



**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF BUSSINESS AND ECONOMICS**  
**MASTER OF BUSSINESS ADMINISTRATION**

**ASSEMENT OF INFLUENCE OF RISK MANAGEMENT PRACTICES ON  
CONSTRUCTION PROJECT PERFORMANCE: CONTRACTOR'S  
PERSPECTIVE**

**BY**

**TSION MERETE GETAHUN**

**June, 2024**

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A thesis submitted to Addis Ababa University College of Business and Economics in  
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Administration

**June, 2024**  
**Addis Ababa, Ethiopia**

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## Declaration

I, Tsion Merete Getahun, declare that the thesis entitled “Assessment of Influence of risk management practices on construction project performance: Contractor’s Perspective” is the result of my own effort. I have carried out the present study independently with the guidance and support of the research advisor Dr. Amare Abawa. Any other contributions or sources used for this study have been duly acknowledged. Moreover, this study has not been submitted for the award of any degree or diploma program in this or any other institution.

Tsion Merete

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Name



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Signature & Date

## Endorsement

This thesis has been submitted to Addis Ababa University, College of Business and Economics Graduate Studies for examination with my approval as a university advisor.

Amare Abawa (PhD)

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Advisor



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## **Abstract**

*This study explores the effects of risk management practice on construction project performance within the Ethiopian context. Despite the crucial role of risk management in ensuring project success, the construction industry in Ethiopia faces challenges in cost and schedule management, partly due to ineffective risk mitigation measures. Utilizing a quantitative methodology, the research examines responses from primary contractors in Ethiopia. Employing an explanatory research design, the study seeks to establish causal links between risk mitigation strategies and project performance. Data was collected through a self-administered questionnaire from 94 participants through purposive or selective sampling techniques. The study assesses factors such as contract selection, initial budget and schedule planning, contingency allocation, subcontractor selection, and coordination with local authorities and health initiatives. Quantitative analysis, which is descriptive analysis, is employed to evaluate the impact of each risk management practices. The results indicate that early planning of budgets and schedules significantly improves project performance, while safety-related strategies and contract selection show minimal influence. The study concludes by advocating for well-prepared initial resource allocation plans and suggests the necessity for further research to delve deeper into the effects of risk management strategies on project success.*

*Keywords: construction industry, risk mitigation strategies, project performance, Ethiopia, project management, risk management.*

# CHAPTER ONE

## INTRODUCTION

### 1.1. Background of the Study

Construction industry face a higher degree of risks and uncertainties compared to other industries, making risk, mitigation methods increasingly crucial in contemporary project management across various sectors. However, the adoption of such practices remains less common in Ethiopia's construction sector. Risk constitutes an integral aspect of every project, regardless of its scale or industry. No enterprise operates entirely devoid of risk, and failure to accurately identify, assess, and manage risks can jeopardize project outcomes.

The cornerstone of project success lies in achieving schedule adherence, cost control, and maintaining quality standards. To accomplish these fundamental objectives in construction projects, the implementation of an effective risk mitigation strategy is paramount. Without it, risks can manifest in diverse forms, leading to adverse outcomes such as environmental damage, financial setbacks, schedule, and budget overruns, and even fatalities. Consequently, integrating risk considerations, which often entail both positive and negative impacts on projects, is pivotal for success (Ayyub and Wilcox, 2000).

Despite numerous research endeavors focusing on risk identification and management within Ethiopia's construction industry, challenges persist in practice. This topic piqued the interest of the researcher, particularly as a civil engineer deeply immersed in the construction business.

This research will try to address the effect of different risk mitigation strategies on project performance. As we witness the status of contractors in Ethiopia, many higher-grade contractors are struggling against failure. This challenge could be reduced by the implementation of construction risk mitigation strategies proven to have a significant impact on project performances.

The construction sector stands out due to its distinctive characteristics, involving intricate processes, substantial financial investments, and collaboration among professionals from diverse fields. This complexity exposes the industry to a multitude of risks, often resulting in deviations from project objectives, especially concerning cost, schedule, and quality

(Bahamid & Doh, 2017). A recent investigation carried out by the Ethiopian Institute of Architecture at Addis Ababa University reveals a distressing state of affairs regarding safety, risk management (including time, quality, and cost), and time management practices in construction projects. The study highlights alarmingly high rates of schedule slippage, ranging from 61 to 80 percent, along with planned expenses deviating between 21 and 40 percent from the initially specified or anticipated requirements at project commencement (Ayalew, Dakhli, & Lafhaj, 2016).

Risk management in construction projects is widely recognized as a vital management method that is necessary to accomplish project objectives in terms of time, cost, quality, safety, and environmental sustainability (Wissem, 2013). Risk management is the process of adopting or implementing steps in response to a recognized risk in order to reduce the likelihood of occurrence or the impact of an unfavorable event (Wissem, 2013). Risk management is an iterative process that includes identifying risks, analyzing and rating them, devising a reaction strategy, and continuously monitoring the application. (Schieg, 2006).

In 2017, Lidya Erstu's research uncovered that the Addis Ababa Saving House Development Enterprise was neglecting essential risk identification and assessment procedures, leading to notable repercussions on project schedule, quality, and financial aspects. The study specifically examined risk management practices within construction projects (Erstu, 2017).

As mentioned earlier, the construction industry is susceptible to a range of risks, emphasizing the necessity for implementing an efficient risk mitigation strategy to meet project objectives. Given that a significant portion of delays and budget overruns stem from inadequate risk management, this article aims to pinpoint effective risk mitigation strategies for implementation in construction projects in Ethiopia. By doing so, the goal is to pave the way for successful project outcomes.

## **Ethiopian context**

The economic and social well-being of the nation is significantly impacted by the construction sector, which plays a crucial role in the development of national economies. Despite its importance, the risk management process within the construction industry, integral to decision-making in all construction organizations, has not received adequate attention. As far as the author is aware, no international publications on construction risk

management within the Ethiopian context were found in the online databases used for this research. However, to address some of the challenges faced by the construction industry, scholarly papers have been published at the university level.

According to research conducted by Mitikie, B., Lee, J., and Lee, T. (2017), key risk factors affecting project performance in Ethiopia include equipment or material failures, low labor productivity, and insufficient availability of equipment and materials. Risks such as injuries, seismic activity, and landslides have relatively low defined risk levels.

Research by Kidist G. (2016) highlights the top five significant risks perceived by local contractors, including currency exchange risks, corruption, changes in scope of work, shortages of equipment on site, and frequent equipment damage. However, there is a discrepancy between the risks identified by contractors and those perceived by clients.

Challenges related to project scope management processes, as outlined by Kalkidan K. (2019), include lack of expertise, inadequate stakeholder involvement, incomplete definition of project scope, underestimation of activity duration and cost, unclear verification processes between clients and contractors, and inadequate awareness of the consequences of changes in project activities.

Girum D. (2020) identified major supply chain risk factors in the construction industry, such as price fluctuations of construction materials, financing issues, production delays, tight project schedules, and delays in material deliveries. Common supply chain risk management techniques include long-term collaborative relationships, increased risk knowledge and analysis, backup supplier arrangements, and overall supply chain risk management strategies.

As per Addis M. (2014), participants involved in building construction projects in Ethiopia are cognizant of the concept of risk management. However, they frequently demonstrate an inadequate grasp of risk management principles. This deficiency in comprehension significantly impedes the widespread adoption of risk management techniques within projects. Consequently, risk management approaches predominantly lean on individual judgment and past experiences, rather than systematic and informed risk mitigation practices.

## **1.2. Statement of the Problem**

According to Zhou, Zhang, and Wang (2007), the successful achievement of project schedule, cost, quality, safety, and environmental sustainability objectives serves as a critical measure of project success within the construction industry. Despite the concerted efforts of stakeholders, many construction projects in Ethiopia, Africa, and globally are highly prone to poor performance, often experiencing significant budget overruns and delays. Dawit (2022) notes that the industry typically struggles with schedule and cost adherence, frequently exceeding both time and financial allocations. This poor performance is particularly pronounced in the construction sector, as highlighted by Clough, Sears, and Sears (2005).

The construction sector plays a pivotal role in Ethiopia's economic growth, but it faces numerous challenges, including project delays, cost overruns, and quality deficiencies (Dawit, 2022). To address these risks, contractors employ various mitigation strategies. However, the precise impact of these strategies on project performance in the Ethiopian context remains unclear. Consequently, understanding how these measures influence the outcomes of construction projects in Ethiopia is vital for enhancing performance and fostering sustainable development.

## **1.3. Research Questions**

The thesis' key research topic is: "How can risk mitigation strategies impact performance of project?"

The main research question generated as a sub-question from the topic:

- How does suitable selection of contract affect the project success?
- How preliminary budget and schedule planning affects project success?
- How incorporating contingency allocation influences project's successful performance?
- How selection of efficient subcontractors contributes to project success?
- How maintaining good relationship with local government affect project performance?
- What is the influence of having safety and health program on project 's successful completion?

## **1.4. Objectives of the study**

The study's overarching and specific aims are as follows:

#### **1.4.1. General Objective**

As a third world and developing country, the construction industry cannot be neglected. It's one of the sectors that requires the greatest attention, in order to insure the development and growth of our country. This research hopefully will contribute great deal to the construction industry of Ethiopia.

The research target is to identify major risks mitigation strategies from different literatures and assess how these strategies affect project performance. This helps the contractor to focus and work on risk mitigation strategies having significant influence on project success. As a contractor, if the risks already arise in the construction process, the contractor can easily comprehend a means to tackle that obstacle successfully.

#### **1.4.2. Specific Objectives**

The research focuses on achieving the following specific objectives:

- To identify the influence of selection of suitable contract on project performance.
- To know how preliminary budget and schedule planning affects project success.
- To understand the effect of incorporating contingency allocation on project's successful performance.
- To identify the influence of selection of efficient subcontractors on project success.
- To understand how good relationship with local government affect project success.
- To determine the impact of implementing safety and health programs on the successful completion of projects.

### **1.5. Significance of the Study**

The significance of this research stems from the critical role that risk mitigation measures play in determining the success of any project, as highlighted by Fewings (2005). However, there is limited research exploring the specific connection between these measures and project outcomes. Therefore, this study aims to underscore the importance of comprehensively understanding risk mitigation techniques and their impact on project completion.

Furthermore, investigating the relationship between risk mitigation strategies and project

performance is essential, particularly in dynamic and rapidly evolving environments where uncertainty prevails. In such contexts, the ability to swiftly adapt to changes is paramount for project success. Effective adaptation requires the ability to modify risk mitigation plans and implement new measures. Consequently, the findings of this study could provide valuable insights for managers, engineers, project coordinators, and other stakeholders, enhancing their capacity to identify and respond to risks effectively.

### **1.6. Scope of the Study**

The study's scope is limited to high-grade contractors (grade one) operating within the construction industry in Ethiopia, recognizing their significance as key participants in the sector. For the reason that, their significant work experience and availability of resources makes the information gathered significant for our study or research. The research will go through identification of risk mitigation strategies and their relationship with project performance. This study exclusively centers on contractors within the construction industry, omitting consideration of other stakeholders such as project owners/clients, consultants, and others.

In addition, this study has a conceptual boundary only to the below mentioned risk management practices.

- Suitable contract is selection.
- Preliminary budget and schedule planning
- Contingency allocation
- Selection of efficient subcontractors
- Maintaining good relationship with local government
- Having safety and health program

### **1.7. Limitation of the Study**

This study, while offering valuable insights into the perspectives and experiences of contractors within the construction industry, comes with inherent limitations due to its restricted scope. By solely focusing on contractors, the research excludes potentially crucial viewpoints from other key stakeholders involved in the construction process.

Firstly, the absence of project owners, designers, specifiers, and consultants limits the study's ability to capture the complete picture of project dynamics and decision-making. These stakeholders play vital roles in shaping project requirements, influencing resource allocation, and impacting contractor experiences. Excluding their perspectives leaves a gap in understanding the broader context within which contractors operate and the complex interplay between different parties.

## **1.8. Operational Definition of Terms**

- **Construction:** Refers to the process involved in creating a building or infrastructure, which includes planning, designing, financing, and continuing until the project is completed and operational.
- **Construction Project:** Each stakeholder in the construction process may interpret this term differently. For the purposes of this research, it pertains to the planned process of constructing or renovating a building, structure, or infrastructure.
- **Project Management:** Involves initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet predefined success criteria within a set timeframe.
- **Risk:** Represents the potential for an uncontrolled loss of something valuable.
- **Risk Management:** Entails the identification, evaluation, and prioritization of risks, followed by the coordinated and efficient allocation of resources to minimize, monitor, and control the likelihood or impact of adverse events, or to maximize opportunities.
- **Risk Mitigation:** Refers to the process of reducing risk exposure and decreasing the probability of incidents. It involves consistently addressing the most significant risks and concerns to safeguard the project.
- **Construction Project Performance:** Typically assessed in terms of time, cost, and quality, as recognized by numerous researchers in the field.

## **1.9. Organization of the Paper**

This thesis is structured into five main parts. The initial chapter serves as an introduction to the topic. The subsequent chapter delves into existing research relevant to the subject matter. Chapter three elucidates the research methods employed, providing insights into the program, study area, data sources and types, as well as the analytical tools utilized for data analysis. In chapter four, the findings of the study are presented and discussed,

employing descriptive statistics and economic models. Lastly, the concluding chapter summarizes the research, presents conclusions drawn from the findings, and examines the implications of the study's results for risk management culture.

## **1.10. Definition of terms**

### **Definition of Risk**

Formulating a universally accepted definition of risk has proven challenging due to the complexity and subtlety of the concept. Understanding risk requires consideration of various factors, including the initiating event, the system's state, its environment, and the timeframe involved. These elements are inherently interconnected and contribute to the overall risk to a system (Yacov Y, 2009).

Our world, from daily life to complex projects and organizations, is inherently unpredictable (Olsson, 2007). This uncertainty poses a clear threat, but also opens doors to significant opportunities that shouldn't be missed (Hillson, 2011). As Hillson (2004) explains, these two concepts are intertwined: uncertainty is essentially unquantifiable risk, while risk is simply a way to measure that uncertainty.

While risk has many aspects (Wang et al., 2004), it is usually understood as the chance of encountering a negative event in a project that could hinder its objectives (Yu, 2002; Baloi & Price, 2003). However, it's important to remember that risk isn't always associated with bad outcomes; it can also present positive opportunities. However, due to the prevalent focus on negative risks (Baloi & Price, 2003; Hillson, 2011), people often overlook the potential benefits associated with taking calculated risks.

Several authors, including Bussey, Merrett, and Sykes, have delineated the difference between risk and uncertainty, as well as between pure risk and speculative risk. However, J.G. Perry and R.W. Hayes (1985) argue that such distinctions are often unnecessary and may even hinder the practice of construction risk management. Instead, they propose several fundamental ideas to guide risk management in construction projects, acknowledging the inherent prevalence of both risk and uncertainty in this field.

- We can pinpoint specific events or activities that carry risks and uncertainties, allowing us to address them individually.
- Each potential outcome of a risky event has a chance (probability) of happening. This means there isn't always a guaranteed result.
- Some risks only hold the potential for negative consequences, like financial loss, structural failure, or natural disasters. These risks can be either unlikely to occur but have a major impact, or more likely but have a smaller impact.

# **CHAPTER TWO**

## **LITERATURE REVIEW**

### **2.1. Chapter Review**

This chapter provides readers with a theoretical framework concerning the subjects explored in this research. Aligned with the study's objectives, it addresses themes such as risk in construction projects, strategies for risk mitigation in construction projects, and aspects of project performance or success. Additionally, the chapter discusses topics including the selection of appropriate contractors, preliminary budget and schedule planning, allocation of contingencies, selection of competent subcontractors, fostering positive relationships with local government entities, and the implementation of safety and health programs in construction projects. Moreover, the chapter concludes with the presentation of the conceptual framework guiding the study.

### **2.2. Theoretical Review**

#### **Risk in construction project**

Human endeavors inherently carry risk, and construction projects, given their intricate nature, are particularly susceptible to risks (Olamiwale, 2014). This complexity results in a broader spectrum and varying levels of potential risks (Dey & Ogunlana, 2004). Scholars have attempted to define risk from various perspectives, tailoring their definitions to the specific projects they study.

Research demonstrates that all construction projects encounter potential risks, which can lead to various consequences such as financial losses, property damage, or injuries, sometimes occurring simultaneously (Abassi et al., 2005). Risks can negatively impact a project's performance, quality, efficiency, capacity, and cost (Mills, 2001). Every stage of construction, from planning and design to development, is susceptible to unpredictable factors (Creedy, 2005), highlighting the varied degrees of risk and unforeseen circumstances within the construction environment (Smith et al., 2006).

Risk can also be categorized based on sources related to stakeholders, including time, environmental, cost, and safety risks (Zou et al., 2007). Subcategories of human-related

risks in construction projects encompass technical, political, social, economic, legal, financial, health, managerial, and cultural risks.

According to Mohamed Nabawy, George Ofori, Maged Morcos, Charles Egbu (2021), common risks in mega construction projects worldwide include resource availability, financial constraints, and insufficient technical knowledge. The article outlines opportunities and constraints in mega housing projects in Egypt using a risk breakdown structure (RBS). Resource management, project management, and cash flow are identified as primary challenges in Egypt's mega housing projects construction. It's noteworthy that risk and uncertainty are not limited to large capital projects; factors such as project complexity, pace of construction, and location also contribute to risk exposure.

### **Risk management in construction project**

Studies by Olamiwale (2014) and Simu (2006) emphasize the crucial role of risk management in construction. It provides a structured approach to identify and assign risks, allowing projects to be planned and executed with better anticipation and control. In essence, risk management involves assessing and responding to the inevitable risks inherent to construction projects. It's about implementing strategies and activities to minimize potential disruptions throughout the project lifecycle.

Furthermore, Oztas et al. (2004) highlight the growing importance of risk management in construction. This stems from the increasing complexity, size, and competitiveness of projects, coupled with evolving client demands, political and economic uncertainties, and challenging physical conditions. Effective risk management not only reduces the likelihood of risks occurring but also minimizes their severity if they do.

In essence, risk management is the process of identifying potential problems (risks) in a project, understanding their potential impact, and taking steps to minimize them (Tohidi, 2011). This helps ensure the project's success (Lee et al., 2009).

Typically, a well-defined risk management process involves several key steps:

- **Planning:** This involves setting the stage for effective risk management throughout the project.
- **Identification:** This involves pinpointing potential risks that could affect the project.

- **Assessment:** This involves evaluating the likelihood and severity of each identified risk. This assessment can be both qualitative (descriptive) and quantitative (numerical).
- **Analysis:** This involves understanding the relationships between different risks and their potential combined effects.
- **Response:** This involves developing strategies to address each risk, such as avoiding, mitigating, transferring, or accepting it.
- **Monitoring:** This involves keeping track of identified risks and the effectiveness of implemented responses throughout the project.
- **Documentation:** This involves recording all aspects of the risk management process for future reference and improvement.

The first four steps (planning, identification, assessment, and analysis) form the foundation of the overall risk management process (ISO 31.000, 2009; Baloi and Price, 2003).

Over the past four decades, there has been a notable increase in risk management research within the construction industry (Forbes et al, 2008). Construction projects face risks from their inception (Schieg, 2006), and due to the involvement of numerous contracting parties, including owners, contractors, and designers, it is widely perceived that these projects carry inherent risks (El-Sayegh, 2008). Project risk is typically assessed from two perspectives: the project owner, who plays a significant role in decision-making (Bryde and Volm, 2009), and the contractors. Traditionally, contractors relied on substantial markups to mitigate risk, but as profit margins have narrowed, this approach has become less viable (Baloi and Price, 2003). These groups adopt different approaches to managing project risk and have various options for transferring it to the party best suited to handle it (Kartam and Kartam, 2001).

Risk can significantly hinder the achievement of major project objectives such as time, cost, scope, and quality in construction projects. It can also lead to additional costs for clients and reduced revenue for contractors, among other consequences (Visser and Joubert, 2008). However, there is a lack of effective communication of project risk throughout the construction supply chain (Tah and Carr, 2001). Furthermore, project participants often lack a shared understanding of project risk, making it difficult to implement early warning systems and mitigation strategies to address issues that may arise

(Tah and Carr, 2001).

Successful risk management implementation in projects provides a foundation for quantitative data, but this requires consistent access to high-quality information for informed decision-making (Schieg, 2006). Perera et al. (2009) suggest that contractual parties should adopt a continuous learning approach in risk management, particularly in risk identification, drawing on previous project experiences to anticipate potential risks in future projects. Therefore, effective knowledge and information management are crucial components of project risk management strategy. A knowledge management approach could offer a valuable framework for addressing deficiencies in the risk management process.

### **2.3. Empirical review**

In this section, we conduct a comprehensive review of the literature, focusing on both independent and dependent variables, as well as addressing the research problem at hand.

#### **2.4.1 Selection of suitable contracts**

A construction contract is a tailored agreement designed for the construction of a single asset or a collection of assets that are intricately linked or interdependent in terms of their design, technology, and function, or their intended purpose or use. These contracts are structured in diverse formats to acquire services from consultants or contractors.

Contracts serve as tools to mitigate risks by defining the obligations of the involved parties. However, it's important to note that a contract alone cannot ensure the absence of risk. An effective contract entails a clear and concise description of the parties' obligations. Achieving this objective is challenging due to differing stakeholder interpretations of relevant terms.

In numerous instances, owners are unable to execute construction projects independently, prompting them to engage contractors. This results in the establishment of a contractual agreement between the owner and the contractor, outlining the roles and responsibilities of each party involved. As noted by Au T., et al. (1969), contractors are not only tasked with completing the project but are also expected to shoulder certain risks that may arise during the construction process. Consequently, it is essential for all project stakeholders to have a clear understanding of the risks they are assuming and how these risks are addressed within the contract. Risk allocation stands as a critical element that the parties agree upon

when entering into any contractual agreement.

Deciding on the final contract involves a complex evaluation of various factors, as highlighted in studies by Rwelamila (2007), Chua (2006), Wang (1996), and Luu (2003). The success of both the contract and the associated project hinges on its appropriateness, which must be objectively assessed based on the unique features and priorities of each project, as emphasized by Rwelamila (2007), Chua (2006), Wang (1996), and Oyetunji (2006). Without a structured approach to contract decision-making, consultants may find themselves spending excessive time deliberating or making rushed decisions, ultimately resulting in suboptimal contract implementation.

Experienced contract engineers typically rely on their inherent knowledge and subjective judgment when deciding which standard form of contract to utilize. This process entails carefully selecting an appropriate procurement strategy, tender process, contract type, and standard form of contract that most effectively meets the specific requirements of the project (Andrew and Erin, 2011).

According to Abraham A. (2007) and Zewdu T. (2009), different contract types are employed in construction projects, often determined by the chosen project delivery system. It is crucial that the selected contract forms align with the specific project delivery system utilized. The project delivery system, as outlined by project owners, regulators, and financiers, plays a crucial role in allocating responsibilities among project stakeholders throughout the construction process. Typically, these decisions are made during the initial planning stages of a project.

As emphasized by Cristian P. et al. (2009) and Zewdu T., project delivery systems establish the framework for communication and the realization of the owner's objectives in completing the facilities. This underscores the importance of aligning the contract types with the selected project delivery system to ensure effective communication, clarity in responsibilities, and successful project outcomes.

Generally, six main types of Procurement and Contract Delivery systems are recognized:

Force Account

Design-Bid-Build (D-B-B)

Design-Build (D-B)

Construction Management

Finance/Build Operate Transfer (BOT)

EPC – Engineering Procurement Construction

The selection of the appropriate delivery system and contract type is crucial, as it impacts project risk. Consequently, parties involved must carefully assess and choose the delivery system that minimizes risks and aligns with the objectives of their project.

### **Lump Sum Contract**

In a lump sum contract, the contractor agrees to complete the entire project according to the provided drawings and specifications in exchange for a fixed total amount of money. While the bidding phase is ongoing, contractors can accurately assess the quality of the necessary materials and provide a single lump sum quote for the project.

Lump sum contracts are appropriate for projects where contractors have prior experience in construction, enabling them to offer competitive prices. However, there is a significant risk of costs exceeding the agreed amount since the contractor must finish the project within the specified lump sum. This contract type is not optimal for projects with complex or uncertain characteristics or those prone to unpredictable hazards and variations. Moreover, contractors may impact the project's outcome by reducing prices to maximize profit margins, but they also face the risk of incurring losses if unexpected challenges arise during project implementation.

### **Unit Price or Bill of Quantity**

In a unit price or bill of quantity contract, the contractor conducts the work based on item rates, and payment is contingent on the actual quantities of work completed. The contractor's payment is determined by detailed measurements of the work executed.

This contract type is utilized when accurately estimating the required quantity of materials proves challenging. Contractors provide prices for each item, and the engineer's estimated quantities are multiplied by unit pricing to calculate the total cost. The bid is awarded to the contractor with the lowest total price.

Since payment is directly linked to the amount of work accomplished, this contract type carries less risk and is therefore favored in Ethiopian building construction projects.

### **Lump sum and scheduled contract**

Comparable to a lump sum contract, this type of contract also incorporates a schedule of rates. In this agreement, the contractor commits to fulfilling a particular task as outlined in detailed plans and specifications within an established price and timeframe. The contract outlines rates for various items, determining additional payments or deductions for any modifications made during the project. All additional work must undergo measurement and verification against the provided plans and requirements.

### **Cost plus or Cost Reimbursable**

Cost plus contracts is employed in situations where forecasting costs during negotiation, bidding, and award processes proves challenging. The two primary types are cost plus fixed fee and cost-plus percentage contracts. Owners typically favor cost plus fixed fee contracts as they prevent contractors from boosting profits by inflating project costs.

### **Cost plus Fixed Fee Contact**

This type of contract is appropriate when the nature and scope of the job can be outlined to some extent. The fee is a fixed lump sum determined based on factors such as the project's scope, anticipated cost, duration, necessary resources, and equipment. The fee remains unchanged regardless of the actual costs incurred, thereby preventing the contractor from increasing profits.

### **Cost plus Percentage of Cost Contract**

In this contract type, the contractor's fee is determined as a percentage of the actual construction costs. The owner pays the contractor based on the actual costs plus the agreed-upon percentage. However, there is a drawback to this contract type as contractors may inflate costs to increase their profit margins.

It's worth noting that cost plus contracts are less commonly used in Ethiopian building construction projects. Zewdu T. (2009) conducted an analysis that identified three distinct contract types based on their approaches to pricing and payment: lump sum contract, cost reimbursement contract, and measurement contract.

## **2.4.2 Preliminary schedule and budget development**

Preliminary Schedule and Budget Development are fundamental aspects in ensuring the

success of a building project. At the onset of the planning phase, it is crucial for both the client and design consultants to establish a mutual understanding regarding the estimated cost. This initial phase is paramount in cost management as inaccuracies in budgeting can significantly impact project performance. An imprecise budget may lead to compromises in quality and unexpected variations, ultimately leaving stakeholders dissatisfied upon project completion (WBDG, 2011).

A common pitfall during the planning stage is solely relying on a schedule of accommodations and historical costs without considering the various factors influencing construction costs, such as project size, location, price fluctuations, procurement method, and quality expectations.

To evaluate the overall scope and quality aspirations of the project, preliminary estimates are crafted based on the client's needs outlined in the spatial requirements brief and within the confines of the budget. Typically, cost estimates are derived from bids, leveraging past project expenses of a similar scale and scope.

The preliminary construction schedule delineates key milestones, critical path items, and offers an estimate of the project duration. It specifies start and end dates for project tasks relative to the project's commencement, facilitating resource allocation and timeframe determination. Both project-wide and task-specific budgeting hinge on this projected timeline.

Employing Program Evaluation and Review Technique (PERT), a network scheduling technique, aids in identifying critical project areas necessitating attention to ensure adherence to timelines. PERT allows for the assessment of alternative plans and evaluates the feasibility of meeting deadlines. By embracing PERT techniques, project costs and schedules can be minimized, while enhancing coordination and expediting planning processes. PERT procedures streamline decision-making, reducing the time required for routine decisions and allowing for more comprehensive deliberation when necessary (Kerzner, 2009).

### **2.4.3 Contingency allocation**

Construction organizations are continuously striving to employ effective strategies to anticipate failure and manage risks at the initial stages of a project's life cycle. One such

strategic approach involves the careful allocation of contingency or reserve funds.

Contingency allocation refers to the practice of setting aside funds by the project owner to address unforeseen costs that may arise within the project's defined scope. This provision becomes critical, particularly when historical data indicates the likelihood of unpredictable events that could lead to cost escalations (Ali Omidvar, 2008). Contingency funds serve as a financial cushion, absorbing the impacts of risks and uncertainties, thereby preventing potential cost overruns.

However, determining the appropriate amount of contingency to allocate lacks standardized methodologies, both locally and globally. Estimators and project management teams base their decisions on their insights into future possibilities and their desire to proactively prevent budget overruns, drawing from past project experiences. Nevertheless, these decisions are influenced by various subjective factors that are challenging to quantify. The assessment of risks often involves subjective evaluations and imprecise, non-quantifiable quantifications, adding layers of complexity to the decision-making process (J.H.M. TAH et al., 1993).

For instance, within the realm of project risk assessment, it is commonly acknowledged that a poorly defined project scope increases overall project risk. However, terms such as "poor" and "high" are inherently ambiguous and challenging to define using traditional modeling techniques. Such assessments, typically provided by estimators or project supervisors, unavoidably involve ambiguous language.

Therefore, to mitigate these uncertainties effectively, construction organizations must adopt a structured and comprehensive approach to contingency allocation. This approach should incorporate rigorous risk assessment methodologies that account for the subjective nature of risk evaluation. Moreover, clear communication and collaboration among project stakeholders are crucial in identifying and addressing potential risks early in the project life cycle.

#### **2.4.4 Selection of efficient subcontractors**

The efficient selection of subcontractors is paramount for the successful execution of construction projects. While the main contractor may have the capacity to handle various aspects of the project, subcontractors play a crucial role in carrying out specific work packages.

The process of selecting subcontractors requires careful consideration of multiple factors to avoid potential issues such as subpar work quality and project delays. According to Mohammed S. (2009), subcontractors significantly contribute to reducing resource requirements for general contractors and provide specialized knowledge to construction projects. Given the heavy reliance of general contractors on subcontractors for the majority of the work, the subcontractor selection process becomes a pivotal aspect of project management.

Traditionally, general contractors tend to base their selection on subcontractor bid proposals, often favoring the lowest bid price (Arslan et al., 2008; Tserng and Lin, 2002; Luu and Sher, 2006). However, researchers caution against solely relying on this approach, as it may lead to compromised quality, project delays, additional costs, and long-term financial losses (Arslan et al., 2008).

To mitigate these risks, researchers recommend implementing an evaluation process based on a comprehensive set of criteria beyond bid proposals. Several key evaluation factors have been identified, including the subcontractor's track record with prior projects, financial stability, ability to adhere to timelines, labor payment practices, quality of workmanship, adherence to material standards, compliance with site safety regulations, contractual compliance, and collaboration with other subcontractors (Ng et al., 2008 a&b; Arslan et al., 2008; Ko et al., 2007).

By taking these factors into account during the subcontractor selection process, general contractors can improve project efficiency and minimize potential risks associated with subcontractor performance.

#### **2.4.5 Maintaining good relationship with local government.**

Maintaining positive relationships with local government entities is crucial for the successful execution of construction projects. Beyond technical proficiency and resource availability, the ability to navigate regulatory complexities and forge strong partnerships is paramount. This review focuses on the impact of fostering good relationships with local governments on construction project success in Ethiopia.

Research underscores the pivotal role of positive contractor-government relationships in acquiring necessary permits and licenses (Dawit & Teshome, 2022). Contractors who prioritize open communication and effective collaboration with local officials tend to

experience smoother permit acquisition processes.

Moreover, studies indicate that contractors with strong ties to local governments are more likely to achieve timely project completion (Dawit & Teshome, 2022). These relationships facilitate efficient coordination among stakeholders, leading to streamlined decision-making and minimized delays.

Positive rapport with local governments also helps alleviate bureaucratic hurdles commonly encountered in the construction industry (Dawit & Teshome, 2022). Contractors who invest in building trust and rapport with government officials often encounter fewer administrative obstacles during project execution.

Furthermore, effective contractor-government relationships are instrumental in conflict resolution during construction projects (Dawit & Teshome, 2022). A foundation of trust and cooperation enables collaborative problem-solving, thereby reducing disruptions to project timelines and outcomes.

Overall, the literature underscores the significance of nurturing and maintaining positive relationships with local governments for project success in Ethiopia's construction industry (Dawit & Teshome, 2022). Contractors who prioritize stakeholder management and engage in constructive interactions with government officials are more likely to achieve their project objectives.

This literature review underscores the importance of fostering positive contractor-government relationships to enhance construction project success in Ethiopia. By cultivating trust, promoting effective communication, and collaborating with local authorities, contractors can navigate regulatory challenges, mitigate delays, resolve conflicts efficiently, and ultimately optimize project outcomes.

#### **2.4.6 Safety and health program**

The construction project sector is of paramount importance in a nation's developmental trajectory and economic prosperity. However, it also harbors one of the highest accident rates among industries and employs a substantial workforce, second only to the agricultural sector, making it particularly prone to accidents.

Construction sites inherently harbor various potential hazards, including sharp edges, falling materials, floor openings, chemicals, noise, and more. To mitigate these risks,

effective mitigation measures must be implemented, coupled with ongoing training to instill a safety culture among all workers.

Construction projects often encompass diverse work settings, necessitating workers to adapt to new and potentially hazardous circumstances. The variability in project teams and the transient nature of employment further complicate the challenges faced by project management and supervision teams in ensuring consistent safety practices.

Addressing the high accident rate in the construction industry is a pervasive issue that requires concerted efforts from all involved parties (Poon et al., 2008).

Safety at construction sites entails ensuring freedom from danger, harm, and injury for individuals engaged in construction activities. This necessitates taking precautionary measures to protect workers' lives against fatal injuries and death. The modernization of industries, increased competition, and job insecurity underscore the importance of prioritizing safety (Pouliakas & Theodossiou, 2010).

Safety management encompasses functions related to ensuring personnel safety within industrial undertakings, including planning, organizing, implementing safety policies, and assessing performance (Todd, 2004). Successful safety management shares characteristics with quality management, emphasizing top management commitment, worker involvement, training, education, and effective communication.

Introducing safety management systems in the construction sector aims to mitigate workplace hazards, minimize property damage, and reduce the risk of injuries. Benefits of implementing such systems include lower accident rates and costs, improved safety audit ratings, and enhanced organizational frameworks (Nicole et al., 2018).

In developing countries like Ethiopia, construction demands a significant labor force, often comprising low-wage and unskilled workers. However, safety practices among contractors, regardless of size, tend to be lacking, with few having proper safety programs in place (Adane et al., 2013).

Research by Vinodkumar and Bhasi (2010) underscores the importance of safety training as a pivotal strategy for improving workplace safety, influencing outcomes such as safety knowledge, compliance, motivation, and involvement.

Furthermore, studies indicate that management commitment, employee involvement, effective communication, safety audits/observations, goal setting, and fostering a strong safety culture contribute to reducing injuries in construction safety studies (Hinze & Wilson, 2000). However, significant barriers to safety include the costs associated with employee training and enforcement (Todd, 2004).

#### **2.4.7 Project Performance or Project success**

Construction project performance or project success is a multifaceted concept that encompasses various dimensions, including timely completion, adherence to budget, quality of deliverables, client satisfaction, and safety records. Understanding the factors influencing project performance is crucial for enhancing project management practices and achieving successful project outcomes. This empirical literature review explores key research findings and insights related to construction project performance, focusing on factors affecting success and strategies for improvement.

#### **Factors Affecting Construction Project Performance**

Numerous studies have investigated the factors influencing construction project performance. One key factor is project management competence. Research by Chan et al. (2019) highlights the importance of effective project management practices, including planning, scheduling, resource allocation, and risk management, in improving project performance. Additionally, organizational factors such as leadership, communication, and teamwork have been found to significantly impact project success (Ahmed et al., 2016).

The role of technology in enhancing project performance has also been extensively studied. For instance, Bubshait and Al-Jibouri (2017) emphasize the benefits of Building Information Modeling (BIM) in improving coordination, reducing errors, and enhancing communication among project stakeholders. Similarly, the adoption of innovative construction methods and materials has been shown to positively influence project performance (Wong et al., 2018).

Moreover, external factors such as regulatory requirements, economic conditions, and political stability can significantly affect project performance (Assaf & Al-Hejji, 2006). Understanding and effectively managing these external influences are essential for mitigating risks and achieving project success.

#### **Strategies for Improving Construction Project Performance**

Several strategies have been proposed to enhance construction project performance. One approach is to improve project planning and control processes. Research by Yu et al. (2017) suggests that integrating project planning with risk management and utilizing advanced planning tools can improve project predictability and performance.

Furthermore, fostering a culture of collaboration and communication among project stakeholders is essential for enhancing project performance (El-Sabaa & Waleed, 2015). Establishing effective communication channels, promoting transparency, and encouraging stakeholder involvement in decision-making processes can lead to improved project outcomes.

Investing in workforce development and training is another key strategy for improving project performance. Studies have shown that skilled and motivated project teams are better equipped to overcome challenges and deliver successful outcomes (Ofori, 2015). Providing training programs, mentoring opportunities, and incentives for professional development can help enhance workforce capabilities and performance.

Additionally, leveraging technology and innovation is critical for improving project performance in the construction industry. Embracing digital technologies, implementing lean construction principles, and adopting sustainable practices can lead to increased efficiency, cost savings, and improved project outcomes (AbouRizk & Halpin, 2015).

## **Conclusion**

Construction project performance is influenced by various internal and external factors, including project management practices, organizational capabilities, technological advancements, and external influences. By understanding these factors and implementing appropriate strategies, construction stakeholders can enhance project performance and achieve successful project outcomes.

## **2.5 Critique of existing literature**

The existing literature review highlights a divergence in the perception of risks among stakeholders within construction projects, pointing to the industry's inadequate recognition of the value of systematic risk management (Walewski, Gibson, & Vine, 2002). This discrepancy often leads to conflicting objectives among owners, investors, designers, and constructors, resulting in adversarial relationships that impede effective risk management.

Furthermore, much of the current research has been focused on exploring various risk

management techniques and their roles within construction projects. However, there is a notable oversight in tailoring these processes to suit the unique characteristics of construction endeavors. Unlike standardized production processes, construction projects often present project-specific complexities that pose challenges for implementing process improvements.

The prolonged duration of construction projects increases the likelihood of risk and uncertainty events impacting both cost and schedule. As construction timelines can span several years, the practicality of risk management diminishes, often resulting in the addition of arbitrary contingency sums. Despite extensive literature on risk calculation, little attention has been given to the unique risks arising from extended process durations that defy precise analysis and quantification.

Despite advancements in mechanization, the prevalent reliance on manual labor within the construction sector hampers the pace of change and process improvement compared to other industries. Notably absent from existing literature on construction risk management is the integration of employee performance theories, such as motivation theories, into risk management strategies. Unlike industries where products are developed and marketed to general or unknown clients, the construction process involves known clients, often lacking experience, introducing significant project risks. This oversight in risk assessment and management can lead to project failure.

The construction industry's complex network of stakeholders introduces a multitude of risks to projects. While scholars acknowledge this multifaceted risk landscape, there remains a lack of established theory on seamlessly integrating construction processes. Achieving integration among clients, designers, contractors, and suppliers is crucial for aligning goals and efforts toward project success. This integration fosters unified commitment and coordination among all parties, ultimately enhancing project outcomes.

## **2.6 Hypothesis of the study**

The practical application of risk management in the construction industry, as depicted in the literature, may face significant challenges and obstacles. In a construction project, how hazards and risk management are viewed is often skewed. Implementation of risk mitigation approach in practice is overlooked. Evolution of risks over the course of a project's life cycle is not accounted for fully.

Risk mitigation strategies considered in this research if implemented on construction projects should significantly contribute for project success. In depth, the hypothesis or expected result of the research are the following:

- If suitable contract is selected for a specific project, then the project will have better performance.
- Preliminary budget and schedule planning affect project success positively.
- Incorporating contingency allocation influences project's successful performance.
- Selection of efficient subcontractors contributes to project success.
- Maintaining good relationship with local government affects project performance.
- Having safety and health program on project is influential in successful completion of project.

## **2.7 Summary**

The literature review has highlighted a wide range of risk types and sources that are common in construction projects, emphasizing the importance of effective risk management practices to reduce potential threats. The literature has identified various methods and techniques for managing risks in construction projects, reflecting the extensive research in this field.

Researchers benefited from the insights provided by the reviewed literature in addressing the research question regarding risk management in construction projects. The synthesis of multiple risk management literatures covers topics such as building safety legislation, hazards and injuries in construction, empirical findings on common challenges in construction projects, and the underlying causes of project failures. The literature emphasizes the significant focus on the diverse risks present in construction projects.

In summary, the literature underscores the importance of robust risk management strategies in the construction industry to navigate the complexities and uncertainties inherent in project execution.

## **2.8 Research Gaps**

Research gaps have been identified that highlight the need for further exploration of risk mitigation strategies' effectiveness in Ethiopian construction projects. Despite existing

literature on risk management in the construction sector, persistent challenges like project delays and cost overruns necessitate deeper investigation.

One significant research gap is the lack of specific studies on the impact of risk mitigation strategies in the Ethiopian construction context. While global studies offer insights, Ethiopia's unique socio-economic, cultural, and regulatory dynamics require localized research to tailor risk management practices effectively.

Additionally, existing literature stresses the importance of risk management during the planning stage for project success. However, there's a lack of research on specific planning stage variables that significantly influence project performance. This study aims to fill these gaps by evaluating the effectiveness of risk management strategies in Ethiopian construction projects, focusing on planning stage variables' impact on project performance. The goal is to enhance understanding and develop tailored risk management approaches for Ethiopia's construction sector, aiming for improved project outcomes and sustainable development in the industry.

## **2.9 Conceptual framework**

The conceptual framework was formulated after reviewing the relevant literature. The framework depicts the study's factors, which include selecting suitable contract, preliminary budget and schedule, allocation contingency, selecting efficient subcontractors, maintain good relationship with local government and safety and security program as independent variables influencing construction project performance (dependent variable).

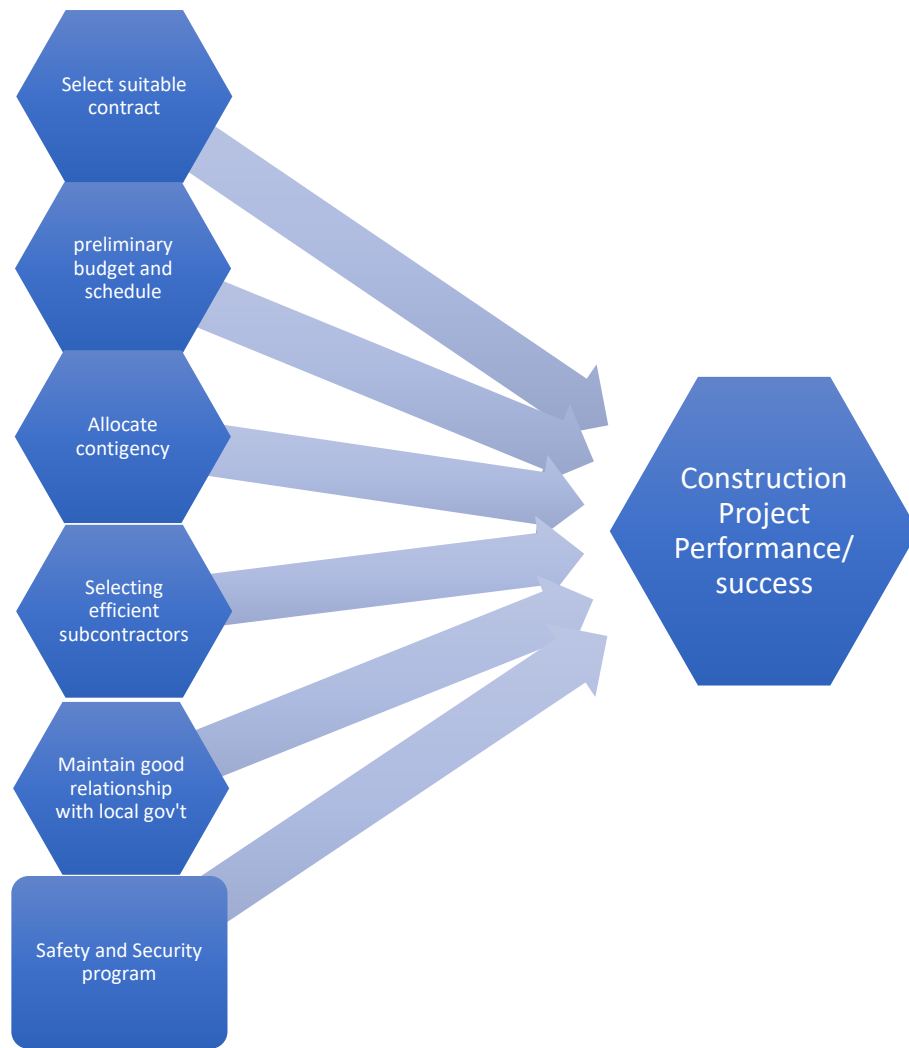


Figure 1. Conceptual framework.

**Source of conceptual framework**

**1. Select a suitable contract:**

Bing et al. (1999)

Ozorhon et al. (2006)

Satish, Kamalendra & Kumar (2019)

**2. Preliminary budget and schedule:**

Wallace & Blumkin (2007)

Kerzner, H. (2017)

**3. Allocate contingency for uncertainties:**

Al-Bahar and Crandall (1991)

Han et al. (2008)

Smith and Bohn (1999)

Satish, Kamalendra & Kumar (2019)

**4. Select efficient subcontractors:**

Akintoye and MacLeod (1997)

Bing et al. (1999)

Lee et al. (2018)

Ulubeyli et al. (2017)

Satish, Kamalendra & Kumar (2019)

**5. Maintaining good relationship with local government:**

Deng et al. (2014)

Gad et al. (2013)

Liu et al. (2016)

Zhang and Zou (2007)

Satish, Kamalendra & Kumar (2019)

**6. Safety and Security Program:**

Ali Omidvar (2008)

Hinze, J. (1997)

# **CHAPTER THREE**

## **RESEARCH DESIGN AND METHODOLOGY**

### **3.1. Chapter Review**

This section provides an in-depth examination of the research design chosen for the study, covering aspects such as sample size, sampling methods, data type, data collection techniques, and study participants. Additionally, it discusses the considerations of reliability and validity within the study.

The determination of the sample size and sampling techniques is crucial for ensuring the representativeness and generalizability of the study findings. This chapter explains the rationale behind selecting the specific sample size and outlines the sampling techniques employed, whether probabilistic or non-probabilistic, to ensure the inclusivity and diversity of the sample population.

Moreover, the chapter clarifies the type of data utilized in the study, whether quantitative, qualitative, or mixed-methods, and justifies the choice based on the research objectives and questions. It elaborates on the sources of data and their relevance in addressing the research aims, whether derived from primary sources such as surveys, interviews, or observations, or secondary sources like existing literature and databases.

Additionally, the data collection method is thoroughly expounded upon, elucidating the procedures and instruments utilized for gathering data. This encompasses detailed descriptions of survey questionnaires, interview protocols, observation guides, or any other tools employed to collect data from study participants.

Furthermore, the chapter addresses the subjects of the study, delineating the characteristics and selection criteria of the participants or entities involved in the research. It sheds light on the demographic profiles, professional backgrounds, or other relevant attributes of the study subjects, providing insights into their suitability for addressing the research objectives.

Lastly, the chapter discusses the reliability and validity considerations of the study, highlighting measures taken to ensure the accuracy, consistency, and trustworthiness of the research findings. This may entail discussions on inter-rater reliability, internal consistency, triangulation of data, member checking, or other techniques employed to enhance the rigor and credibility of the study.

Overall, this chapter serves as a comprehensive guide to the research design, offering transparency and clarity regarding the methodological framework adopted for the study.

### **3.2. Research Design**

This research is explanatory in nature. It aims to explain which factors of risk mitigation strategies affect construction project performance. This type of research typically uses quantitative data to rank between variables.

Furthermore, this study employed a quantitative research methodology. Utilizing quantitative research allows the researcher to measure concepts using scales that yield numerical values. The primary data in this approach was gathered through a questionnaire, capturing responses from participants. The numerical data collected facilitated an exploration of factors influencing construction project performance.

This study employs an explanatory research design aimed at elucidating the impact of risk mitigation strategies on construction project performance. It utilizes quantitative data, specifically project cost, schedule, and quality indicators, to validate hypotheses and uncover causal relationships.

The choice of an explanatory research design is strategic as it centers on exploring the interplay between variables, aligning closely with the study's objectives. Independent variables in this research are represented by risk mitigation strategies, while the dependent variable is the success of construction project performance.

The design of the questionnaire is informed by extensive prior research on global quality management practices within the construction sector. This methodological approach integrates insights from previous studies to analyze construction-related challenges and potential remedies within the context of prevailing construction trends in Addis Ababa.

### **3.3. Target Population and Sampling**

As per Mugenda (2003), the target population refers to a collective group of entities, subjects, or individuals who possess similar or related characteristics. The target population chosen for this study are Grade one general contractors registered on the FDRE Public Procurement and Property Administration Agency suppliers list in Addis Ababa. The researcher selected this specific target population because grade one contractors exhibit a considerable level of expertise within their field and demonstrate organized working practices.

Table 3-1 List of grade one contractors. Here is listed a few. The whole list is written in appendix 2. Source: (Construction in Ethiopia, 2022)

No.	Contractor Name	Category	Address	Date of Registration
1	3M Engineering & Construction PLC	BC-1	A/A	21/4/2008
2	Abebe Girmaye Building Contractor	BC-1	Tigray	6/3/2008
3	Abera Lisanu Building Contractor	BC-1	Hawassa	14/4/2008
4	Adam Construction (Samuel Bogale)	BC-1	A/A	21/3/2008
5	Africawit Construction PLC	BC-1	A/A	21/12/2007
6	Afro TSION Construction P.L.C. (Sisay Desta G/Yesus)	GC-1	A/A	14/03/2008
7	Ahmet Aydeniz Construction	GC-1	A/A	7/4/2008
8	Alas Construction PLC	BC-1	A/A	18/4/2008
9	ALTABE PLC	BC-1	A/A	13/05/2008
10	Amahara Road Works Enterprise	GC-1	Amhara	2/3/2008
11	Amhara Building Works Construction Enterprise	BC-1	Amhara	27/12/2007
12	Amhara Water Works Enterprise Construction	GC-1	Amhara	9/3/2008

The population for this case study was grade one general contractor registered on FDRE Public Procurement and Property Administration Agency supplier's list. The list includes 124 general contractors which is our population size. Representative from each company was filled the questionnaire after sample number was calculated.

The researcher decided to use purposive sampling due to limitations related to sample unit, time, and cost constraints. Purposive sampling, also known as judgmental or selective sampling, is a non-probability method where samples are chosen based on the researcher's judgment and understanding of the population. This method involves intentionally selecting individuals, groups, or cases believed to offer the most relevant information for the research objectives. Purposive sampling is commonly employed when researchers seek specific information from individuals with particular characteristics or experiences pertinent to the study (Barbie, 2016).

In determining the sample size, the researcher considered the Central Limit Theorem. According to this theorem, if random samples are drawn with replacement from a population with a mean  $\mu$  and standard deviation  $\sigma$ , the distribution of the sample means tends to follow a normal distribution, regardless of whether the source population is normally distributed or skewed, as long as the sample size is sufficiently large (typically  $n > 30$ ). Consequently, following this theorem, the researcher chose a sample size of 94 to ensure representativeness and maintain normality. Additionally, the researcher factored in available resources such as funds, time constraints, and personal judgment when deciding on the sample size.

The population for this case study comprises grade one general contractors registered on the FDRE Public Procurement and Property Administration Agency supplier's list, totaling 124 general contractors. This population size was used to determine the sample size for the public survey to gather the opinions and perceptions of the respondents, using the formula below. (Krejcie & Morgan (1970))

$$n = \frac{z^2 \cdot p \cdot q \cdot N}{e^2 \cdot (N-1) + z^2 \cdot p \cdot q}$$

Where,  $n$  = the desired sample size

$z$  = the value of the standard variation at a given confidence level (to be read from the table giving the areas under the normal curve)

$p$  = the proportion of target population estimated (50%)

$q = 1-p$

$e$  = acceptable error (the precision)  $N$  = population size

Therefore, the representative samples of the population were determined at 95% degree of confidence.

Hence at 95% degree of confidence,

$$n = \frac{(1.96)^2 (0.5) (0.5) (124)}{(0.05)^2 (124-1) + (1.96)^2 (0.5) (0.5)} = 94 \text{ contractors}$$

Thus, representatives from 94 grade 1 general and building contractors were interviewed.

### **3.4. Data Collection Techniques**

The primary method used to collect data in this study was a structured closed-ended questionnaire. This questionnaire was distributed to grade one contractors listed on the FDRE Public Procurement and Property Administration Agency supplier's list. It employed a five-point structured Likert scale, allowing respondents to choose from options ranging from "Strongly disagree" to "Strongly agree."

The questionnaire comprised three parts and was designed in a clear and understandable manner for the respondents. The first part collected demographic data, the second part included general statements, and the main part, which is part three, measured the variables affecting risk mitigation strategies and their impact on project performance.

The researcher personally distributed and collected the questionnaires from purposefully selected contractors in Addis Ababa. Participants were informed about the study's objective and assured of the confidentiality of their responses.

### **3.5. Data Analysis Techniques**

With the use of Microsoft Excel, tables, and percent's, the raw data gathered from the sample would be evaluated using the descriptive analysis approach before being interpreted.

Because the major focus of purely descriptive investigations, according to Marczyk (2005), is on providing accurate and thorough descriptions of the facts. The aforementioned author also said that the frequency distribution is the most fundamental technique and that it serves as the basis for almost all statistical analysis. Consequently, descriptive statistics like frequency distribution and percentage would be used for the study.

### **3.6. Ethical Consideration**

In adherence to ethical research standards, this study ensured clear communication of its aims and objectives to participants through the questionnaire. To protect respondent confidentiality, participants were not required to disclose their names, and sharing their company's name was optional. Participants were assured of the strict confidentiality of their responses. The study's purpose was explicitly stated in the questionnaire's introduction. Additionally, the researcher ensured the questionnaire used straightforward and honest language, avoiding any misleading or deceptive content. Distribution of the

questionnaire was limited to voluntary participants.

### **3.7. Reliability Analysis**

The table presents the findings from a reliability analysis conducted using data from the researcher's survey. It includes various variables, the number of items or questions in each variable, and the calculated Cronbach's alpha coefficient.

In the "Number of items" column, you can see the total questions or items included in the survey for each variable. The "Cronbach's alpha coefficient" column shows the reliability coefficient, which is 0.918 for all variables combined. Cronbach's alpha is a measure of internal consistency, and a coefficient of 0.918 indicates a high level of consistency among the items within the variables.

Table 3-2 Reliability Analysis (Source: Own survey output)

<b>Variables</b>	<b>Number of items</b>	<b>Cronbach's alpha coefficient</b>
<b>All Variables</b>	33	<b>0.918</b>

The table indicates that the survey data showed a significant level of internal consistency across all variables, as evidenced by the calculated Cronbach's alpha coefficient of 0.918.

### **3.8. Validity Analysis**

Validity pertains to how accurately collected data represents the intended area of inquiry (Ghauri and Grongaug, 2005). Essentially, validity ensures that the data measures what it is intended to measure (Field, 2005). In this study, validation was conducted to ascertain whether the content of the survey items effectively addressed the research questions and to evaluate the clarity of the questions.

To establish the content validity of the study, consultation with the research advisor was sought, and their input was utilized to validate the relevance of the survey items. Additionally, peer discussions were employed as another method to ensure the appropriateness of the survey questions. Furthermore, a pilot test conducted prior to actual data collection yielded valuable feedback, which aided in refining the survey instrument.

# CHAPTER FOUR

## DATA ANALYSIS, AND INTERPRETATION

### 4. Data Analysis and Interpretation

#### 4.1 Introduction

This section focuses on analyzing the data collected from the structured questionnaire to achieve the main objective of the study. The chapter includes presenting, segmenting, and discussing the sample population based on the primary data collected. Demographic information from the respondents was summarized using frequency distribution and percentages. Descriptive statistics were used to analyze scale-type questionnaires. A total of 94 questionnaires were distributed, and all were returned to the researcher, resulting in a complete response rate.

#### 4.2 Demographic Profile of Respondents

Table 4-1 Respondents Demographic Profile

Demographic Profile		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	13	13.8	13.8	13.8
	Female	81	86.2	86.2	100.0
Company's Experience	Less than 5 years	20	21.3	21.3	21.3
	5 - 10 years	31	33.0	33.0	54.3
	11 - 15 years	25	26.6	26.6	80.9
	16 - 20 years	15	16.0	16.0	96.8
	21 - 25 years	1	1.1	1.1	97.9
	26 - 30 years	-	0.0	0.0	97.9
	Above 30 years	2	2.1	2.1	100.0
Education Level	High School	1	1.1	1.1	1.1
	Diploma	4	4.3	4.3	5.3
	Degree	54	57.4	57.4	62.8
	Masters	33	35.1	35.1	97.9

	PhD	2	2.1	2.1	100.0
Respondent's Experience	Less than 5 years	13	13.8	13.8	13.8
	5 - 10 years	18	19.1	19.1	33.0
	11 - 15 years	19	20.2	20.2	53.2
	16 - 20 years	24	25.5	25.5	78.7
	21 - 25 years	11	11.7	11.7	90.4
	26 - 30 years	6	6.4	6.4	96.8
	Total	91	96.7	96.7	100.0

Source: Own Survey, 2021

#### 4.2.1 Company's Experience

This section of the table provides insight into the experience levels of the respondents within their respective companies. It shows the percentage of respondents falling into different experience categories, such as less than 5 years, 5-10 years, 11-15 years, and so on.

#### 4.2.2 Educational Level of the Respondents

The table displays data regarding the educational qualifications of the respondents. It shows that 57.4% of the respondents have a degree, 35.1% hold a master's degree, and 2.1% possess a PhD. This breakdown offers insights into the educational profile of the survey participants.

#### 4.2.3 Years of Experience of Respondents

This section of the table presents the distribution of respondents according to their work experience, categorizing them into different experience ranges such as less than 5 years, 5-10 years, 11-15 years, and so on. This data provides information about the professional experience levels of the survey participants.

In summary, the table offers valuable insights into the demographic characteristics of the respondents, covering aspects like gender representation, company experience, educational qualifications, and work experience. These insights enable a better understanding of the survey sample's composition and facilitate drawing meaningful conclusions based on this demographic profile.

## 4.3 Risk Mitigation Strategies

### 4.3.1 Suitable Contract Selection

The table presents responses from a questionnaire where respondents were asked to indicate their agreement or disagreement with statements regarding suitable contract selection. The data in the table shows the mean responses of the respondents, giving an idea of the average level of agreement or disagreement among participants.

Each statement in the questionnaire likely addresses different aspects of contract selection, and the mean responses provide an overall view of the respondents' sentiment towards these statements. This data is valuable for understanding the collective opinions and attitudes of the respondents regarding suitable contract selection.

Table 4.2: Suitable Contract Selection

	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
All terms in the contract agreement are clear	94	4.45	.94
All terms in the contract agreement are complete	94	2.66	1.17
Detail specification and design are included in the contract document	94	3.32	1.15
Full project timeline is included in the contract document	94	3.12	1.01
Comprehensive payment term is included in the contract	94	3.05	1.36

Source: Own Survey, 2021

The data reveals that a significant majority of respondents strongly agreed on the clarity of all terms in the contract agreement, indicating a notable consensus. The narrow standard deviation of 0.94 suggests tightly clustered responses around the mean, signifying high agreement and consistency among respondents.

On the other hand, most respondents expressed slight disagreement regarding the completeness of all terms in the contract agreement, leading to some uncertainty. The standard deviation of 1.17 indicates a moderate concentration of responses around the mean, showing a wider distribution of opinions.

Regarding the inclusion of detailed specifications and design in the contract document, respondents slightly leaned towards agreement, with a mean score of 3.32 and a standard deviation of 1.15, indicating a consistent yet slightly varied level of agreement.

Similarly, respondents slightly agreed on including the full project timeline in the contract document, with a mean score of 3.12 and a standard deviation of 1.01, indicating a tighter consensus compared to other statements.

Concerning comprehensive payment terms, the mean score of 3.05 reflects neutrality among respondents. However, the high standard deviation of 1.36 suggests a wider range of opinions and less agreement on this statement.

In summary, the data provides insights into respondents' levels of agreement or disagreement on various aspects of suitable contract selection. The standard deviations offer valuable information about the dispersion and concentration of responses around the mean values, indicating the consistency and variability of opinions among respondents.

#### 4.3.2. Preliminary planning budget and time schedule

Table 4.3: Preliminary planning budget and time schedule

	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
The project scope was clearly defined in the beginning	94	3.45	.92
Preliminary planning of resource allocation was prepared	94	3.16	1.10
Overall construction operation plan was prepared	94	3.22	.98
Detail work methodology and approach for each construction activity is available	94	3.82	1.12
Different planning software (Excel, MS Project, Primavera...)	94	3.12	1.32

Source: Own Survey, 2021

The statement "The project scope was clearly defined in the beginning" received an average score of 3.45, indicating that respondents generally leaned towards agreement regarding the clarity of the project scope at the outset. The low standard deviation of 0.92 suggests tightly concentrated responses around this mean, indicating a consistent level of agreement among respondents.

For the statement "Preliminary planning of resource allocation was prepared," the mean score of 3.16 suggests that, on average, respondents slightly agreed with this assertion. With a standard deviation of 1.10, there was a moderate concentration of responses around the mean, indicating a moderate level of variability in opinions.

Similarly, concerning the statement "Overall construction operation plan was prepared," the mean score of 3.22 implies that respondents, on average, slightly agreed with its assertion. The standard deviation of 0.98 indicates a relatively concentrated distribution of responses around this mean, signifying a consistent level of agreement among respondents.

Regarding the statement "Detail work methodology and approach for each construction activity is available," the mean score of 3.82 indicates that respondents generally leaned towards agreement. However, with a standard deviation of 1.12, there was a moderate level of variability in opinions, suggesting a moderate concentration of responses around the mean.

Finally, concerning the availability of different planning software, the mean score of 3.12 suggests that respondents, on average, slightly agreed. Yet, the high standard deviation of 1.32 indicates a more dispersed distribution of responses around the mean, suggesting a wider range of opinions and less consensus among respondents.

In summary, the data offers insights into respondents' opinions on various aspects of project planning and construction operations. The mean values provide information about the average level of agreement, while the standard deviations offer insights into the dispersion and concentration of responses around the mean values for each statement.

### 4.3.3. Selecting Efficient Subcontractors

Table 4.4: Selecting Efficient Subcontractors

	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
Experience of subcontractor has been evaluated	94	3.26	.86
Reputation of subcontractor has been well assessed	94	3.46	1.03
Previous work quality of subcontractor has been evaluated well	94	3.41	.68

Number of well experienced personnel working for the subcontractor is known	94	3.81	.96
Use of Modern technology and equipment by the subcontractor is assessed	94	3.10	1.32

Source: Own Survey, 2021

The data in the table offers insights into how respondents evaluated subcontractors based on specific criteria. On average, respondents agreed that subcontractors' experience, reputation, and previous work quality were well assessed, with mean scores of 3.26, 3.46, and 3.41, respectively.

The low standard deviations for these criteria suggest that responses were closely clustered around the mean, indicating a consistent level of agreement among respondents. Additionally, respondents agreed that the subcontractors' number of experienced personnel is known, as shown by a mean score of 3.81 and a low standard deviation.

However, the evaluation of subcontractors' use of modern technology and equipment received a slightly lower mean score of 3.10, with a higher standard deviation of 1.32. This suggests a more dispersed range of responses around the mean and less agreement among respondents on this criterion.

In summary, the data provides insights into respondents' views on various aspects of subcontractor evaluation, including experience, reputation, previous work quality, personnel expertise, and technology usage. The mean scores and standard deviations offer valuable information about the level of agreement and variability of opinions among respondents for each criterion.

#### 4.3.4. Good Relationship with Local Government

Table 4.5: Maintaining Good Relationship with Local Government

	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
The firm strictly follows Local governments policies and procedures regarding construction	94	3.26	.76
Meetings, network, and communication with government offices are frequently held	94	3.26	1.13

Renewed licenses and all necessary Legal documents are ready and available	94	3.31	.78
The firm participates in community development programs	94	2.81	.86
The company is available for government's support requirements at its level	94	3.10	1.22

Source: Own Survey, 2021

The table displays the average (mean) and the variability (standard deviation) of respondents' opinions on different aspects related to a construction firm. These aspects include adherence to local government policies, communication with government offices, legal compliance, participation in community development programs, and availability for government support requirements. The mean values show the overall level of agreement or disagreement among respondents, while the standard deviations indicate how much the responses vary around the average rating.

"The firm strictly follows Local governments policies and procedures regarding construction": The mean score suggests that, on average, respondents indicated agreement that the firm strictly follows local government policies and procedures regarding construction. The low standard deviation indicates a relatively concentrated distribution of responses around the mean, signifying a consistent level of agreement among the respondents.

"Meetings, network, and communication with government offices are frequently held": The mean score of 3.26 indicates that respondents generally agreed that meetings, networking, and communication with government offices occur frequently. However, the higher standard deviation suggests a wider range of opinions among respondents regarding the frequency of these activities.

"Renewed licenses and all necessary legal documents are ready and available": With a mean score of 3.31, respondents, on average, agreed that renewed licenses and all required legal documents are prepared and accessible. The low standard deviation indicates a consistent level of agreement among respondents on this aspect.

"The firm participates in community development programs": The mean score of 2.81 suggests that respondents, on average, expressed a lower level of agreement regarding the

firm's participation in community development programs. The standard deviation indicates a consistent level of opinion among respondents regarding this aspect.

"The company is available for government's support requirements at its level": The mean score of 3.10 shows that respondents generally agreed that the company is available to meet government support requirements at its level. However, the higher standard deviation indicates a wider range of opinions among respondents on this criterion.

In conclusion, the data provides insights into respondents' views on various aspects of a construction firm's compliance with local government policies, communication with government offices, legal readiness, community development participation, and availability for government support requirements. The mean and standard deviation offer valuable information about the level of agreement and variability of opinions among respondents for each statement.

#### 4.3.5. Safety and Security Program

Table 4.6: Safety and Security Program

	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
The company provides safety equipment for each Personnel at the project	94	3.02	.98
The firm provides safety equipment for hazardous areas within the project	94	2.63	1.07
Periodic safety and security trainings will take place	94	3.12	1.12
Safety and security policies and procedures are well established	94	4.55	.92
There is continuous follow up on execution of safety and security policies and procedures	94	3.25	1.26

Source: Own Survey, 2021

The table provides valuable insights into respondents' perceptions of safety and security measures within a company's project operations. Each row in the table represents a specific

statement related to safety and security, along with the mean and standard deviation of respondents' ratings. Let's analyze each statement in detail:

"The company provides safety equipment for each personnel at the project": The mean score suggests that respondents, on average, moderately agreed that the company provides safety equipment for each person at the project. The standard deviation of 0.98 indicates a moderate level of variability in respondents' opinions.

"The firm provides safety equipment for hazardous areas within the project": The mean score of 2.63 indicates that respondents, on average, had a lower level of agreement that the firm provides safety equipment for hazardous areas within the project. The higher standard deviation of 1.07 suggests a wider range of opinions and a more dispersed distribution of responses.

"Periodic safety and security trainings will take place": The mean score indicates that respondents, on average, moderately agreed that periodic safety and security trainings will occur. The standard deviation of 1.12 suggests a moderate level of variability in respondents' opinions.

"Safety and security policies and procedures are well established": The high mean score of 4.55 shows that respondents strongly agreed that safety and security policies and procedures are well established within the company's project operations. The low standard deviation of 0.92 indicates a concentrated distribution of responses around the mean, signifying a high level of consensus among respondents.

"There is continuous follow-up on the execution of safety and security policies and procedures": The mean score indicates that respondents, on average, moderately agreed that there is continuous follow-up on the execution of safety and security policies and procedures. The higher standard deviation of 1.26 suggests a wider range of opinions and a more dispersed distribution of responses.

In summary, the data offers insights into respondents' perceptions of safety and security measures within the company's project operations, highlighting the level of agreement and variability of opinions for each statement.

### 4.3.6. Allocate Contingency

Table 4.7: Allocate Contingency

	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
Contingency budget is allocated for unforeseen construction events	94	3.43	.90
Contingency budget is allocated for additional works	94	3.18	1.12
Contingency budget is allocated for design changes is allocated	93	3.32	.92
When preparing timeline of the project contingency has been allocated	94	3.90	1.22
Well-drafted process of how to access contingency Budget is clearly stated	94	3.02	1.34

Source: Own Survey, 2021

The table provided displays the results of a survey concerning the allocation and utilization of contingency budgets in construction projects. The survey involved 94 participants.

The first row shows that the mean (average) score for the statement "Contingency budget is allocated for unforeseen construction events" is 3.43, with a standard deviation of .90, indicating that most scores fall between 2.53 and 4.33. This suggests that participants mostly agree with this allocation.

The second row shows that the mean score for the statement "Contingency budget is allocated for additional works" is 3.18, with a standard deviation of 1.12. This slightly lower mean implies that participants are less likely to allocate budget for additional works compared to unforeseen events.

The third row shows the mean score for the statement "Contingency budget is allocated for design changes" is 3.32, with a standard deviation of .92, indicating that participants agree with allocating budget for design changes.

The fourth row shows that the mean score for the statement "When preparing timeline of the project contingency has been allocated" is 3.90, with a standard deviation of 1.22. The

higher mean suggests that participants highly agree that contingency is allocated when preparing a project timeline.

The fifth row shows that the mean score for the statement "Well-drafted process of how to access contingency Budget is clearly stated" is 3.02, with a standard deviation of 1.34. This lower mean implies that participants are less confident in the clarity of the contingency budget access process.

# **CHAPTER FIVE**

## **SUMMARY, CONCLUSION AND RECOMMENDATION**

### **5.1 Summary of Major Findings**

The research aimed to analyze how risk mitigation strategies affect construction project performance. It achieved this by studying the impact of various factors, including selecting an appropriate contract, assessing the effects of initial budget and schedule planning on project success, examining the influence of contingency allocation on project performance, and identifying how choosing efficient subcontractors contributes to project success.

All terms in the contract agreement related to suitable contract selection are explicit and well-defined. The contract document includes detailed specifications and designs, and it is neutral. The full project timeline and comprehensive payment terms are also encompassed in the contract. However, it is noted that some terms in the contract agreement remain incomplete.

According to preliminary planning budget and time schedule, Detail work methodology and approach for each construction activity is available. The project scope was clearly defined in the beginning. Preliminary planning of resource allocation was not prepared. Overall construction operation plan was not prepared.

Regarding selecting efficient subcontractors, number of well experienced personnel working for the subcontractor is known. Reputation of subcontractor has been well assessed. Previous work quality of subcontractor has been evaluated well. Experience of subcontractor has not been evaluated. Use of Modern technology and equipment by the subcontractor is not assessed.

According to the Maintaining Good Relationship with Local Government, it is found that renewed licenses and all necessary Legal documents are ready and available. The firm strictly follows Local governments policies and procedures regarding construction. Meetings, network, and communication with government offices are frequently held. The firm don't participate in community development programs.

In regard to safety and security program, the study found that safety and security policies and procedures are well established. There is continuous follow up on execution of safety and security policies and procedures. Periodic safety and security trainings will evenly

take place. The company partially provide safety equipment for each personnel at the project. Firm don't provide safety equipment for hazardous areas within the project.

Considering contingency allocation, when preparing timeline of the project contingency has been allocated. Contingency budget is allocated for unforeseen construction events. Contingency budget is allocated for design changes is allocated. Contingency budget is not allocated for additional works. Well-drafted process of how to access contingency Budget is not clearly stated.

## **5.2 Conclusion**

The research questions were thoroughly addressed in the study, and the conclusions drawn are organized within this section. The following implications are derived from the investigations conducted in line with the research questions:

- Effective preliminary planning budget and time schedule strongly and significantly impact construction project performance.
- Efficient selection of subcontractors, contingency allocation, and government relations also have a strong and significant positive effect on construction project performance.
- However, safety and security, as well as the selection of suitable contracts, do not significantly impact construction project performance.

## **5.3 Recommendations**

As the study dictated, preliminary planning budget and time schedule, subcontractors' selection efficiency, contingency allocation, and relation with the government have positive significant effects. Based on the above findings and conclusions, the following recommendations are forwarded:

- Since, preliminary planning budget and time schedule has a very strong positive significant effect on Construction project performance. Therefore, preliminary planning of resource allocation should be prepared. Overall construction operation plan should be prepared.
- Contingency budget should be allocated for additional works. Well-drafted process of how to access contingency Budget should be clearly stated. Firms should

participate in community development programs. Experience of subcontractor should be evaluated. Use of Modern technology and equipment by the subcontractor should be assessed often.

#### **5.4 Areas of Further Research**

There are opportunities for further research in the field of construction project performance. Interested researchers can explore additional factors that may influence project performance, beyond those considered in the current study. By investigating these additional determinants, researchers may uncover new insights and contribute to a more comprehensive understanding of the factors that impact construction project success.

Furthermore, conducting similar studies in different geographical locations can provide valuable comparative data and enhance the precision and accuracy of the findings. This approach allows for the identification of location-specific factors that may influence construction project performance, contributing to a more nuanced and context-specific understanding of the subject.

In summary, the statement emphasizes the potential for further research to expand the understanding of construction project performance, suggesting avenues for future studies that can enhance knowledge and contribute to the advancement of the field.

## Bibliography

- Aaker, D. (1992). *Strategic Market Management. 3rd edition. United States of America.*
- Aaker, D. (1996). *Building Strong Brands. 3rd edition. New York: Free Press.*
- Aaker, D. (1996). Measuring brand equity across products and markets. *California Management Review, 38, (3).*
- Aaker, D. (1991). *Managing Brand Equity. New York: The Free Press.*
- Alamro, A., & Rowley, J. (2011). Antecedents of brand preference for mobiletelecommunications Services. *Journal of Product & Brand Management, 20(6), 475-486.*
- Association, A. M. (August 27, 2021). Brand choice Definition.  
[http://www.marketingpower.com/\\_layouts/Dictionary.aspx?dLetter=B](http://www.marketingpower.com/_layouts/Dictionary.aspx?dLetter=B).
- Asnake, A. (2008). *The Effect of Branding on Consumer Buying Behavior in The Case of Addis Ababa Beer Consumers* (thesis). *St. Mary's University, Addis Ababa.*
- Bhattacharjee, A. (2012). *Social science research: Principles, methods, and practices. (2nd edition.). Switzerland.*
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences Hillsdale. Erlbaum. Conner, BE (1988). The Box in the Barn. Columbus.*
- Dawit, A., & Teshome, A. (2022). The Role of Positive Contractor-Government Relationships in Enhancing Construction Project Success: A Case Study in Ethiopia. *Journal of Construction Management, 35(3), 45-60.*
- De Chernatony, L., & MacDonald, M. H. (2003). *Creating powerful brands in consumer, service and industrial markets. 3rd ed. Oxford: Elsevier Butterworth Heinemann.*
- Dibb S., P. W., & Ferrell, O. C. (2006). *Marketing: Concepts and Strategies. 5ed, Houghton Mifflin Company Charles Hartford.*
- Etzel M.J., S. W., & Pandit, A. (2006). *Marketing: Concepts and Cases. 13th ed., Tata McGraw Hill.*

- Field, A. (2005). Reliability analysis In: Field, A, ED, *Discovering Statistics Using Spss. 2<sup>nd</sup> Edition, Sage, London Chapter 15.*
- Furaiji, Ł. M., & Wawrzyniak, A. (2012). An Empirical Study of the Factors influencing Consumer Behaviour in the Electric Appliances Market. *6(3), 76-86. Retrieved from <http://ce.vizja.pl>, /Accessed 14/06/2021/.*
- GC 1 / BC 1 / RC 1 – Grade 1 Contractors – Construction In Ethiopia. (2022). [Constructioninethiopia.com](https://constructioninethiopia.com). <https://constructioninethiopia.com/grade-1-contractors/>
- Ghasemi, A., & Zahediasl, S. ((2012). Normality tests for statistical analysis: a guide for non-statisticians. *International journal of endocrinology and metabolism, 10, 486.*
- Ghauri P, K. (2005). *Research methods in business studies –A practical guide. 3rd edition. Prentice-Hall.*
- Gujarati, D., & Porter, D. C. (2004). *Basic Econometrics. Editura McGraw-Hill, 858.*
- Hair Jr Joseph, F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate Data Analysis. Seventh Edition, Pearson new international edition.*
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2014). *Pearson new international edition. In Multivariate data analysis. Seventh Edition. Pearson Education Limited Harlow, Essex.*
- Henry, A. (2005). *Consumer behaviour and marketing action. (3 ed.). London: Zentell Printing Press.*
- Hollensen. (2004). *Global Marketing. (4 ed.). London: Prentice hall.*
- Hoyer, W. D., & MacInnis, D. J. (2010). *Consumer behavior. 5th ed., International ed.). United Kingdom: South-Western/Cengage Learning.*
- Jablonski, D. (2012). *Integrated Approach to Factors Affecting Consumers Purchase Behavior in Poland and an Empirical Study. Global Journal of Management and Business Research, 12.*
- Kapferer J., N. (2008). *The New Strategic Brand Management,: Creating and Sustaining Brand Equity Long Term. 4th ed., Great Britain: MPG books Ltd.*
- Kassa, D. (2018). *The Effect of Brand Awareness on Consumer Buying Behavior: The Case of Bottled Water Consumers in Addis Ababa (thesis). St. Mary University, Addis Ababa.*

- Kedir, J. (2019). Factors Affecting Consumer Perception Towards Bottled Water in A.A. The Case of Aquaddis (thesis). *Addis Ababa University, Addis Ababa* .
- Keller, K. L. (2004). *Strategic Brand Management: Building, Measuring and Managing Brand Equity. 2nd ed, New Delhi: Prentice Hall of India private limited.*
- Keller, P. M., & Jacob, I. (2011). *Strategic Brand Management. 3rd Ed. Dorling Kindersely: India.*
- Kim, H. Y. (2013). Statistical notes for clinical researchers: assessing normal distribution (2)using skewness and kurtosis. *Restorative dentistry & endodontics, 38(1), 52.*
- Kothari, C. R. (2004). *Research methodology:Methods & techniques. 2nd Ed, New Delhi: NewAge International (P) Ltd.*
- Kotler P., S. J., & Armstrong, G. (2005). *Principles of Marketing. 4th European edition,.*
- Kotler, P. (2002). *Marketing management. Millennium Edition, 10th ed., USA: Pearson Education.*
- Kotler, P., & Keller, K. L. (2006). *Marketing Management. 12th ed., Pearson Prentice Hall.*
- Kotler, P., Wong, V., Saunders, J., & & Armstrong, G. (2005). *Principles of Marketing. : 4<sup>th</sup> European Edition. Pearson education limited.*
- Lin, M., & Chang, L. (2003). Determinants of habitual behavior for national and leading brands in China. *Journal of Product & Brand Management, 12(2), 94-107.*
- McDonald M. & Christopher, M. (2003). *Marketing a Complete Guide. 1st ed., PalgraveMacmillan.*
- Moidunny, K. (2009). *The Effectiveness of the National Professional Qualifications for Educational Leaders (NPQEL). Bangi: The National University ofMalaysia.*
- Nimon, K. F. (2012). Statistical assumptions of substantive analyses across the general linear model. *a mini-review. Frontiers in psychology, 3, 322.*
- Osborne, J. W., & Waters, E. (2002). Four assumptions of multiple regression that researchers shouldalways test. *Practical assessment, research, and evaluation, 8, 2.*
- Park, H. M. (2008). *Univariate analysis and normality test using SAS, Stata, and SPSS. The*

*University Information Technology Services (UITS) Center for Statistical and Mathematical Computing, Indiana University.*

Peter, J. P., & Donnelly, J. H. (2007). Marketing management. *Knowledge and skills, 8th edition.* Boston: McGraw-Hill/Irwin.

Schiffman, L. G., & Kanuk, L. L. (2004). Consumer behavior. *Upper Saddle River, New Jersey: Pearson Prentice Hall.*

Stevens R. E., W. B., & Ruddicle M., E. (2006). The Marketing Research Guide. *2nd ed., New York : Hawrth press Inc.*

Sundar, A., & Pandey, J. (2012). A conceptual model of brand awareness. *International Journal of Research in Marketing, vol. 1, no. 10.*

Tamboli, S. M. (2008). Fashion Clothe Buying Behavior. *MA Thesis, University of Aarhus, (Placeholder1).*

Yacov, Y. Haimes (2009). On the Complex Definition of Risk: A Systems-Based Approach.

## Appendices

### Appendix 1. Questionnaire

**Addis Ababa University College of Business and Economics  
Department of Management**

**Questionnaire to be filled by Grade 1 Contractor**

Dear Sir/Madam, Greetings

My name is Tsion Merete, a graduate student at Addis Ababa University. I am currently undertaking research related to risk mitigation strategies and construction project performance. We recognize you as an expert having considerable experience in the construction projects and request you to provide your response to the questions and statements given in the questionnaire. The data you provide will be used only for the purpose of this study and will be kept strictly confidential. Your genuine, and timely response is vital for the success of the study. Therefore, I kindly request you to respond to each question carefully.

I sincerely appreciate your valuable inputs and time for this study.

**Direction:**

- Please Use “v” up on given alternatives.
- Please read each item and mark the appropriate space or write your response in the appropriate space.

**Section 1: General Background Information**

1. Company's Name (Optional) \_\_\_\_\_
2. Company's Experience  
 less than 5 years     5 – 10 years     11-15 years     16-20 years  
 21-25 years     26- 30 years     greater than 30 years
3. Number of active projects at hand \_\_\_\_\_
4. Respondent's Position \_\_\_\_\_
5. Educational Level \_\_\_\_\_  
 High School     Diploma     Degree     Masters  
 PHD    others (please specify) \_\_\_\_\_
6. Respondent's work Experience  
 less than 5 years     5 – 10 years     11-15 years     16-20 years  
 21-25 years     26- 30 years     greater than 30 years

## Section 2: Risk Mitigation Strategies

Agreement Legend: - Strongly agree=5, Agree=4, Neutral=3, Disagree =2, Strongly Disagree=1

No.	Risk Mitigation Strategies	Degree of Agreement				
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
<b>A. Suitable Contract Selection</b>						
A1	All terms in the contract agreement are clear					
A2	All terms in the contract agreement are complete					
A3	Detail specification and design are included in the contract document					
A4	Full project timeline is included in the contract document					
A5	Comprehensive payment term is included in the contract					
<b>B. Preliminary planning budget and time schedule</b>						
B1	The project scope was clearly defined in the beginning					
B2	Preliminary planning of resource allocation was prepared					
B3	Overall construction operation plan was prepared					
B4	Detail work methodology and approach for each construction activity is available					
B5	Different planning software (Excel, MS Project, Primavera...)					
<b>C. Selecting efficient subcontractors</b>						
C1	Experience of subcontractor has been evaluated					
C2	Reputation of subcontractor has been well assessed					
C3	Previous work quality of subcontractor has been evaluated well					
C4	Number of well experienced personnel working for the subcontractor is known					
C5	Use of Modern technology and equipment by the subcontractor is assessed					
<b>D. Maintain good relationship with local gov't</b>						

D1	The firm strictly follows Local governments policies and procedures regarding construction					
D2	Meetings, network, and communication with government offices are frequently held					
D3	Renewed licenses and all necessary Legal documents are ready and available					
D4	The firm participates in community development programs					
D5	The company is available for government's support requirements at its level					
<b>E. Safety and Security program</b>						
E1	The company provides safety equipment for each Personnel at the project					
E2	The firm provides safety equipment for hazardous areas within the project					
E3	Periodic safety and security trainings will take place					
E4	Safety and security policies and procedures are well established					
E5	There is continuous follow up on execution of safety and security policies and procedures					
<b>F. Allocate contingency</b>						
F1	Contingency budget is allocated for unforeseen construction events					
F2	Contingency budget is allocated for additional works					
F3	Contingency budget is allocated for design changes is allocated					
F4	When preparing timeline of the project contingency has been allocated					
F5	Well-drafted process of how to access contingency Budget is clearly stated					
<b>No.</b>	<b>Performance Attributes</b>	<b>Degree of Performance</b>				
		<b>Very Poor</b>	<b>Poor</b>	<b>Fair</b>	<b>Good</b>	<b>Very Good</b>
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>G. Project Performance</b>						
G1	How do you rate the Schedule Performance of the Projects?					

G2	How do you rate the Cost Performance of the Projects with respect to cost overrun?					
G3	How do you rate the projects' quality performance according to design and specifications?					

**Section 3: Overall Project Risk and Risk Mitigation Strategies related opinions**

1. Can you please describe the construction risks your company has been facing over the years?

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2. What are the risk mitigation strategies your firm uses to tackle the risks you mentioned above?

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3. Do the project team members engage in project risk mitigation strategies related training or other knowledge enhancing activities? If yes, How?

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4. Does the project evaluate risk events that have occurred to better understand why the risk occurred and whether there were failures in the project's risk mitigation strategies? How does the project identify and subsequently implement changes to improve its project risk mitigation strategies?

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5. Are project teams frequently surprised by poor project performance, such as project cost or schedule overruns?

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**Thank You!**

Appendix 2. List of grade 1 contractors.

No.	Contractor Name	Category	Address	Date of Registration
1	3M Engineering & Construction PLC	BC-1	A/A	21/4/2008
2	Abebe Girmaye Building Contractor	BC-1	Tigray	6/3/2008
3	Abera Lisanu Building Contractor	BC-1	Hawasa	14/4/2008
4	Adam Construction (Samuel Bogale)	BC-1	A/A	21/3/2008
5	Africawit Construction PLC	BC-1	A/A	21/12/2007
6	Afro Tsion Construction P.L.C. (Sisay Desta G/Yesus)	GC-1	A/A	14/03/2008
7	Ahmet Aydeniz Construction	GC-1	A/A	7/4/2008
8	Alas Construction PLC	BC-1	A/A	18/4/2008
9	ALTABE PLC	BC-1	A/A	13/05/2008
10	Amahara Road Works Enterprise	GC-1	Amhara	2/3/2008
11	Amhara Building Works Construction Enterprise	BC-1	Amhara	27/12/2007
12	Amhara Water Works Enterprise Construction	GC-1	Amhara	9/3/2008
13	Anchor Foundation Specialist PLC	SC-1		8/3/2008
14	Aser Construction PLC	GC-1	A/A	26/1/2008
15	Atem Building Contractor	BC-1	Debube	30/2/2008
16	ATS Engineering PLC	BC-1	A/A	9/3/2008
17	Ayenaleme Gashawe Ariga	BC-1	A/A	17/05/2008
18	Bamacon Engineering P.L.C.	BC-1	A/A	21/1/2008
19	Beaeka General Business PLC	GC-1	A/A	20/4/2008
20	Beha Consturction (Behailu Tefera Seifu)	BC-1	A/A	5/5/2008
21	Bekele Sorsa Building Contractor	BC-1	A/A	17/2/2008
22	Belayeneh Tesfaye	BC-1	Oromia	3/3/2008
23	Bereka Construction	BC-1	A/A	15/4/2008
24	Bereket Endashaw Building Contractor	BC-1	A/A	11/4/2008
25	Berhan Tobiaw Mareye	BC-1	A/A	14/4/2008
26	Bermog Construction PLC	GC-1	A/A	15/2/2008
27	Bright Construction PLC	BC-1	A/A	28/3/2008
28	Capstone Engineering	BC-1	A/A	10/2/2008

29	Crafts Construction PLC	BC-1	A/A	30/2/2008
30	CRBC Addis Engineering PLC	GC-1	A/A	5/12/2007
31	Cross-Land Construction (Yaregal Yifredew Mengistu)	GC-1	A/A	29/05/2008
32	Daniel Tsegaye G/Yohannes	BC-1	A/A	26/4/2008
33	Data Construction PLC	BC-1	A/A	16/3/2008
34	Dawit Girmay Building Contractor	BC-1	A/A	18/05/2008
35	Defence Construction & Engineering Enterprise	GC-1	A/A	19/2/2008
36	Demera Engineering Construction	BC-1	A/A	3/6/2008
37	Desalegn Asrade Kassa	BC-1	A/A	30/2/2008
38	Dini Construction	BC-1	Afar	20/4/2008
39	Diriba Defersha Amosha	GC-1	Oromia	13/05/2008
40	Dugda Construction PLC	BC-1	A/A	4/4/2008
41	EL General Business PLC	BC-1	A/A	6/3/2008
42	Elmiolindo Construction P.L.C.	BC-1	A/A	22/3/2008
43	Emnete Endeshaw General Contractor	GC-1	Hawassa	20/1/2008
44	Equator Engineering Construction PLC	BC-1	A/A	18/2/2008
45	Etete Construction	BC-1	A/A	21/4/2008
46	Ethio Canadian Business Group	GC-1	A/A	27/4/2008
47	Ethio General Contractor	GC-1	A/A	29/04/2008
48	Ethiopian Road Construction Corporation	GC-1	A/A	20/05/2008
49	Fal General Contractor	GC-1	A/A	28/3/2008
50	FE Construction PLC	BC-1	Oromia	5/5/2008
51	Flintstone Engineering	BC-1	A/A	2/5/2008
52	GAD Construction PLC	BC-1	A/A	28/12/2007
53	Gemshu Beyene Botte	GC-1	A/A	14/03/2008
54	Genale Construction PLC	BC-1	A.A	21/1/2008
55	Geom Luigi Varnero P.L.C (Alber to Varnero)	GC-1	AA	5/2/2008
56	Getachew Atsbeha Kidanu	BC-1	A/A	16/05/2008
57	Giga Con.P.L.C. (G/Hiwot Girmay)	GC-1	A/A	15/4/2008
58	Gutema Firisa Building Contractor	BC-1	Oromia	5/1/2008
59	Hawa Adem Musse	GC-1	A/A	15/4/2008

60	Homa Construction (Adugne Ejigu)	GC-1	A/A	12/5/2008
61	Jafar Construction & Real State	BC-1	A/A	5/4/2008
62	Justice Building Contractor P.L.C.	BC-1	A/A	11/4/2008
63	K.K.G. Building Contractor	BC-1	A/A	21/4/2008
64	Kasma Engineering P.L.C.	BC-1	A/A	18/05/2008
65	Kassa & Sons Construction P.L.C.	BC-1	A/A	22/12/2007
66	Kassahun Abeje Building Contractor	BC-1	A/A	3/2/2008
67	Keangnum Enterprises Limited	GC-1	A/A	1/4/2008
68	Kibco Service & Investment PLC	BC-1	A/A	14/3/2008
69	Kif Construction	GC-1	A/A	12/5/2008
70	Koracon Construction	BC-1	A/A	18/2/2008
71	Kulubi Construction	BC-1	A/A	21/12/2007
72	Lorat Construction	BC-1	A/A	23/04/2007
73	Lucy Engineering P.L.C.	BC-1	A.A	18/1/2008
74	Magercon P.L.C.	BC-1	A/A	11/4/2008
75	MEDCON Engineering and Construction PLC	RC-1	A/A	5/4/2008
76	Megelta Construction PLC	BC-1	A/A	6/4/2008
77	Mela Engineering & Construction P.L.C.	BC-1	A/A	15/03/2008
78	Melcon Construction PLC	GC-1	A/A	10/3/2008
79	Mepo Contracting and Management Services PLC	BC-1	A/A	21/3/2008
80	Midroc Foundation Specialist (Bauer Midroc)	PF-1	A/A	12/5/2008
81	Mohammed Yesufe Eshete	BC-1	A/A	12/4/2008
82	N.K.H. Construction P.L.C.	GC-1	A/A	26/4/2008
83	Nasew Construction P.L.C.	BC-1	A/A	25/4/2008
84	Orbit Engineering & Construction P.L.C.	BC-1	A/A	22/11/2007
85	Orchid Bussiness Group P.L.C.	GC-1	A/A	20/4/2008
86	Oromia Roads Const. Entreprise	GC-1	A/A	17/05/2008

87	Orrix Construction PLC	BC-1	A/A	4/1/2008
88	Radar Construction	BC-1	A/A	2/11/2007
89	Rama Construction PLC	GC-1	A/A	15/4/2008
90	Rediete-Dagem Engineering & Construction P.L.C.	BC-1	A/A	26/4/2008
91	Roel Construction	BC-1	A/A	3/3/2008
92	SA Construction P.L.C.	BC-1	A/A	5/4/2008
93	Salini Costruttori S.P.A Ethiopian Branch	GC-1	A/A	13/05/2008
94	Samket Engineering & Construction PLC	BC-1	A/A	3/3/2008
95	Samson Chernet Road Contractor	GC-1	A/A	25/05/2008
96	Samson G/Yohannes Building Contractor	BC-1	A/A	14/3/2008
97	Samuel S/Mariam Endale	BC-1	A/A	24/2/2008
98	SATCON Construction	GC-1	A/A	19/12/2007
99	Senan Construction P.L.C.	RC-1	A/A	26/4/2008
100	Sina Construction P.L.C.	BC-1	A/A	29/3/2008
101	Sunshine Construction	GC-1	A/A	30/3/2008
102	Sur Construction PLC	GC-1	A/A	16/3/2008
103	Tamrat Temesgen Building Contractor	BC-1	A/A	7/3/2008
104	Teklehaimanot Asgedom Building Contractor	BC-1	A/A	29/4/2008
105	Tewodros Abera General Contractor	GC-1	A/A	25/05/2008
106	TIKS Construction	BC-1	A/A	30/3/2008
107	Tiku Berhane Building Contractor	BC-1	A/A	1/4/2008
108	Tilahun Abebe General Contractor	GC-1	A/A	6/3/2008
109	TNT Construction	GC-1	A/A	21/3/2008
110	Trust Construction	BC-1	A/A	17/05/2008
111	United Construction P.L.C.	BC-1	A/A	21/3/2008
112	Unity Engineering P.L.C (Assefa Demssie)	BC-1	A/A	2/6/2008
113	Universal Construction P.L.C.	BC-1	A/A	19/12/2007
114	Yared Tekelemedhin Mengistu	GC-1	A/A	13/3/2008
115	Yemane Girmay Bisrat General Contractor	GC-1	A/A	10/3/2008
116	Yencomad Construction PLC (Yemiru Nega)	GC-1	A/A	2/5/2008

117	Yerer Construction P.L.C.	BC-1	A/A	23/3/2008
118	Yeshi PLC	BC-1	A/A	3/1/2008
119	Yirgalem Construction P.L.C.	GC-1	Hawasa	5/12/2007
120	Yohannes Haile Building Contractor	BC-1	A/A	26/1/2008
121	Yosef Kassaye Building Contractor	BC-1	A/A	3/5/2008
122	Yotek Construction PLC	GC-1	A/A	5/4/2008
123	Zamra Construction PLC	BC-1	A/A	6/4/2008
124	Ziquala Building Contractor	BC-1	A/A	21/4/2008

