criteria can be seen as the principles or standards by which favorable outcomes can be achieved within specified requirements (Chan & Chan, 2004). Atkinson (1999) also described success criteria as a measuring tool for project success.

In the construction industry, project success criteria are often considered in terms of completing the project within the defined scope, time, cost, quality, resources, and approved risk levels as agreed upon by project management and senior management (PMI, 2013), it also includes more complex criteria such as client satisfaction (Pinto and Slevin 1987). In this research, the components specified by the project management institute (PMI, 2013) and Pinto and Slevin (1987) will be considered as the guiding framework for the standard form of project risk management. According to the project management institute (2008) project risk management encompassing identification, analysis, response planning, and monitoring and control of risks (PMI, 2008).

2.7 Empirical Review

The literature examined in this study sheds light on various research endeavors that explore the impact of project risk management on the attainment of project success. One such study conducted by Müller and Turner (2010) aimed to identify the key competencies required for project success. Through an extensive survey of 256 project managers from various industries, the researchers found that effective risk management significantly influenced project success. Skilled project managers who demonstrated expertise in risk management were more likely to achieve project objectives, deliver within the scheduled time and budget, and meet stakeholder expectations. These project managers exhibited a proactive approach to identifying and assessing risks, developing appropriate risk mitigation strategies, and monitoring risks throughout the project's lifecycle. The study emphasized the importance of integrating risk management practices into project management processes to enhance project success.

In the same vein Weick and Sutcliffe (2011) asserts that risk management plays a significant role in ensuring project success as it enables stakeholders to acknowledge the existence of potential risks, empowering them to adapt their expectations and actions accordingly. In their study on IT project success, Bakker et al. (2009) found that risk management can be beneficial in certain project contexts. However, they emphasized that merely being aware of the risks is insufficient for ensuring project success. In the same vein, Musyoka (2012) highlights the presence of risk elements such as scope creep, lack of understanding, ambiguous requirements, resource limitations, and technical issues in manufacturing projects. The review underscores the necessity of implementing risk management strategies in various industries including construction and manufacturing to improve project performance.

Another study conducted by Tahir, Tahir, and Shujaat (2019) underscores the critical significance of risk management in the comprehensive planning and execution of projects. By understanding the role of risk management it becomes possible to implement effective measures that enhance project success in terms of adhering to schedules, controlling costs, and ensuring quality. The study establishes a clear relationship between the implementation of risk management practices and the achievement of project success in the construction industry of Pakistan. Similarly the research conduct by Maghanga & Lewa (2019) discovered that risk management practices specifically risk avoidance, risk retention, risk transfer, and risk control,

were implemented in cement manufacturing companies. These practices were examined to determine their impact on project success. Furthermore, a research article by Turner et.al (2016) supports the positive relationship between risk management and stakeholder satisfaction. The study underscored the significance of adopting a comprehensive risk management framework that incorporates various components, including the identification, analysis, and planning of risk responses. This integrated approach empowers organizations to proactively address stakeholder concerns and meet their expectations effectively. This proactive approach fosters stakeholder satisfaction by minimizing project disruptions, meeting project objectives and delivering expected outcome. The findings provide evidence of a significant relationship between project risk management practices and project performance. In other words, the way risks are managed in a project has a notable effect on its overall success.

Research conducted at a local level has shown consistent findings regarding the positive relationship between risk management practices and project success. A study carried out by Million (2018) specifically highlighted the implementation of risk management practices in diverse projects. Through the analysis of the collected data, it was established that there is a positive correlation between risk management and project success. Consistently applying risk management practices enhances the likelihood of achieving project success. In other words, when risk management practices are effectively utilized, it increases the probability of successful project outcomes. Similarly the primary finding of the study conducted by Gumataw (2019) suggests that the implementation of project risk management practices, such as risk management planning, risk identification, risk analysis, risk response planning, and risk monitoring and control, significantly impacts the success of IT projects in Ethio Telecom. More over the study conducted by Mitikie et al (2017) highlights the need for timely risk identification, assessment, monitoring, and control in construction projects to minimize their impact.

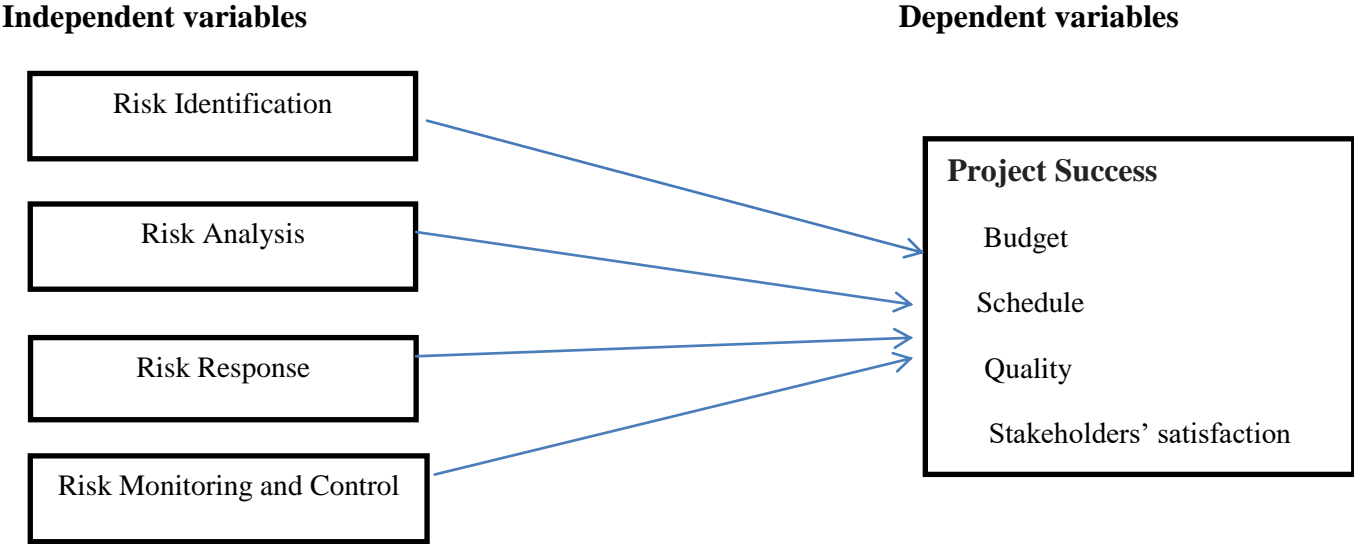
On top of this Chapman and Ward (2003) in their book "Project Risk Management: Processes, Techniques, and Insights" provided a comprehensive overview of project risk management. They highlighted the various aspects of risk management, such as identification, assessment, response planning, and monitoring, and emphasized its critical role in achieving project success. These studies collectively demonstrate that effective project risk management is vital for project success. By proactively identifying, assessing, and managing risks, project managers can

enhance the likelihood of achieving project objectives and mitigating the negative impacts of risks on project outcomes.

2.8 Conceptual Frame Work

After reviewing relevant literature the following conceptual framework has been formulated to guide this study. The framework serves as a structure for conducting the research and is described as follows:

Figure 2.1: Conceptual Frame work



Conceptual framework developed by the researcher

CHAPTER THREE

3. RESEARCH DESIGN AND APPROACH

This section of the research proposal deals with research approach, research design, data sources, sample size and sampling techniques, methods of data collection and data analysis. It also presents the ethical consideration and organization of the study. Moreover it presents how the validity and reliability of the instruments were maintained.

3.1 Research Approach

There are three commonly recognized research approaches: qualitative, quantitative, and mixed methods. In this study mixed approach was employed because it provides improved understanding of research problem than either the quantitative or qualitative data do (Creswell & Creswell, 2013). By employing a mixed research approach in the research, the researcher can benefit from a holistic perspective that considers both subjective experiences and objective measures. This approach allows the researcher to triangulate data, validating and strengthening the findings.

3.2 Research Design

The concept of research design has been defined in diverse manners by various authors. For instance, Creswell (2013) defines it as a plan, outline, or scheme used to generate answers to research problems. De Vos et al. (2011) describe it as the techniques and methods used by a researcher to conduct a study in a logical manner that effectively addresses the research problem. Hameed (2020) views it as a framework of techniques and methods that a researcher selects to logically combine different components of a research project for effective handling of the research problem. In addition, research design involves the process of data collection, instruments utilized in data collection, their usage, and the intended methods of data analysis (Mishra & Alok, 2017). This highlights the significance of research design in providing direction and organization to research by outlining the process that researchers will follow from start to finish.

In this study, an explanatory research design was employed to examine the role of project risk management practices on the success of mega projects in Addis Ababa City Administration. Explanatory research design is a methodological approach utilized to explore causal relationships and elucidate the underlying reasons or mechanisms behind observed phenomena (Creswell, 2014). It is particularly useful when researchers aim to comprehend the factors or variables that contribute to specific events or outcomes, seeking to uncover the "why" behind them.

3.3 Source of Data

Both primary and secondary sources of data were utilized to obtain pertinent information and effectively address research objectives. The primary data were collected using questionnaire from the target population. On top of this the secondary data were collected using interview from top and middle level managers

3.4 Target Population and Sampling Design

3.4.1 Population: population is defined as all the individuals or units of interest who share certain common characteristics in a study (Burns & Grove, 2010). The major population of the study comprises project managers and project team personnel from contractors, consultants involved in mega projects, and the client organization of the Addis Ababa city administration mega project office and other stakeholders (end users).

3.4.2 Sample and sampling technique: According to Beandry and Miller (2016), sampling is one of the most important concepts in the total research endeavor. Taherdoost (2016) describes sampling as a procedure of choosing a small number of people from a larger group to serve as a basis for forecasting the results of the investigation. The sample size of target population were determined by considering the idea of Best and Khan (1989) they suggest, "The ideal sample size of a target population is large enough to serve as an adequate representative and small enough to be selected economically in terms of both time and complexity of analysis."

In this study, a multistage sampling technique was employed, involving two stages. In the first stage active projects were selected. In the second stage, participants including experts and officials from the selected projects, the Addis Ababa City Administration mega project construction office and the end users of the projects were selected. Currently Addis Ababa city

government mega project construction office was carrying out twelve mega projects. Among the twelve projects only six projects were selected. However, among the twelve projects six projects were not considered because the projects were under provision acceptance. Among the selected six mega projects three of them Addis Africa international convention and exhibition center, Zewuditu memorial hospital expansion and Addis Ababa transport bureau head office were selected using simple random sampling technique.

The total population of the study consisted of 80 individuals, including project managers, project team personnel from contractors and consultants involved in mega projects, the client organization of the Addis Ababa City Administration mega project office and other stakeholders (end users). Among this 66 sample respondents were selected using simple random sampling technique. The sample size were determined using Krejcie & Morgan (1970)Table . The table provides sample size based on the population sizes and level of precision.

3.5 Data Collection Methods

Data collection is the process of gathering information or data from various sources for research purposes. It is a critical step in the research process as the quality and validity of the research findings depend on the quality of the collected data. Creswell (2012) defines data collection as a process of acquiring important information. In this study two data collection instruments were used to collect data from the respondents, these were questionnaire and interview. Questionnaire was employed as main data gathering instrument and interview was used as supportive data collection instrument.

3.5.1 Questionnaire

A questionnaire is a data collecting instrument consisting of a series of questions designed to gather data from participants. It is often used in social science research to collect information on attitudes, beliefs, behaviors, and other factors related to a particular topic or population (Johnson & Christensen, 2008). In this study data were collected using questionnaires from respondents. The questionnaire was a five-point Likert-type scale and two types of questions open and close-ended questions were included. The researcher prefers questionnaire because it is easier to handle and simple for respondents to answer and fill with in short time (Koul, 1994). Similarly, it helps to save time by addressing numerous respondents separately at the same time and helps the majority of the respondents to answer their opinion liberally (Kothari, 2004).The study adapted

the questionnaire developed by Murad (2018) to investigate how project risk management practices contribute to the success of mega projects in Addis Ababa City Administration. The adaptation of the instrument was based on a thorough review of the existing literature.

The first step towards collecting data involved obtaining a supporting letter from the school of commerce and submitting it to the manager of the Addis Ababa mega projects office to request permission for data collection. After securing the permission in collaboration with the city project managers and directors of the offices, I arranged a convenient time for the respondents to fill out the questionnaire. Afterward, I carefully selected the individuals who would participate and distributed the questionnaire to 66 respondents, with only one questionnaire remaining unreturned.

3.5.2 Semi structured interview

A semi-structured interview is a research technique used to gather in-depth information from participants about their experiences, opinions, and beliefs (Smith & Osborn, 2008). In addition to the questionnaire, semi-structured interviews were employed to collect relevant data from respondents. The interviews were conducted with six top and middle-level managers of the projects in the Addis Ababa City Administration mega project construction office, who were selected purposefully due to their comprehensive knowledge about the subject matter being studied.

3.6. Methods of Data Analysis

The quantitative data collected through questionnaire were processed and analyzed through descriptive and inferential statistics using Statistical Package for Social Science (SPSS), version 24. Descriptive statistics such as frequency, percentage, mean and standard deviation were employed. The analysis went beyond descriptive statistics; correlation analysis was employed to analyze the relationship between the dependent and independent variables. Moreover, multiple regressions were employed to determine the degree to which the independent variables are influencing the dependent variable.

On the other hand the qualitative data obtained from the field using interview were organized and analyzed thematically. Next, general patterns and main themes were created and reviewed in response to research questions. Finally, the text was analyzed and interpreted.

3.7. Validity and reliability

3.7.1 Validity

Validity according to Wong, Ong and Kuek (2012) refers to the extent to which an instrument measures the constructs it purports to measure. According to Kimberlin and Winterstein (2008) validity is established by expert judgment. In order to ensure the accuracy of the items, the questionnaires questions will be distributed to individuals who possess research experience and are proficient in language. After receiving feedback from these experts, the questionnaire and interview were revised accordingly.

3.7.2 Reliability

Reliability refers to the consistency or stability of scores obtained from a questionnaire or test. A reliable questionnaire will produce consistent results when administered multiple times to the same group of people (Nunnally& Bernstein, 1978). In this study, the reliability of the instrument was tested Cronbach's alpha coefficient were be employed. This method involves calculating the average correlation between all items on a measure.

Cronbach's alpha coefficient can be used to determine the extent to which the items on a measure are measuring the same construct (Nunnally& Bernstein, 1978). Based on this assumption the questionnaire was tested using pilot test to check internal consistency of the item. The questionnaires were distributed to 20 respondents of similar projects other than the projects under study. The computed result of the Cronbach's alpha coefficient were 0.941 hence the instrument was found to be reliable.

3.8 Ethical Considerations

When conducting a study, it is essential to prioritize ethical considerations to protect the rights and well-being of participants. This involves obtaining informed consent from all participants, clearly explaining the study's purpose, procedures, potential risks and benefits, and emphasizing their voluntary participation and right to withdraw (American Psychological Association, 2017). To obtain informed consent for the study the researcher effectively communicated the purpose and objectives of the research to the participants. Additionally, participants were informed about the voluntary nature of their participation and the importance of maintaining anonymity by not disclosing their names. Furthermore, the researcher formally requested permission from the Addis Ababa City Administration Mega Projects Construction Office to conduct the research.

CHAPTER FOUR

4. RESULTS and DISCUSSIONS

This chapter deals with the presentation and analysis of the data gathered through the administration of questionnaires and conducting interviews. The data obtained from the questionnaires were organized in tables and subjected to analysis using statistical measures like frequency, percentage, mean, and standard deviation. Furthermore, regression analysis was utilized to assess the extent to which the independent variables influenced the dependent variable. On the other hand the qualitative data obtained from the field was organized and analyzed thematically. The interview were transcribed and followed by generating the relevant data through indexing and coding. Next, general patterns and main themes were created and reviewed in response to research questions. Finally, qualitative data were used to either confirm or disconfirm results from the quantitative phase of the study.

4.1 Background Information

Respondents were asked to indicate their background information through questionnaire. Responses on their sex, qualification and work experience are summarized in table 4.1

Table 1: Characteristics of respondents

	Variable	Characteristics	Instructors	
			Frequency	%
1	Sex	Male	56	86.2
		Female	9	13.8
2	Age	Under 25	5	7.7
		26-30	20	30.8
		31-35	26	40.0
		36 and above	14	21.5
3	Educational level	Masters	37	56.9
		BA	28	43.1
4	Work experience	< 2	7	10.8
		3-5	26	40.0
		6-10	20	30.8
		>10	12	18.5

The above table 4.1 reveals that 56(86.2%) of the respondents were male, whereas 9(13.8 %) of the respondents were female. This show that the projects sites and project coordinating offices were dominates by male.

The same table shows that 5(7.7%) of the respondents were aged under 20,(30.8%) , and 26(40.%) of the participants were aged between 31-35. Moreover, 14(21.5%)) of the were aged 36 and above .This indicates that the age range in the projects and project coordinating offices was fairly distributed. It can be concluded that there is a relatively even distribution of age groups among respondents, which may contribute to a more comprehensive and well-rounded approach to project risk management.

Regarding the educational qualification , table 4.1 item 3 depicts 37 (56.9%) of the participants were MA holders and 28(43.1%) of the respondents were BA holders. The findings suggest that a significant portion of the participants hold a Master's degree. This indicates that the respondents have the necessary knowledge and expertise to implement the risk management process effectively.

Pertaining the work experience table 4.1 item 4 reveals that 7(10.8%) of the participants had work experience of below two years, whereas, 26 (40%) of the participants s had between three and five years of experience. Moreover, 32 (49.3%) of the respondents had six or more years of work experience. This indicates that half of participants in the projects and project coordinating offices were well experienced in their respective fields. This finding indicates that the respondents have acquired substantial practical knowledge and expertise, which can be extremely valuable for effectively managing the risk management process.

4.2. Project Success

Table 2: Project Success

No	Statement	Mean	Std.
1	The project was completed on time	2.23	.84
2	The project was completed with budget	2.00	.75
3	The project was completed with quality standard	3.05	.85
4	Stakeholders were satisfied with the project performance	3.15	.88
	Grand mean	2.6	0.80

According to Table 4.2.1, item 1, the mean value for the statement the project was completed on time was ($M=2.23$). This indicates that the project was not complete on time, as the mean value is less than the ideal mean ($M=3.00$). The same table also reveals that the mean value for the statement the project was completed with budget ($M=2.00$). This indicates that the project was not completed within the allocated budget. Moreover, the third item in this table shows that the mean value for the statement the project was completed with quality standard ($M=3.05$). This suggests that, on average, respondents rated the project as meeting the quality standard. On top this respondents were asked to provide their views on stakeholder satisfaction with the project's success. The results from table 4.2.1, item 4, reveal that the mean value for stakeholder satisfaction with the project's success was ($M=3.15$). This indicates the perception of the respondents regarding stakeholder satisfaction was moderately positive.

In general the result in table 4.2.1 shows that the grand mean for all four statements combined concerning project success was ($M=2.6$) with a standard deviation of ($St.d=0.80$). This indicates that respondents generally rated the projects as not reaching the desired level of success.

Similarly, the qualitative results from interviews with top and middle-level site managers and the mega project office confirmed the quantitative findings. *“Most of the time, projects were expected to be completed within the planned schedule and budget; however, these projects still did not meet the planned timelines and budgets”.*($M=6$)

It can be concluded that there was moderate performance in completing the project with quality standards and satisfying stakeholders. However, the project's performance was low in terms of meeting the allocated budget and timeline. This finding contradicts the conventional notion that project success is solely determined by the achievement of intended objectives, meeting stakeholder expectations and delivering desired outcomes. In other words, successful projects are those that meet the schedule, budget, quality standards, stakeholder satisfaction, and overall project performance (Yong and Mustafa, 2012).

4.3. Risk Management Process

4.3.1. Application of Risk Identification Practice

Table 3: Risk Identification

No	Statement	Mean	Std.
1	The concept risk for the project is clearly defined	2.46	.867
2	Risks are identified throughout the project lifecycle	2.42	.869
3	All key project stockholders are involved in the risk identification process	2.13	.88
4	Structured and formal risk identification tools and techniques are used to identify risks (review of documentation, brainstorming, interviews expert judgment)	2.33	.97
5	Risk register is produced as an output in risk identification process	2.00	.93
	Grand mean	2.26	0.9

Table 4.3.1 indicates the practice of risk identification as risk management tool in mega projects of Addis Ababa city Administration. The result in table 4.3.1 reveals that the mean value for the statement the concept risk for the project was clearly defined was (M=2.46). This indicates that there is a lack of clarity in their understanding and awareness of the risks associated with the project. The same table also reveals the mean value for the statement risks are identified throughout the project lifecycle was (M=2.42). This indicates risk there was a lower level of agreement or perception that risks are adequately identified throughout the project lifecycle.

Furthermore, the statement in the third item was concerning key project stockholders involvement in the risk identification process in mega projects of Addis Ababa city Administration. The mean value for the statement was (M=2.13). This indicates that key stakeholders were not adequately involved in the risk identification process or the participation of the key stakeholders were low.

Table 4.3.1 also reveals the mean value for the statement structured and formal risk identification tools and techniques were used to identify risks was (M=2.33). This indicates that there was a lack of adequate utilization of structured and formal risk identification tools and techniques. The fifth item in the table shows the mean value for the statement risk register is produced as an output in risk identification process was (M=2.00). This indicates that risk register was not sufficiently produced as an output in risk identification process. In general Table 4.3.2 indicates the status of risk Identification practice in in mega projects of Addis Ababa city administration . The result in this table reveals that the grand mean value for the risk identification process was (M=2.26) . This indicates that the application of risk identification to the project was rated as poor. The standard deviation value (St.dv=0.9) shows that there was low variability or dispersion in individual response.

The result from the interview confirms the result obtained from the quantitative result. Some of the responses from these managers and team leaders regarding the practice of risk identification included the following:

“The practice risk identification was not common in our project, simply risk are tackles when they just appear”.(M-1).

“Risk identification is done rarely ,it is not continuous process”.(M-3)

The finding from the quantitative and qualitative data reveals that the practice of risk identification was not effectively conducted. Even though, risk identification is the foundation in the project management process, in practice it was not serving as a foundation to mitigate risk in the projects understudy. This contradicts with the idea risk identification is a crucial step in the risk management process as it lays the foundation for further analysis and mitigation strategies (PMI, 2017).

4.3.2. Application of Risk Analysis Practice

Table 4.3.2.Respondents view regarding application of risk analysis practice to the project

Table 4: Risk Analysis

No	Statements	Mean	Std.
1	Standard and useful tools and techniques are used to analyze risks	1.96	.86
2	Risk is analyzed by using qualitative analysis method	3.47	.95
3	Risk is analyzed by using quantitative analysis method	2.03	.70
4	Risk is analyzed based on its likelihood of occurrence	2.58	.93
5	Risk is ranked based on its impact to the project	3.50	.97
	Grand mean	2.70	0.88

Table 4.3.2 indicates the status of application of risk analysis as risk management process in Addis Ababa mega projects. The result in table 4.3.2 reveals that the mean value for the statement standard and useful tools and techniques were used to analyze risks was (M=1.96). This indicates that standard and useful tools and techniques were not effectively employed to analyze risks in the mega projects of Addis Ababa City Administration. The same table also reveals the mean value for the statement risk was analyzed by using qualitative analysis method was (M=3.47). This indicates that qualitative analysis methods were effectively employed to analyze risks in the mega projects of Addis Ababa City Administration. Furthermore, the statement in the third item was concerning the utilization of quantitative analysis method to analyze the risk in in mega projects of Addis Ababa city Administration. The mean value for the stamen was (M=2.03). This indicates quantitative analysis methods were not effectively utilized in the analysis of risks.

Table 4.3.2 also reveals the mean value for the statement risk is analyzed based on its likelihood of occurrence was (M=2.58). This indicates that the analysis of risks in the mega projects of

Addis Ababa City Administration moderately takes into account the likelihood of their occurrence. Item 5 in the table shows the mean value for the statement risk is ranked based on its impact to the project was (M=3.50). This indicates that risk was ranked based on their impacts to the project. In general Table 4.3.3 indicates the status of risk analysis practice to the project in in mega projects of Addis Ababa city administration . The result in this table reveals that the grand mean value for the risk analysis process was (M=2.70) . This indicates that the application of risk analysis to the project was rated as moderately poor. The standard deviation value (St.dv=0.88) shows that there was low variability or dispersion in individual response.

Similarly, the qualitative results from interviews with top and middle-level site managers and the mega project office confirmed the quantitative findings. Some of the responses from these managers and team leaders regarding the practice of risk identification included the following:

“The identified risk were not were analyzed and assessed exhaustively. This is because of many reasons for instance lack of knowledge lack of emphasis given to the role of risk analysis”.(M=5)

It can be concluded that though there was moderate performance in completing the project with quality standards and with stakeholders' satisfaction. However, the practice of risk analysis to the project performed poorly . This contradicts with the idea effective risk analysis is essential for the successful execution of a project as it enables the identification, evaluation, and management of potential risks that may impact project objectives. By conducting a thorough analysis of risks, project teams can proactively recognize and address potential issues, thereby improving the project's likelihood of success. Through comprehensive risk assessment, project teams can take proactive measures to mitigate the impact of risks, ultimately increasing the probability of achieving desired project outcomes (PMI, 2017).

4.3.3. Application of Risk Response Practice

Table 5: Risk response

No	Statement	Mean	Std.
1	There is a well-developed strategy within the project to respond to risk.	2.26	.76
2	Options are developed to enhance opportunities and to reduce threats to project objectives	2.29	.84
3	Risks are addressed by their priority	3.56	.80
4	Influence of predictability matrix is used for risk response	2.07	1.00
5	The most appropriate risk treatment option is selected	3.67	.83
6	Project management plan, are updated after risk response process	3.44	.90
	Grand mean	3.01	0.82

According to the result in table 4.3.3 item 1, the mean value for the statement there was a well-developed strategy within the project to respond to risk was ($M=2.26$) this indicate that there was no well-developed strategy within the project to respond to risk. The same table also reveals that the mean value for the statement options are developed to enhance opportunities and to reduce threats to project objectives was ($M=2.29$). This indicates that options were not well-developed to enhance opportunities and to reduce threats to project objectives. Table 4.3.3 item 3, reveals that that the mean value for the statement risks were addressed by their priority was ($M=3.56$). This indicates that risks were addressed by their priority. Moreover, the fourth item in this table shows that the mean value for the statement influence of predictability matrix is used for risk response was ($M=2.07$). This indicates that influence of predictability matrix was not used for risk response effectively.

The same table also shows that the mean value for the statement the most appropriate risk treatment option is selected was ($M=3.67$). This indicates that the most appropriate risk treatment option was selected to respond to the risk raised. Table 4.2.4 item,7 shows that the mean value for the statement project management plan, are updated after risk response process was ($M=3.44$).

This indicates that the project management plans were updated to a moderately high level after the risk response process

In summary, the result in table 4.3.3 shows the grand mean value for the practice of project risk response was (M=3.71). This reveals that the practice of project risk response was moderately high. The standard deviation value of (Std.=1.05) indicates that there was high variation in individual responses.

In the same vein, the qualitative results from interviews with top and middle-level site managers and the mega project office confirmed the quantitative findings. Some of the responses from these managers and team leaders regarding the practice of risk identification included the following:

“If risk arise in our project the project team responds automatically by considering many options and selects the best fit solution among the many alternatives”. (M=2)

“In my project, the project management plan was updated after the risk response process because the measures taken to address the risks necessitated changes to the initial plan”.(M=4)

Based on the above information from the quantitative and qualitative analysis, it can be concluded that the practice of risk response was implemented effectively to mitigate risks that arose during the project execution. This concurs with the idea proposed by Smith et al. that through the implementation of suitable risk response strategies such as risk avoidance, risk transfer, risk mitigation, or risk acceptance, project teams can proactively tackle potential threats. This proactive approach to risk response equips projects with better capabilities to navigate uncertainties and overcome challenges, leading to improved project outcomes and reduced adverse impacts of risks (Smith et al. (2006).

4.3.4. Application of Risk Monitoring and Control Practice

Table 6: Risk Monitoring and control

No	Statements	Mean	Std.
1	Risks that occur within the project are controlled in a way that goes with the goal and objective of the project	3.92	.77
2	Effectiveness of risk management process is evaluated throughout the project	2.63	1.28
3	There is an open and effective communication channel between the project team, the contractors, suppliers, client and other project stakeholders.	3.55	.79
4	Different tools and techniques are used in risk monitoring and control	2.86	1.22
5	Risk registrar was updated regularly	2.98	1.01
	Grand mean	3.18	1.02

The result in table 4.3.4 reveals that the mean value for the statement risks that occur within the project are controlled in a way that goes with the goal and objective of the project was (M=3.92). This suggests that risks within the project were effectively managed in a manner consistent with the project's intended goals and objectives.

Table 4.3.4 item,2 shows that the mean value for the statement effectiveness of risk management process is evaluated throughout the project was (M=2.63). This indicates that the effectiveness of the risk management process was evaluated at a moderately low level throughout the project. Similarly item 3 of this table, reveals that the mean value for the statement there was open and effective communication channels between the project team, the contractors, suppliers, client and other project stakeholders was (M=3.55). This indicates that there were open and effective communication channels between the project team, the contractors, suppliers, client and other project stakeholders.

More over item 4, shows that the mean value for the statement different tools and techniques are used in risk monitoring and control was (M=2.86). This reveals that the utilization of various tools and techniques in risk monitoring and control was rated moderately low in terms of effectiveness. In addition table 4.3.4 reveals that the mean value for the statement risk registrar was updated regularly was (M=2.98). This indicates that the regular updating of the risk registrar was rated as moderately effective.

In general the result in this table shows that the grand mean value for project risk monitoring and control practice was (M = 2.39). This indicates that the practice of project risk monitoring and control was rated as low.

“In the case of our project, risk monitoring was not conducted continuously in a planned manner. Instead, we evaluated, controlled, and monitored risks only when project managers felt that they could occur”.(M=2)

Based on the above information from the quantitative and qualitative analysis it can be concluded that the practice of monitoring and control was not conducted continuously and effectively. This disagrees with the concept that the project manager should regularly assess and review risks to ensure they are being managed appropriately (PMI, 2004). Continuous monitoring helps in detecting new risks and allows for the removal of past risks from the risk register (Winch, 2010).

In summary the result of the descriptive analysis reveals that risk monitoring and control (Mean: 3.14) and risk response (Mean: 3.01) processes were performed relatively well with mean scores above the ideal threshold of 3.00. The project team seems to have a good grasp on responding to identified risks and effectively monitoring and controlling them. On the other hand risk identification (Mean: 2.69) risk assessment (Mean: 2.70) processes were performed poorly and needing improvement since their mean scores fall below the ideal threshold of 3.00.

4.4 Correlation

Table 7: Correlation

		Project success	Risk Identification	Risk analysis	Risk response	Risk monitoring and control
Project success	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	65				
Risk Identification	Pearson Correlation	.272*	1			
	Sig. (2-tailed)	.029				
	N	65	65			
Risk analysis	Pearson Correlation	.137	.560**	1		
	Sig. (2-tailed)	.276	.000			
	N	65	65	65		
Risk response	Pearson Correlation	.460**	.316*	.282*	1	
	Sig. (2-tailed)	.000	.010	.023		
	N	65	65	65	65	
Risk monitoring and control	Pearson Correlation	.083	.580**	.607**	.455**	1
	Sig. (2-tailed)	.513	.000	.000	.000	
	N	65	65	65	65	65

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Based on the correlation analysis, risk response has the strongest correlation with project success ($r = 0.460^{**}$, $p < 0.01$). This indicates that more effective risk response strategies are associated with higher project success. Additionally, there is a moderate correlation with risk identification ($r = 0.272^*$, $p = 0.029$), highlighting the crucial role of accurately identifying and recognizing risks in achieving successful project outcomes.

However, the correlation between project success and risk analysis is not statistically significant ($r = 0.137$, $p = 0.276$). This suggests that the relationship between project success and risk analysis may be weak or negligible when compared to the other variables. Similarly, the correlation between project success and risk monitoring and control is also not statistically significant ($r = 0.083$, $p = 0.513$). This indicates that the relationship between project success and risk monitoring and control may be weak or less pronounced compared to other variables.

4.5 Regression analysis

Regression is a statistical method used to analyze the relationship between a dependent variable and one or more independent variables. It aims to predict or estimate the value of the dependent variable by considering the values of the independent variables (Kutner, et.al,2005). Prior to conducting regression analysis, it is essential to perform testing the assumptions of regression model(Montgomery et.al, 2012)

4.5.1 Assumption of Regression Analysis

Assumption of Linearity Test

According to Keith (2006), some researchers argue that the assumption of normal distribution is of utmost importance in regression analysis as it directly influences the bias of the overall analysis results. In multiple regression analysis, it is assumed that there is a linear relationship between the independent variables and the dependent variable. This means that the effect of the independent variables on the dependent variable is expected to be proportional and consistent across the range of values. According to the findings presented in Annex C, it can be inferred that the relationship between the response or outcome variable and predictors is approximately linear. This suggests that the variables involved in the analysis exhibit a linear association, implying that changes in the predictors are associated with consistent and proportional changes in the response variable along a straight line.

Assumption of Multicollinearity

Multicollinearity refers to strong correlations among independent variables in a regression model, which can lead to unstable coefficient estimates and difficulties in interpreting individual variable effects. To identify multicollinearity, several statistical tests and measures are available.

One commonly used test is the Variance Inflation Factor (VIF), which quantifies the extent to which the variance of an estimated regression coefficient is inflated due to multicollinearity. Higher VIF values indicate a stronger correlation between a specific independent variable and the other predictors in the model, indicating a higher degree of multicollinearity.

Another measure used to assess multicollinearity is tolerance. Tolerance measures the proportion of variance in an independent variable that is not explained by the other independent variables in the model. A tolerance value close to 1 suggests low multicollinearity, indicating that the

independent variable is not highly correlated with the other predictors. Conversely, a tolerance value close to 0 suggests high multicollinearity, implying a strong correlation with the other predictors. In this study, all the tolerance value are less than 1 and the VIF values are greater than 1(See annex C).

Assumption of Normality

This assumption can be tested through scattered plot of the standardized residuals (Field etal,2012).. Based on the scatter plot of standardized residuals against predicted values, there are no obvious deviations from normality. The residuals appear to be evenly distributed around the line of best fit, without any clear patterns or outliers indicating a significant departure from normality. In this research residuals appear to be evenly distributed around the line

4.5.2 Regression Analysis

In this section, regression analysis (as displayed in Table 4.5.1) was employed to assess the extent to which the independent variables influenced the dependent variable. The main objective was to assess the extent to which the independent variables namely identification, analysis, response, monitoring and control, contribute to the observed variation in the project success.

Table 8:Regression model showing nexus of relationship between independent Variables

Model	R	R Square	Adjusted R Square	Std Error of the Estimate	Change Statistics			
					F Change	df1	df2	Sig. F Change
1	.539a	.290	.243	.62580	6.136	4	60	.000
Predictors(constant), Risk identification, Risk analysis, Risk response, and Risk monitoring and control								
Dependent variable : Project success								

Table 4.5.1 shows the findings of the regression model^s regarding the relationship between the independent variables and the dependent variable project success. The table indicates that the correlation coefficient (R) between the independent variables and the dependent variable is

(0.539) signifying a moderate positive correlation. Additionally, the coefficient of determination (R Square) is 0.290, meaning that the model explains approximately 29% of the variance in project success.

These results suggest that the four independent variables considered in the model (Identification, Analysis, Response, and Monitoring and Control) collectively account for 29% of the variation observed in project success. However, it's important to note that there might be other factors not included in the model that also influence project success.

Table 9:ANOVA Result

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.612	4	2.403	6.136	.000b
	Residual	23.498	60	.392		
	Total	33.110	64			

The ANOVA results confirm the findings of the regression analysis. The F value (F= 6.136) and the significance of ($p < 0.000$) indicate that the four independent variables, risk identification, risk analysis, risk response and risk monitoring and control, all have a significant impact on project success.

Table 10:Regression Analysis model for project success in Addis Ababa mega projects

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error				Beta	Lower Bound	Upper Bound	Tolerance.
1	(Constant)	.660	.629		1.051	.298	.597	1.918		
	Identification	.340	.169	.284	2.011	.049	.002	.679	.592	1.689
	Analysis	.058	.215	.039	.272	.786	.371	.488	.566	1.766
	Response	.634	.151	.513	4.190	.000	.331	.937	.789	1.268
	Monitoring and control	.320	.147	.339	2.181	.033	.614	-.027	.489	2.046

Table 4.5.3 provides an overview of the step-wise regression model used to analyze the role of risk management practice on project success. The table presents the results obtained from this model to test the relationships between each predictor variable and the dependent variable. Moreover Tables 4.5.3 was created as extracted subsets from Table 4.5.3. These tables were developed to provide more focused and specific information regarding certain aspects or variables related to the data presented in Table 4.5.3. They offer a more detailed analysis of specific components or relationships within the broader context presented in Table 4.5.3

Table 11:Risk Management process and project success

Model Dependent Variable	Unstandardize d Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Boun d	Upper Boun d	Tolerance.	VIF
Project success									
Risk Identification	.340	.169	.284	2.011	.049	.002	.679	.592	1.689
Risk analysis	.058	.215	.039	.272	.786	.371	.488	.566	1.766
Risk Response	.634	.151	.513	4.190	.000	.331	.937	.789	1.268
Monitoring and Control	.320	.147	.339	2.181	.033	.614	.027	.489	2.046

Table 4.5.4 was derived from the above Table 4.2 the table presents the results of a regression analysis with project success as the dependent variable.

Results of the regression analysis in table 4.5.4 reveals that Beta coefficient β , for risk identification was ($\beta= 0.284$), the t-value of ($t= 2.011$) and the associated (p-value = 0.049 ; $p > 0.05$) indicates that there is statistically significant relationship between risk identification and project success. Therefore, we can confidently conclude that risk identification significantly influences project success. On top of this table 4.3 shows the tolerance value of ($0.592 < 1$) and the Variance Inflation Factors VIF value of ($1.689 > 1$) indicates that the assumptions of multi collinearity were not violated.

Results of the regression analysis in table 4.5.4 reveals that Beta coefficient β , for risk analysis was ($\beta= 0.039$), the t-value of ($t= 0.272$) and the associated (p-value = 0.786 ; $p > 0.5$) indicates

the risk analysis has no statistically significant impact on project success. On top of this table 4.3 the tolerance value of (0.566<1) and the variance inflation factors (VIF) value of (1.766>1) indicates that the assumptions of multicollinearity were not violated.

Results of the regression analysis in table 4.5.4 reveals that Beta coefficient β , for risk response was ($\beta = 0.513$), the t-value of ($t = 4.190$) and the associated (p-value = 0.000; $p < 0.5$) indicates the risk response has a statistically significant and positive impact on project success. On top of this table 4.3 the tolerance value of (0.789<1) and the Variance Inflation Factors VIF value of (1.268>1) indicates that the assumptions of multi collinearity were not violated

Results of the regression analysis in table 4.5.4 reveals that Beta coefficient β , for risk monitoring and control was ($\beta = -0.320$), the t-value of ($t = -2.181$) and the associated (p-value = 0.033; $p < 0.5$) indicates the risk monitoring and control has a statistically significant impact on project success. On top of this table 4.3 the tolerance value of (.489<1) and the Variance Inflation Factors VIF value of (2.046>1) indicates that the assumptions of multi collinearity were not violated.

In summary the result of the regression analysis reveals that risk identification, risk response and risk monitoring and control have a statistically significant impact on project success. This finding aligns with the research conducted by Hillson and Murray-Webster (2007), which states that risk identification, response, and monitoring are interconnected and synergistic, with a strong identification process supporting effective response strategies and ongoing monitoring for improved project outcomes and risk mitigation. However, the result of the regression analysis reveals that risk analysis has no statistically significant impact on project success. These findings appear to contradict the results of the study by Chapman and Ward (2003), which found that projects with comprehensive risk analysis and management processes tend to have a higher likelihood of achieving project objectives, meeting stakeholder expectations, and delivering on time and within budget

CHAPTER FIVE

5. SUMMARY OF MAJOR FINDINGS, CONCLUSION and RECOMMENDATIONS

This chapter provides a summary of the main research findings accompanied by conclusions drawn from these findings. Additionally, recommendations were provided to address the issues related to project risk management practices in mega projects implemented by the Addis Ababa City Administration, with the intention of offering practical solutions to mitigate these challenges.

5.1 Summary of findings

The general objective of this study is to examine the role of project risk management practices on mega projects success in Addis Ababa city administration. In order to achieve this objective the following four basic research questions were raised.

1. Does risk identification affect the successful completion of mega projects in Addis Ababa?
2. Does risk analysis affect the successful completion of mega projects in Addis Ababa?
3. Does risk response affect the successful completion of mega projects in Addis Ababa?
4. Does risk Monitoring and control affect the successful completion of mega projects in Addis Ababa?

The data collected using questionnaire was analyzed using frequency, percentage, mean and standard deviation and regression. More over data collected using interview was analyzed thematically. Based on the above analysis the following results were obtained.

1. Practice of risk management practices employ in the mega projects executed by Addis Ababa city administration?

Risks were not adequately identified on mega projects in Addis Ababa city administration with mean values (2.26).

- Actors who participate in the project execution lack a clear understanding of the risks associated with the projects they execute. It is evident that active participation of project implementers in training, specifically regarding project risk management and the risks associated with their respective projects would familiarize them with the concept of project risks. Unfortunately, no training was given to the actors who implement the projects

- Risks were not identified throughout the project life cycle.
- Involvements of stakeholders in risk identification are critical .However the result of the analysis shows that stakeholders' participation in risk identification of risk was minimal.
- Risk are identification demands utilization a standardized and formal tools and techniques to identify risks. On the contrary the result of the analysis shows that there was poor utilization of the tools and techniques in risk identification.
- The production of risk registrar in the projects carried out by Addis Ababa mega project office was poorly practiced.

There was poor project risk analysis practice on mega projects in Addis Ababa city administration with mean value (M=2.7)

- The result of the analysis reveal that standard and useful tools and techniques were not effectively utilized for analyzing risks, while qualitative analysis methods were employed effectively. However, quantitative analysis methods were not effectively utilized in the analysis of risks.
- The analysis of risks in these projects moderately takes into account the likelihood of their occurrence and risks were ranked based on their impacts to the project.
- The qualitative responses from managers and team leaders further highlighting a lack of exhaustive analysis and assessment of identified risks. This is attributed to reasons such as lack of knowledge and inadequate emphasis on the role of risk analysis.

The practice of risk response in Addis Ababa city administration's mega projects was moderately high mean value (M=3.01)

- The result of the analysis reveals that there was a lack of well-developed strategies to respond to risks, and options to enhance opportunities and mitigate threats were not effectively developed. Additionally, the utilization of the predictability matrix for risk response was not effectively implemented, suggesting the need for improvement in using this tool.
- However, risks were addressed based on their priority, and appropriate risk treatment options were selected. Project management plans were moderately updated after the risk response

process, demonstrating a proactive approach to adjusting plans based on the measures taken to address risks.

- The qualitative responses from interviews support these findings, with project teams mentioning their automatic response to risks by considering multiple options and choosing the most suitable solution. The importance of updating project management plans after the risk response process was recognized to effectively manage identified risks.
- Overall, the findings indicate that the practice of project risk response in Addis Ababa City Administration's mega projects was moderately high.

The practice of project monitoring and control in Addis Ababa city administration's mega projects lacks continuity and effectiveness mean value (M=3.18)

- The result of the analysis indicates that risks occurring within the projects were effectively controlled in alignment with the project's goals and objectives and there was open and effective communication among the project team, contractors, suppliers, clients, and other stakeholders, highlighting the importance of clear and efficient communication for successful project monitoring and control
- However, evaluation of the effectiveness of the risk management process throughout the project was also found to be at a moderately low level.
- The utilization of various tools and techniques in risk monitoring and control, as well as the regular updating of the risk register were considered moderately effective.
- Overall, the practice of project risk monitoring and control in Addis Ababa City Administration's mega projects was rated as low. This is supported by the qualitative response from project managers, with one acknowledging the lack of continuous and planned risk monitoring. This contradicts the recommended approach of regularly assessing and reviewing risks for effective management.

The mega projects carried out by Addis Ababa City administration mega project office fail to meet the desired level of success mean value (M=2.6)

- The result of the analysis reveals that the projects were not completed on time
 - The result of the analysis reveals that the project exceeded the allocated budget

- However, the projects achieved a moderate level of compliance with quality standards and stakeholders satisfaction..
- The overall result of the analysis shows the projects as not reaching the desired level of success.

1. Effect of Risk identification on project success

The Beta coefficient β , for risk identification was ($\beta= 0.284$), the t-value of ($t= 2.011$) and the associated ($p\text{-value}=0.049; p > 0.05$) indicates that there is statistically significant relationship between risk identification and project success. Therefore, we can confidently conclude that risk identification significantly influences project success

2. Effect of risk analysis on project success

Beta coefficient β , for risk analysis was ($\beta= 0.039$), the t-value of ($t= 0.272$) and the associated ($p\text{-value}=0.786; p > 0.5$) indicates the risk analysis has no statistically significant impact on project success.

3. Effect of risk response on project success

The Beta coefficient β , for risk response was ($\beta= 0.513$), the t-value of ($t= 4.190$) and the associated ($p\text{-value}=0.000; p < 0.5$) indicates the risk response has a statistically significant and positive impact on project success.

4. Effect of risk monitoring and control on project success

The Beta coefficient β , for risk monitoring and control was ($\beta= -0.320$), the t-value of ($t= -2.181$) and the associated ($p\text{-value}=0.033; p < 0.5$) indicates the risk monitoring and control has a statistically significant impact on project success.

5.2 Conclusion

Based on the findings of the study it can be concluded that risk management practices in mega projects within Addis Ababa City Administration reveals areas of concern. Project monitoring and control received the highest mean value of ($M=3.18$), indicating a relatively well-performed practice. However, there is a need for improved continuity and effectiveness in monitoring risks and implementing control measures. The practice of risk response received a moderately high mean value of ($M=3.01$), suggesting some effective strategies are being implemented to address identified risks. Nevertheless, there is still room for improvement in terms of efficiency and effectiveness. On the other hand, risk analysis was rated relatively low with a mean value of

M=2.7), indicating a need for considerable improvement in conducting comprehensive risk analysis and assessing the potential impacts and likelihood of identified risks. Similarly, risk identification received the lowest mean value of (M=2.26), highlighting the inadequate recognition of potential risks at the early stages of the projects. Addressing these concerns and enhancing risk analysis and identification practices are crucial for ensuring robust risk management in mega projects within Addis Ababa City Administration. More over the finding reveal the mega projects carried out by Addis Ababa City administration's mega project office have failed to achieve the desired level of success. While there was a moderate level of compliance with quality standards and stakeholders' satisfaction, the projects experienced delays in completion and exceeded their allocated budgets.

According to the regression analysis results, risk response is identified as the most influential factor with a highly significant relationship ($p = 0.000$). This indicates that implementing effective risk response strategies is crucial for achieving successful project outcomes. Following risk response, risk monitoring and control exhibit a statistically significant relationship ($p = 0.033$), suggesting its importance in project success. While risk identification also shows a significant relationship ($p = 0.049$), it is not as strongly associated as risk response. On the other hand, the p-value for risk analysis ($p = 0.786$) indicates a weak or negligible relationship with project success.

5.3 Recommendations

Based on the conclusion drawn the following recommendations are suggested

- The Addis Ababa mega projects construction office needs to enhance awareness among project execution actors regarding project risk management practices
- Risk identification is not a one-time activity; therefore, the Addis Ababa Mega Projects Construction Office should identify risks throughout the project life cycle
- Risk identification, risk analysis and risk monitoring and control should be carried out with maximum care to ensure exhaustiveness and active participation of all stakeholders.
- Project execution actors need to identify, assess, respond to, and monitor and control risks using standard tools and techniques

- Risk should be analyzed based on its likelihood of occurrence and its impact to the project
- The Addis Ababa mega projects construction office should to develop strategies and options to effectively respond to risks, enhance opportunities, and mitigate threat
- The Addis Ababa mega projects construction office should strengthen the formulation of risk response strategies by conducting thorough risk analysis and considering a wide range of potential scenarios.
- The Addis Ababa mega projects construction office shall implement robust monitoring and control mechanisms to evaluate the effectiveness of the risk management process.
- The Addis Ababa mega projects construction office should focus on enhancing project planning, scheduling, and budgeting to minimize delays and cost overruns. This may involve conducting thorough feasibility studies, setting realistic timelines, and implementing effective cost control measures

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Appendices

Appendix A Questionnaire

Addis Ababa University
College of Business and Economics
School of Commerce

The objective of this questionnaire is to collect accurate and necessary information concerning the role of project risk management practices on mega project success in Addis Ababa City Administration. Hence, the success and effectiveness of this research is highly dependent on the accurate and genuine information that you give. Hence, you are kindly requested to read the directions and corresponding items of each section and respond accordingly. Please be sure that your responses remain confidential and used only for academic purpose.

Thank you in advance for your collaboration!!!

General direction

1. No need of writing your name on the questionnaire
2. Please follow the instruction when filling out the questionnaire

Part I . General information

Put(x)mark if you agree with the given option

- 1.1 Sex A. Male B. Female
- 1.2 Age A. Under 25 B.25-30 C.31-35 D.36 and above
- 1.3 Educational Level
- A. Masters B. Degree C. Diploma D. other
- 1.4 Year of experience in project work
- A. Less than 2 B. 3-5 C. 6-10 D. >10

Part II: Project Risk Management Practices

The following are a series of statements that measure your view regarding the extent to which the following project risk management practices are applied in your project. Please think about your view regarding the extent to which the following project risk management practices are practiced in your project and indicate your responses by marking an 'X' on the provided space for each statement.

Key: 5= Strongly agree 4= Agree 3= Neutral 2= Disagree 1=Strongly disagree

A. Project success

No	Statements	5	4	3	2	1
1	The project is completed with time					
2	The project is completed with budget					
3	The project is completed with quality standard					
4	Stakeholders are satisfied with the project performance					

B. Risk Identification

No	Statements	5	4	3	2	1
1	The concept risk for the projects clearly defined					
2	Risks are identified throughout the project lifecycle					
3	All key project stockholders are involved in the risk identification process					
4	Structured and formal risk identification tools and techniques are used to identify risks (review of documentation, brainstorming, interviews expert judgment)					
5	Risk register is produced as an output in risk identification process					

C. Risk Analysis

No	Statements	5	4	3	2	1
1	Standard and useful tools and techniques are used to analyze risks					
2	Risk is analyzed by using qualitative analysis method					
3	Risk is analyzed by using quantitative analysis method					
4	Risk is analyzed based on its likelihood of occurrence					
5	Risk is ranked based on its impact to the project					

D. Risk Response

No	Statements	5	4	3	2	1
1	There is a well-developed strategy within the project to respond to risk.					
2	Options are developed to enhance opportunities and to reduce threats to project objectives					
3	Risks are addressed by their priority					
4	Influence of predictability matrix is used for risk response					
5	The most appropriate risk treatment option is selected					
6	There is open and effective communication channels between us the contractors, suppliers, client and other project stakeholders					
7	Project management plan, are updated after risk response process					

E. Monitoring and control

No	Statements	5	4	3	2	1
1	Risks that occur within the project are controlled in a way that goes with the goal and objective of the project					
2	Effectiveness of risk management process is evaluated throughout the project					
3	There is open and effective communication channels between the project team, the contractors, suppliers, client and other project stakeholders.					
4	Different tools and techniques are used in risk monitoring and control					
5	Risk registrar was updated regularly					

Part III: Open ended questions

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

Appendix B

Interview Guide

1. How is risk managed in your project?
2. Does your project apply project risk management process?

Appendix C

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.539 ^a	.290	.243	.62580	1.437

a. Predictors: (Constant), CME_mean, RESe_mean, IDe_mean, ANE_mean

b. Dependent Variable: SC_mean

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.612	4	2.403	6.136	.000 ^b
	Residual	23.498	60	.392		
	Total	33.110	64			

a. Dependent Variable: SC_mean

b. Predictors: (Constant), CME_mean, RESe_mean, IDe_mean, ANE_mean

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.660	.629		1.051	.298
	IDe_mean	.340	.169	.284	2.011	.049
	ANe_mean	.058	.215	.039	.272	.786
	RESe_mean	.634	.151	.513	4.190	.000
	CME_mean	-.320	.147	-.339	-2.181	.033

Coefficients^a

Model		95.0% Confidence Interval for B		Collinearity Statistics	
		Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)				
	IDe_mean			.592	1.689
	ANe_mean			.566	1.766
	RESe_mean			.789	1.268
	CME_mean			.489	2.046

a. Dependent Variable: SC_mean

	Mean	Std. Deviation	N
Predicted Value	2.7154	.38754	65
Std. Predicted Value	.000	1.000	65
Standard Error of Predicted Value	.166	.050	65
Adjusted Predicted Value	2.7105	.37278	65
Residual	.00000	.60593	65
Std. Residual	.000	.968	65
Stud. Residual	.004	1.012	65
Deleted Residual	.00486	.66333	65
Stud. Deleted Residual	.005	1.027	65
Mahal. Distance	3.938	2.933	65
Cook's Distance	.020	.043	65
Centered Leverage Value	.062	.046	65

a. Dependent Variable: SC_mean

