DECLARATION

I, Mengesha Kahsay, the undersigned person declare that the thesis entitled "*Assessment of Risk Management Practices in Public Building Construction Projects in Nifas Silk-Lafto Sub-City, Addis Ababa: Government Perspectives*" is my original and submitted for the award of Master of Degree in Construction Technology and Management from Addis College at Addis Ababa and it hasn't been presented for the award of any other degree. Under this study, fellowship of other similar titles of any other university or institution of all sources of material used for the study has been appropriately acknowledged and notice.

Mengesha Kahsay _____ _____

Candidate Signature Date

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Several construction sector professionals, individuals and academicians have been participated in this study. I would like to elongate my honest salutations to all. Virtually, I want to offer this wisdom to my Almighty God for the wisdom he bequeathed upon me, the strength peace of my mind and good health in order to complete this research.

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ACRONYMS/ABBERIVATIONS

EC = Ethiopian Calendar

GC = Georgian Calendar

GOE = Government of Ethiopia

PM =Project Management

PMBOK = Project Management Body of Knowledge

PMI = Project Management Institute

PMO = Project Management Office

SPSS =Statistical Package for Social Sciences

ABSTRACT

This study examines risk management practices in public building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa, from a government perspective. Using a mixed research approach, the study employed descriptive design, targeted 250 participants—including contractors, consultants, clients, and government officials, with a sample of 153 respondents selected through Yamane's formula. The study achieved a high response rate of 80% with contractors, consultants, clients, and government officials. Key findings reveal that regulatory enforcement positively impacts risk mitigation but remains inconsistent across projects. Risk awareness among government officials varies significantly, with more experienced officials demonstrating higher levels of understanding. While existing risk management practices, including safety regulations, are generally effective, training programs lack consistency and comprehensive coverage. Although risk identification processes exist, they are not formalized or systematically documented, particularly concerning external risks. The study concludes that enhancing regulatory enforcement, improving risk awareness through targeted training, standardizing training programs, and formalizing risk identification frameworks are critical for advancing risk management in public construction projects. It is recommended that regulatory enforcement should be strengthened, and targeted training programs should be developed for government officials to boost their risk management capabilities, and a formalized risk identification framework should be implemented across all construction projects to ensure consistent and proactive risk management practices.

Keywords: Public Building Construction, Risk Awareness, Regulatory Enforcement, Risk Identification, Risk Management

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Risk management has become a crucial on-going activity in project implementation, essential for effective resource utilization and successful project outcomes. According to the Project Management Institute (PMI), risk management is one of the ten key knowledge areas in project management, encompassing processes such as planning, analysis, response, review, and assessment (Oyedele et al., 2016). Risk management is defined as the systematic process of identifying, analysing, and responding to project risks to minimize their impact on project objectives (Hillson, 2003). This process includes several critical components: Risk Identification is the practice of determining potential risks that could affect a project (Bannerman, 2008); Risk Analysis involves assessing the likelihood and potential impact of identified risks, employing both qualitative and quantitative methods (Pritchard, 2014); Risk Response Planning is the development of strategies to mitigate, transfer, accept, or exploit risks (Kendrick, 2015); and Risk Monitoring and Control entails continuously tracking risks throughout the project lifecycle to ensure that responses are effective and adjustments are made as necessary (PMI, 2017). By applying these principles, organizations can enhance their risk management practices and improve overall project outcomes.

Building construction projects are inherently complex and expose stakeholders to various risks that can significantly influence outcomes. Environmental risks, such as adverse weather conditions, can lead to delays and increased costs (Hwang et al., 2017). Financial risks, including material price fluctuations and currency exchange rate variations, threaten project budgets and viability (Oyedele et al., 2016). Technical risks, such as design complexities and technological failures, may affect construction quality and efficiency (Bubshait & Al-Juwairah, 2017). Legal and regulatory risks arising from evolving codes and permit requirements can cause delays and

disputes (Oyedele et al., 2016). Additionally, political instability and social unrest can disrupt construction activities and impact project safety (Bubshait & Al-Juwairah, 2017).

Risks in building construction can be classified into two categories: tangible risks, which are physical or legal in nature, such as natural disasters and accidents, and intangible risks, which relate to factors like communication, stakeholder relationships, and operational efficiency (Hani & Mervat, 2017). Globally, construction projects face a myriad of challenges that reflect these classifications. For instance, in regions prone to earthquakes, such as Japan and California, traditional risks dominate, necessitating strict adherence to seismic building codes to mitigate physical hazards (Fujimoto, 2020). Conversely, in rapidly developing economies like India and Brazil, intangible risks related to stakeholder engagement and project coordination often lead to significant delays and cost overruns (Choudhury & Nambiar, 2021).

In Africa, construction projects encounter unique problems that demand robust risk management practices. Issues included limited infrastructure, fluctuating political climates, and limited access to financing pose significant risks (Oyedele et al., 2016). In Ethiopia, construction projects are critical for urban development, yet they face local problems like insufficient skilled labour, dependence on imported materials, and the need to adhere to environmental regulations (Girma & Mulugeta, 2020). The integration of lessons learned from global practices can inform local strategies, helping to create more resilient construction practices in Ethiopia and other developing contexts. This is because effective risk management frameworks must, therefore, account for both types of risks to enhance project success.

Risk management is essential for addressing these risk related problems and ensuring project success. Research highlights the importance of standardized risk management processes, including proactive planning and rigorous assessment, tailored to local contexts (Hani & Mervat, 2017). In Addis Ababa, particularly in Nifas Silk-Lafto Sub-City, building construction has expanded rapidly over the past two decades, driven by urbanization, population growth, and increased investment in infrastructure. This growth has exposed government-led construction projects to various risks, including land disputes, procurement delays, contractor inefficiencies,

and regulatory inconsistencies. These risks have often led to cost overruns, substandard work, and prolonged project timelines. Despite efforts by local authorities to enforce construction codes and improve oversight, gaps in project planning and stakeholder coordination continue to challenge effective risk mitigation.

Over time, the Addis Ababa City Administration has introduced structured risk management frameworks in public construction projects, especially since the mid-2010s. These include improved feasibility studies, stricter contractor prequalification, and regular monitoring through project audits. However, implementation remains inconsistent due to limited technical capacity, overlapping mandates among agencies, and lack of timely data. The case of Nifas Silk-Lafto Sub-City serves as a microcosm of the broader challenges in the city—highlighting both the progress and ongoing gaps in institutionalizing risk management practices in building construction projects.

This study focuses on government perspectives regarding risk management in building construction projects within Nifas Silk-Lafto Sub-City, Addis Ababa. The sub-city is a key area for construction activities, influenced by significant investments from the Addis Ababa City Administration aimed at regulating both government and commercial private buildings (Addis Ababa City Administration, 2024). By exploring risk management practices in this context, the study seeks to enhance project management strategies and outcomes, contributing to the sustainable development of urban infrastructure in Addis Ababa.

1.2 Statement of the Problem

The collapse of buildings in urban areas, such as the recent incident in Addis Ababa's Addis Ketema, neighbourhood, highlights significant risks associated with building construction projects in Ethiopia (Addis Standard, 2022). This tragic event, which resulted in the loss of seven lives, underscores the critical need for effective risk management practices in construction. According to Africanews (2024), poor-quality construction and insufficient regulatory measures have been cited as contributing factors to such structural failures. Additionally, The Structural Engineer (2024) reported that similar incidents in 2022, such as the collapse in Merkato, raised

concerns about the prevalence of substandard construction practices and inadequate regulatory oversight.

The recent (as reported above by Addis Standard, 2022, Africanews 2024 and The Structural Engineer 2024) building collapses in Addis Ababa, including the tragic incident in Addis Ketema, highlight the critical need for improved construction quality, regulatory oversight, and risk management to prevent further loss of life and address the broader implications of urban safety and development. Firstly, the loss of seven lives signifies a devastating human toll, prompting grief and trauma in the community. Additionally, these incidents erode public trust in government oversight and construction practices, leading to heightened scrutiny and demands for accountability. Economically, the collapses can deter investment in the construction sector, stifling growth and job creation. Furthermore, persistent issues of poor-quality construction may result in increased insurance costs and legal liabilities for construction firms. Ultimately, the on-going risks highlight the critical need for comprehensive regulatory reforms and enhanced safety protocols to prevent future tragedies.

Previous studies have highlighted various issues within the construction industry in Ethiopia but often do not specifically address the risks inherent in building construction projects (Girma & Mulugeta, 2020). Notably, there remains a significant research gap in concepts and methodologies focused specifically on building construction project risk management in Addis Ababa, particularly from the perspectives of consulting and construction firms rather than local government entities (Teferi, 2020). While some studies have assessed risk management practices among contractors in Addis Ababa (Melese, 2022), others have examined structural deficiencies without addressing governmental perspectives on risk management (Abate et al., 2019). Furthermore, studies such as those by Assefa (2021) and Fekade (2023) provide insights into safety culture and risk perception in the Ethiopian construction sector but still lack a comprehensive approach that includes government roles in risk mitigation.

The flourishing construction industry necessitates adequate risk management practices to ensure the successful delivery of projects. These practices vary from risk identification, assessment, and

mitigation regarding the financial, environmental, regulatory, and operational features of construction. In the case study area Nifas Silk-Lafto, bureaucratic obstacles, resource availability limitations, and safety hazards have come across as paramount issues, therefore demanding the evaluation of the existing risk management practice (Nifas Silk-Lafto Sub City Administrations, 2024).

Preliminary interviews conducted in Nifas Silk-Lafto Sub-City indicate that local authorities are increasingly focused on these risks. The combination of these insights suggests an urgent need for further research on public sector perspectives to develop effective risk management frameworks. Research on risk related practices in construction sector in developing countries frequently overlooks localized dynamics and regulatory oversight specific to sub-cities like Nifas Silk-Lafto. Thus, this study aims to assess current risk management practices in building construction projects within Nifas Silk-Lafto Sub-City, Addis Ababa, from the perspectives of local government.

1.3 Objective of the Study

1.3.1 General Objective of the Study

The general objective of the study is to examine risk management practices in public building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa from government perspectives.

1.3.2 Specific Objectives

The specific objectives of the study are:

- To identify the level of risk awareness among government officials, contractors, consultants and clients responsible for construction oversight.
- To assess the risk management practices in terms of risk identification, risk assessment and analysis, risk mitigation and response, risk monitoring and control in public building construction projects at Nifas Silk-Lafto Sub-City, Addis Ababa
- To assess the effectiveness of regulatory enforcement in addressing risks associated issues with building construction in the Nifas Silk-Lafto Sub-City.

- To develop forward strategies to minimize risk in building constructions.

1.4 Research Questions

- How is the current risk oriented level of awareness among government officials, contractors, consultants and clients responsible for construction oversight?
- How are the risk management practices in terms of risk identification, risk assessment and analysis, risk mitigation and response, risk monitoring and control in public building construction projects?
- How the effectiveness of regulatory enforcement in addressing risks is associated issues with building construction in the Nifas Silk-Lafto Sub-City?
- What are the forward strategies to minimize risk in building constructions?

1.5 Scope of the Study

1.5.1 Thematic Scope

The scope of this study focuses on evaluating risk management practices in public building construction projects (specifically G +4 and higher) from the perspective of government authorities in Nifas Silk-Lafto Sub-City, Addis Ababa. The study aims to assess how effective regulatory enforcement is in addressing risks associated with building construction in the sub-city. It also seeks to determine the level of risk awareness among government officials involved in construction oversight. Additionally, the study intends to evaluate and rank current risk management measures, such as training programs, safety regulations, and compliance checks. Another goal is to examine the responses to risk management challenges in public building construction projects. Finally, the study aims to assess the processes used for risk identification in these construction projects.

1.5.2 Geographical Scope

This study focuses on Nifas Silk-Lafto Sub-City, located within the vibrant urban landscape of Addis Ababa, Ethiopia.

1.5.3 Temporal Scope

The research was conducted from September 2024 to March 2025, capturing a current snapshot of risk management practices in building construction projects within Nifas Silk-Lafto Sub-City on projects constructed between years from 2022 to 2024.

1.5.4 Methodological Scope

The methodological scope of this study integrates both questionnaire surveys and in-depth interviews to comprehensively explore risk management practices in building construction projects within Nifas Silk-Lafto Sub-City, Addis Ababa. The qualitative approach will primarily involve conducting in-depth interviews with key stakeholders from local government agencies responsible for regulatory oversight in construction.

1.6 Limitation of the Study

Because of the broad nature of this area of study, it was difficult to access all the literature concerning risk management practices in building construction projects as well as project management knowledge area, project performance, and its determinants concepts because it would have been very voluminous. Thus, this study was hanged in a limited aspect within the literature, thereby around risk management practices in building construction projects. This topic concerns government employees, consultants, contractors, higher officials of the authority, managers and supervisors in Nifas Silk Lafto Sub City, Addis Ababa.

1.7 Significance of the Study

The study addresses theoretical gaps by focusing on the specific context of government-led risk management practices in building construction projects within an urban sub-city. Practically, the study offers several benefits across various stakeholders. For government officials and managers, it provides insights into the effectiveness of current regulatory practices in building construction projects. Lastly, other researchers and scholars in the field of construction management and urban governance can leverage the study's findings to expand their knowledge base, replicate

methodologies, and compare findings across different urban contexts, thereby advancing collective understanding and contributing to broader academic discourse.

1.8 Organization of the Study

This study is structured into five chapters to provide a comprehensive analysis of risk management practices in public building construction projects within Nifas Silk-Lafto Sub-City, Addis Ababa. Chapter One introduces the background, objectives, research questions, and significance of the study. Chapter Two reviews relevant literature, exploring theoretical frameworks, types of risks in construction, and global best practices, with a particular focus on challenges faced in developing cities like Addis Ababa. Chapter Three outlines the research methodology, detailing the research design, data collection methods, and data analysis procedures used in the study. Chapter Four presents the results and discussion, analyzing the current risk management practices in Nifas Silk-Lafto Sub-City and highlighting key challenges from a government perspective. Finally, Chapter Five concludes the study by summarizing the findings and offering recommendations for improving risk management practices in public building construction projects in the area, along with suggestions for future research and policy enhancements.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Introduction

The chapter is systematically organized into several key sections, including theoretical literature, empirical literature, research hypotheses, and the conceptual framework of the study. It offers an in-depth review of both theoretical and empirical studies related to regulatory practices in building construction projects. Additionally, the chapter critically examines the challenges faced in implementing these regulatory practices, considering both practical and contextual factors. It also explores the impact of these regulatory measures on project outcomes, focusing on how they influence efficiency, safety, compliance, and overall project success. By drawing on various studies, the chapter aims to provide a comprehensive understanding of the effectiveness of regulatory enforcement, its potential barriers, and the ways in which it can enhance or hinder the sustainability and quality of public building construction projects. This evaluation serves as a foundation for understanding the broader implications of regulatory practices in the context of construction management and policy.

2.2 Theoretical Literature Review

2.2.1 Concepts of Risk Management

The concept of risk lacks a singular, universally accepted definition, with various scholars offering differing perspectives on its nature and implications. At its core, risk refers to the potential for outcomes to deviate from expected results, often resulting in adverse consequences. These outcomes can lead to significant losses, which may arise from uncertain events such as accidents, crimes, fires, or natural disasters (Novickytė, 2019). According to Mehedi et al. (2020), risk is fundamentally about the uncertainty of potential losses, which can place considerable financial burdens on businesses and organizations. These losses can manifest in various ways, including reputational damage, financial insolvency, and delays in project delivery.

From a more technical standpoint, risk involves both the likelihood and the potential severity of an adverse event, often quantifiable through statistical tools such as probability, mean, and dispersion. When empirical data is available, risk can be analysed using statistical measures like confidence intervals. However, in the absence of sufficient data, decision-makers rely on expert judgment and experience to estimate the probability of such events occurring and to mitigate their potential impact (Novickytė, 2019).

Irungu and Makori (2016) define risk management as a structured process aimed at identifying, assessing, and mitigating potential threats to a project or organization. This proactive approach involves recognizing risks early on, quantifying their likelihood and impact, and taking steps to either reduce or eliminate them. Cagliano et al. (2015) emphasize that effective risk management is not only about controlling risks at minimal costs but also about balancing risk reduction strategies with the overall goals of the organization. Strategies may include risk avoidance, the use of preventive measures, or even the decision to reject high-risk projects altogether.

Effective risk management contributes to the success of projects by ensuring that they stay within budget, meet timelines, and comply with safety and quality standards. In project management, it is crucial to integrate risk management strategies into the entire project lifecycle, ensuring that potential risks are addressed proactively rather than reactively. This holistic approach to risk management has led to the development of various models and frameworks designed to enhance the ability to manage uncertainties and unforeseen challenges in construction projects (Aditya et al., 2022).

2.2.2 Risk Mitigation Strategies in Construction Oversight

In the construction industry, effective risk mitigation strategies are essential for minimizing accidents and ensuring project success. These strategies include comprehensive training programs that equip workers with the knowledge and skills to recognize and respond to potential hazards (Smith, 2022). Safety regulations, such as OSHA standards, provide a framework for best practices, setting clear expectations for worker safety and operational procedures (Johnson & Roberts, 2023). Regular compliance checks further enforce these regulations, allowing for the

identification of non-compliance issues before they escalate into serious problems. Additionally, collaboration between government authorities and private sector stakeholders is vital for managing construction risks effectively. This partnership can facilitate the sharing of information and resources, promoting a proactive approach to risk management (Williams, 2023). However, barriers to effective communication often exist, such as differing priorities, bureaucratic hurdles, and inadequate channels for feedback. Addressing these barriers is critical for fostering a collaborative environment that enhances safety and compliance in the construction industry (Brown & Lee, 2023).

2.2.3 Risk Management in Public Building Constructions

Risk management in public building construction projects is a critical component of ensuring that such projects are completed successfully, meeting safety, quality, and budgetary expectations. Given the complexity and scale of public building projects, particularly those that involve multiple stakeholders, the identification, assessment, and mitigation of risks are vital for their smooth execution. Public building projects often face unique challenges, including strict regulatory requirements, public accountability, and political influences, all of which can significantly impact project timelines and outcomes (Novickytė, 2019).

One of the primary concerns in managing risks in public building construction is the financial risk. Public projects are often funded through government budgets, and any delay or failure to meet the agreed-upon standards can result in financial losses for the government and taxpayers (O'Connor et al., 2017). Therefore, effective risk management strategies must include thorough budgeting, forecasting, and contingency planning to prevent cost overruns. In addition, financial risks also include the risk of cost escalation, often driven by changes in regulations, labor strikes, or unforeseen market conditions such as inflation or fluctuations in material costs (Tang et al., 2020).

Furthermore, public building projects typically require rigorous adherence to safety and regulatory standards. Construction safety risks, including the potential for accidents on site, must be proactively addressed. Risk management strategies in this context often involve detailed

safety protocols, regular inspections, and adherence to established building codes and safety standards. Effective risk management in this area requires collaboration between various entities, including government agencies, construction contractors, and safety inspectors, to ensure that safety guidelines are strictly followed throughout the project lifecycle (Zou et al., 2014). Additionally, delays and disruptions resulting from safety issues can extend project timelines and inflate costs, further emphasizing the need for robust risk mitigation strategies.

Environmental risks also play a significant role in public building construction projects. These risks can stem from external factors such as adverse weather conditions, natural disasters, or environmental regulations that require compliance with sustainability standards (Liu et al., 2021). For example, construction projects located in areas prone to flooding or seismic activity must account for these environmental risks through careful planning and design modifications. Addressing these risks may involve incorporating advanced engineering techniques, conducting environmental impact assessments, and establishing emergency response plans (Mehedi et al., 2020).

In addition to these common risk factors, public building projects are often influenced by political and social risks. Political risks may include changes in government policies, shifts in public opinion, or changes in leadership that could alter the course of the project or lead to delays in approvals and funding. Social risks could involve resistance from local communities or other stakeholders, which may lead to project stoppages or delays due to protests or legal challenges. Risk management strategies for public projects must include stakeholder engagement and public relations efforts to mitigate these social risks and ensure that the project aligns with public interests (Fenton & Macmillan, 2019).

The complexity of public building construction projects necessitates the use of structured risk management frameworks, such as the Risk Breakdown Structure (RBS) or the Project Risk Management Process, to systematically identify and address potential risks. These frameworks allow project managers to assess risks across various dimensions (e.g., financial, safety, environmental, and political) and develop comprehensive mitigation plans tailored to the specific

needs of the project (Kähkönen et al., 2021). Moreover, risk management practices should be integrated into the overall project planning and execution phases, ensuring that risks are continuously monitored, and adjustments are made as new risks emerge (Mehedi et al., 2020).

In conclusion, effective risk management in public building construction is integral to the success of the project, ensuring that it meets budgetary, safety, and regulatory standards. With the complexity and scope of these projects, public building construction requires a multi-faceted approach to risk management, which incorporates financial planning, safety protocols, environmental assessments, and stakeholder engagement to mitigate the variety of risks that can emerge throughout the project lifecycle (Project Management Institute, 2017).

2.2.4 Risk Management Practices in Building Constructions

In the field of building construction, risk management practices encompass a comprehensive set of strategies and methodologies aimed at identifying, assessing, and mitigating potential risks that could impact project outcomes. These practices are essential for ensuring the successful completion of construction projects within budget, schedule, and quality constraints (Oyedele et al., 2016). Key practices in risk management include the systematic identification of risks specific to construction projects. This process involves scrutinizing various aspects such as design complexities, site conditions, environmental factors, and regulatory requirements that could pose potential threats. By pinpointing these risks early in the project lifecycle, construction teams can develop proactive strategies to address them effectively (Cagliano et al., 2015).

Once risks are identified, the next critical step is risk assessment, where the likelihood and impact of each identified risk are evaluated. This assessment helps prioritize risks based on their severity and potential consequences. For instance, risks with high impact and high likelihood may require immediate attention and robust mitigation measures, while risks with lower impact or likelihood may be monitored or accepted with contingency plans in place (Mehedi et al., 2020).

Effective risk management also involves the development and implementation of mitigation strategies. These strategies aim to reduce the likelihood of risk occurrence or minimize their potential impact on project objectives. Mitigation measures often include redesigning project components, enhancing safety protocols, diversifying suppliers, or instituting contractual provisions that allocate risk appropriately among project stakeholders (Teferi, 2020).

Moreover, continuous monitoring and control are integral to effective risk management in construction. Throughout the project lifecycle, constructions teams must regularly review and update risk registers, assess the effectiveness of implemented strategies, and adjust responses as new risks emerge or existing ones evolve. This on-going vigilance ensures that risks are managed proactively and that corrective actions are promptly taken to maintain project progress and mitigate adverse impacts (Irungu & Makori, 2016).

2.2.5 Risk Awareness in Construction Oversight

Risk awareness in construction oversight is critical to ensuring both safety and efficiency on construction sites. Given that construction projects inherently involve various risks—ranging from safety hazards to financial uncertainties and regulatory compliance issues—it's essential that government authorities and stakeholders have a comprehensive understanding of these risks to mitigate their impact (Smith, 2022).

To manage and minimize risks, the construction industry has adopted several key strategies. These include the implementation of comprehensive training programs for workers, the establishment of stringent safety regulations, and the conduction of regular compliance checks (Johnson & Roberts, 2023). Training programs are designed to equip construction workers with the necessary skills and knowledge to identify, assess, and manage risks, thereby fostering a safety-oriented culture within the industry. Safety regulations outline clear guidelines for best practices, helping to reduce the frequency and severity of accidents. Compliance checks ensure that workers and contractors adhere to these safety standards, further minimizing the likelihood of accidents, legal issues, and project delays.

In addition to these preventive measures, effective collaboration between government authorities and private sector stakeholders is crucial for managing construction risks. This partnership allows for the identification of barriers to effective communication and risk management, such as conflicting priorities, bureaucratic inefficiencies, and insufficient resource allocation. By addressing these barriers, stakeholders can improve coordination and cooperation, ultimately enhancing the overall effectiveness of risk management practices. Such collaborative efforts not only mitigate risks but also contribute to more efficient and successful project outcomes (Smith, 2022; Johnson & Roberts, 2023).

2.2.6 Regulatory Enforcement and Risk Mitigation in Building Construction

The effectiveness of regulatory enforcement plays a vital role in mitigating risks associated with building construction. Theoretical studies highlight that clear regulations, strict compliance monitoring, and institutional accountability are essential components of an effective regulatory framework (Loosemore et al., 2006). Regulatory enforcement helps manage risks related to safety, quality, cost overruns, and environmental impact by ensuring that construction activities adhere to legal and technical standards. However, the literature also points out that enforcement alone is insufficient without institutional capacity, transparency, and stakeholder collaboration (Zou et al., 2007). In addition to enforcement, the development of forward-looking strategies is emphasized in the literature as a means to anticipate and minimize construction risks. These strategies include integrating risk management into early project planning, utilizing risk registers, adopting digital tools for project tracking, and promoting adaptive project governance. Proactive approaches that combine prevention, preparedness, and continuous learning are considered more effective in managing both known and emerging risks in complex construction environments (Hillson, 2003; PMI, 2017). Together, these theoretical insights inform how regulatory enforcement and strategic planning can work in tandem to strengthen risk management in the building construction sector.

2.2.7 Minimize Risk in Building Constructions

Developing forward strategies to minimize risks in building construction is a central theme in modern project management literature. Scholars emphasize that risk management must transition from reactive approaches to proactive, strategic planning to effectively address uncertainties throughout the project lifecycle (Hillson, 2003). Forward-looking strategies involve identifying potential risks early in the planning phase, continuously assessing changing conditions, and implementing adaptive measures to manage unforeseen challenges. Techniques such as the use of risk registers, scenario planning, Building Information Modeling (BIM), and real-time monitoring systems are commonly highlighted as tools that enhance foresight and preparedness (Zou et al., 2007; PMI, 2017). Moreover, promoting stakeholder collaboration, enhancing communication across project teams, and building institutional capacity through training and knowledge-sharing are key to improving resilience in construction projects. The literature also underscores the importance of integrating sustainability and environmental considerations into risk planning to align with long-term urban development goals (Hwang et al., 2017). Collectively, these strategies aim not only to minimize losses but also to improve decision-making, optimize resource use, and ensure the overall success of construction projects.

2.2.8 Risk Management Components

2.2.8.1 Risk identification

It is the first and perhaps most critical step in the risk management process, particularly in public building construction projects. Properly identifying risks early in the project lifecycle allows project managers, government authorities, and stakeholders to address potential issues before they escalate, thus improving the chances of project success. In the context of public building constructions, risk identification involves systematically recognizing potential threats that could affect project objectives such as budget, timelines, quality, safety, and regulatory compliance (Irungu & Makori, 2016).

The complexity of public building projects means that risks can stem from various sources, including technical, financial, environmental, social, legal, and political factors. Therefore, effective risk identification requires a broad, multi-disciplinary approach that considers all potential areas of concern. The process involves not only identifying obvious risks but also uncovering hidden or less evident threats that may only become apparent as the project progresses. Risk identification can be conducted through a variety of methods, including brainstorming sessions, expert interviews, workshops, and historical data analysis (Mehedi et al., 2020).

2.2.8.2 Risk Planning

Risk Response Planning is a critical phase in Project Risk Management, essential for developing strategies to address identified risks and mitigate their impact on project objectives. These strategies—risk avoidance, risk transfer, risk mitigation, and risk acceptance—play crucial roles in managing uncertainty effectively (PMI, 2017). Risk Avoidance involves taking proactive measures to eliminate risks entirely. For instance, if a construction project is planned in an earthquake-prone region, the risk of seismic activity may prompt a decision to relocate the project to a safer area to entirely avoid the risk of structural damage (Mariyono, 2019).

2.2.8.3 Risk Analysis

Once risks have been identified, the next step is to analyse their likelihood and potential impact. An organization might divide risks into “serious, moderate, or minor” or “high, medium, or low” depending on their potential for disruption (Irungu & Makori, 2016). The exact categorization method is less important than the recognition that some risks present a more pressing threat than others. Risk analysis helps businesses to prioritize mitigation. The Risk Management Plan analyses potential risks. Once a risk control and management document are in place, the immediate next phase will be a risk assessment, that is, an analysis of their potential and impact to determine whether or not the project's implementation is profitable (Addisu, 2018).

2.2.8.4 Risk Response

There may not be quick solutions to reduce or eliminate all the risks facing a project. Some risks may need to be managed and reduced strategically over longer periods. Therefore, action plans should be worked out to reduce these risks. These action plans should include risk description with risk assessment, description of the action to reduce the risk, owner of the risk action and committed completion date of the risk action (Mariyono, 2019). This step in the risk management process is developing the risk response or treatment plan. This is added to the risk register and provides vital information for what actions need to be taken if a risk occurs or is occurring (Emily and Miller, 2018). Risk response plans usually impact time and costs. It is therefore mandatory that the time and cost for the defined response plan are calculated as precisely as possible. This also assists in selecting a response plan from the alternatives, and in verifying whether the response plan is costlier or has more impact on one of the project objectives than the risk itself. The relative importance of the different sources of risk depends on the nature and circumstances of the individual company and the farm household (Mehedi et al., 2020).

2.2.8.5 Risk Evaluation

Risks are not static; they change over time. The potential impact and probability of occurrence change, and what was once considered a minor risk can grow into one that presents a significant threat to the business and its revenue. Risk monitoring is the process of "keeping an eye" on the situation through regular risk assessments. It's important to understand that risk management is not a one-off event; it's a process that recurs through the life of an organization as it endeavours to anticipate threats and proactively handle them before they have an adverse impact (Addisu, 2018). In avoiding the adversative effect of future income variations and retaining a smooth consumption path, they established a precautionary reserve, named precautionary savings, through less consumption in the existing period, and resorting to it if the bad state is understood in the upcoming time. Precautionary savings comprise the accumulation of liquid and semi-

liquid assets in the form of companies' apparatus, resources, and equipment and other useful assets (Mehedi et al., 2020).

2.3 Empirical Literature Review

2.3.1 Global Contexts

In China, a study by Wang and Li (2020) underscored the importance of integrating risk management into project planning to mitigate financial risks and enhance project outcomes. Korean construction projects were analyzed in a study by Park et al. (2019), which focused on risk management practices adopted by construction firms. The study highlighted the role of government policies in promoting effective risk mitigation strategies and identified cultural factors influencing risk perceptions and management approaches in the Korean context.

Mariyono (2019) discussed the application of agency theory in understanding risk management practices in construction projects. The study highlighted how agency relationships between stakeholders influence decision-making processes and risk management strategies, particularly in large-scale projects with diverse stakeholder interests.

In Malaysia, a study by Yusuf and Gunasekaran (2018) explored risk management practices in the construction sector, particularly focusing on the adoption of advanced risk assessment techniques and proactive risk response strategies. The research emphasized the importance of stakeholder collaboration and regulatory compliance in mitigating risks and improving project performance. In the United States, one study examined risk management strategies in commercial building projects, emphasizing the role of proactive risk identification and mitigation. Their research advocated for integrated risk management frameworks that incorporate both preventive measures and responsive strategies to enhance project resilience (Emily & Miller, 2018).

Across Europe, Cagliano et al. (2015) explored risk management techniques in construction projects, emphasizing cost-effective approaches to mitigate risks through proactive planning and

continuous monitoring. Their study highlighted the importance of organizational readiness and strategic alignment in achieving effective risk management outcomes (Cagliano et al., 2015).

2.3.2 African Contexts

In South Africa, a study by Masango et al. (2019) highlighted issues such as regulatory complexities, economic uncertainties, and labor issues that contribute to project risks. Masango et al. emphasized the importance of integrating risk management into project planning and execution to enhance project success rates. Nigeria's construction industry was the subject of a study by Odeyinka and Oladapo (2019), which explored risk management practices among construction professionals. The research identified risk assessment and risk response strategies as critical areas where improvements are needed. The study recommended enhancing education and training in risk management practices to mitigate risks more effectively.

Research by Smith and Jones (2018) underscored the importance of robust regulatory frameworks in mitigating risks associated with building construction, emphasizing the need for localized approaches tailored to specific urban landscapes (Smith & Jones, 2018). In Zimbabwe, Moyo and Mbohwa (2018) investigated risk management in construction projects, focusing on the role of governance and regulatory frameworks in mitigating risks. Their findings underscored the need for stronger regulatory oversight and the implementation of robust risk management strategies to address problems such as financial risks and project delays. Sudanese construction projects were analyzed in a study by Ibrahim and Gerais (2017), which examined the impact of political instability and economic uncertainties on project risks. The research highlighted the importance of adapting risk management practices to local contexts and emphasized the role of government policies in supporting effective risk mitigation strategies.

2.3.3 Ethiopian Contexts

Melese (2022) revealed that contractors predominantly employ risk avoidance strategies and resort to remedial measures such as increasing working hours. The study highlighted a common use of comparative analysis techniques to assess risks, although systematic risk analysis before

project execution was found to be uncommon. Contractors often address risks reactively rather than proactively, focusing on immediate mitigation rather than preventive measures.

Teferi (2020) identified critical risk factors including high inflation rates, delayed client payments, poor resource management, risk of corruption, and economic instability, all significantly impacting project objectives. Financial risks were particularly emphasized, with time and cost overruns identified as prevalent concerns. Participants highlighted risk transfer and reduction as primary mitigation strategies, yet noted a lack of comprehensive knowledge and practice in risk management that requires improvement within the industry.

Girma and Mulugeta (2020) in their research on the defies of the construction industry in Addis Ababa, Ethiopia, identified broader issues but did not specifically address the risks inherent in building construction projects. Their findings highlighted the need for more focused studies on risk management practices at local levels within the city (Girma & Mulugeta, 2020).

In a comparative study by Abate et al. (2019) in Bahir Dar, Ethiopia, structural deficiencies in residential buildings were analyzed, shedding light on the economic and safety implications of inadequate risk management practices. The study revealed that despite efforts to address structural integrity, gaps in regulatory enforcement persisted, contributing to ongoing risks in building construction projects (Abate et al., 2019).

Ahmadi et al. (2017) conducted a study focusing on risk and uncertainty in project management, examining various risk factors and their impacts on project performance globally. Their research provided insights into the complexities of risk management in diverse project environments, emphasizing the need for adaptable strategies tailored to specific project contexts (Ahmadi et al., 2017).

2.4 Conceptual Framework

2.4.1 Theoretical Foundations

Transaction Cost Economics posits that firms incur costs in organizing economic transactions beyond the price paid for goods and services. In the context of construction projects, TCE suggests that risks arise due to bounded rationality, opportunistic behaviour, and uncertainties in contracting and market environments (Mariyono, 2019). This theory underscores the importance of understanding transaction costs associated with risk management decisions and contractual arrangements. Agency In construction projects, this theory explains how conflicts of interest between stakeholders (owners, contractors, subcontractors) may lead to moral hazards and adverse selection, impacting risk management strategies (Ibrahim & Gerais, 2017).

2.4.2 Components of Risk Management

- **Risk Identification** - This phase utilizes techniques such as brainstorming, expert judgment, historical data analysis, and scenario planning to capture a comprehensive range of risks (Mariyono, 2019).
- **Risk Assessment and Analysis** - are employed to prioritize risks based on their severity and potential consequences (Ibrahim & Gerais, 2017).
- **Risk Mitigation and Response Planning** - includes risk avoidance (changing project plans to eliminate risks), risk reduction (implementing controls and safeguards), risk sharing (transferring risks through contracts or insurance), and risk acceptance (acknowledging and budgeting for risks that cannot be mitigated) (PMI, 2017).
- **Risk Monitoring and Control**- project reviews, progress assessments, and performance indicators are essential for proactive risk management (Project Management Institute, 2017).

2.4.3 Contextual Factors

- **Regulatory Environment** - Regulatory frameworks play a crucial role in shaping risk management practices by establishing standards, guidelines, and compliance requirements that mitigate legal, financial, and operational risks (Cagliano et al., 2015).
- **Cultural and Organizational Factors** - Cultural norms, organizational structures, and stakeholder relationships influence risk perceptions, decision-making processes, and the

adoption of risk management practices within construction firms (Park et al., 2019; Mariyono, 2019).

- **Outcomes and Performance -** The ultimate goal of effective risk management is to enhance project success by achieving objectives related to cost, schedule, quality, and stakeholder satisfaction (Emily & Miller, 2018).

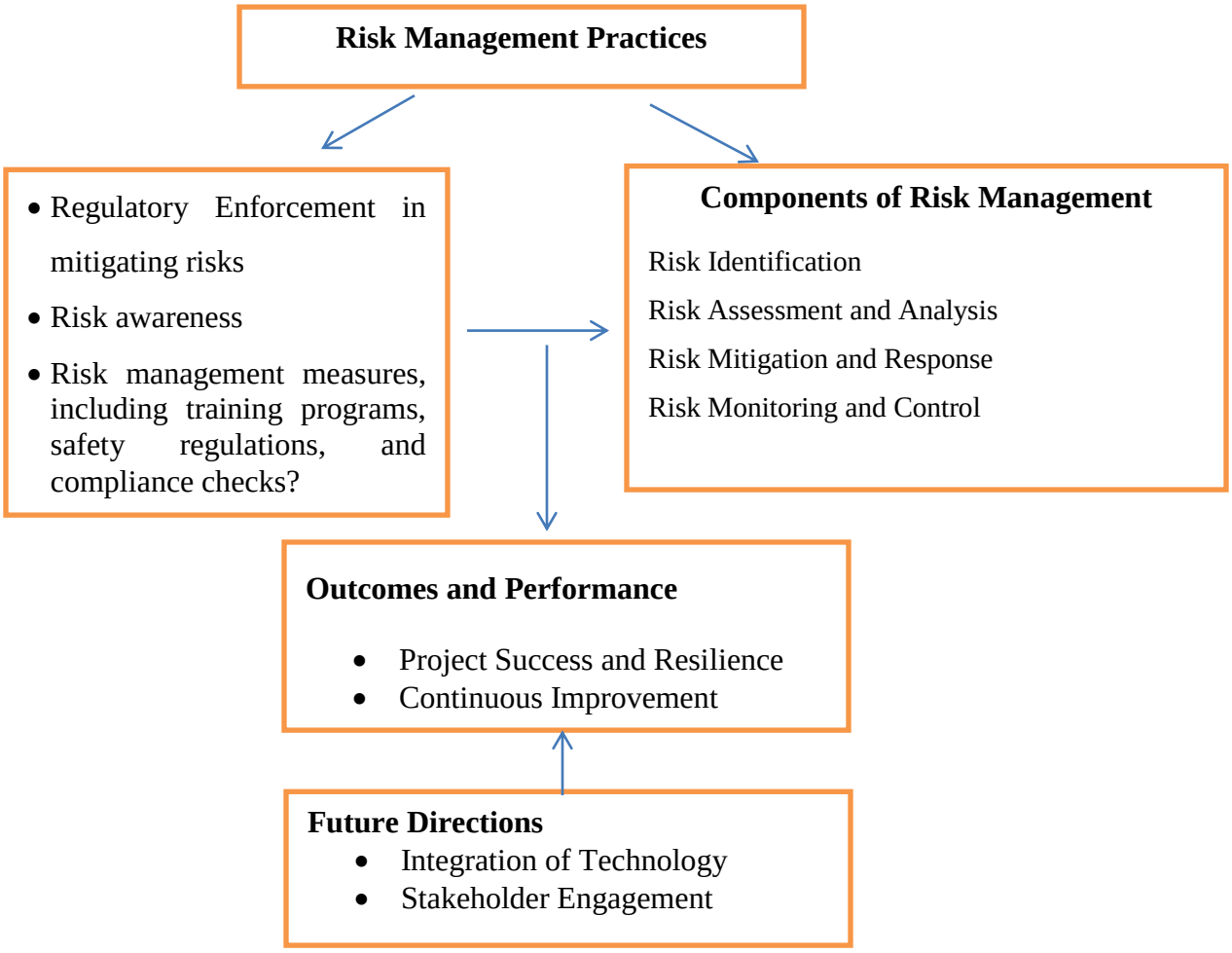


Figure 1 Conceptual Framework Adapted from Wang & Li (2020)

2.5 Research Gap

In reviewing global studies on risk management practices in the construction industry, several key themes and gaps emerge that provide insights into the current state and future directions of research in this field.

Studies from diverse regions such as China, Korea, Malaysia, the United States of America, and Europe have contributed significantly to understanding risk management practices in construction. For instance, Wang and Li (2020) highlighted the contests in China's construction industry, including regulatory compliance, economic fluctuations, and technological advancements, stressing the integration of risk management into project planning to mitigate financial risks effectively. Similarly, Park et al. (2019) examined Korean construction projects, emphasizing the role of government policies and cultural factors in shaping risk perceptions and management strategies.

Agency theory has also been applied to understand risk management practices, as seen in Mariyono's (2019) study, which explored how agency relationships influence decision-making in large-scale construction projects. This theoretical lens provides insights into the complexities of stakeholder interactions and their impact on risk management strategies.

In Malaysia, Yusuf and Gunasekaran (2018) focused on advanced risk assessment techniques and proactive risk response strategies, underscoring the importance of stakeholder collaboration and regulatory compliance in enhancing project performance. Conversely, studies from the United States and Europe, such as those by Emily and Miller (2018) and Cagliano et al. (2015), respectively, emphasized cost-effective risk management approaches through proactive planning and continuous monitoring.

Despite studies by Melese (2022) and Teferi (2020) on risk management practices in Addis Ababa, which identified a reliance on risk avoidance strategies among contractors and the need for systematic risk analysis, Girma and Mulugeta (2020) noted a gap in local-level research, emphasizing the need for more focused studies to address specific risk factors and improve

industry practices. Studies in Nifas Silk Lafto Sub City have highlighted similar challenges in construction practices, with a need for better risk management strategies, but there is a lack of in-depth research specifically focusing on localized risk factors and the effectiveness of risk management at the sub-city level.

Overall, while existing studies provide valuable insights into risk management practices globally, gaps remain in understanding localized risk factors, stakeholder dynamics, and the effectiveness of regulatory frameworks in diverse socio-economic contexts. This study aimed to address these gaps by integrating theoretical frameworks like agency theory, enhancing empirical studies across different regions, and advocating for tailored risk management strategies that account for opportunities in the public building construction industry.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The research methodology, approach, population and sampling methods, sample size determination, and data analysis techniques are all presented in this work. The primary and secondary sources, data gathering techniques such surveys and interviews, ethical considerations, and test equipment are also presented.

3.2 Study Area

Nifas Silk-Lafto Sub-City is one of the 11 sub-cities of Addis Ababa. Further, this sub-city has turned into a city characterized by higher population density and rapid urban growth, furthering the development aspects of this city. It includes residential, commercial, and industrial areas, including historic and modern architecture.

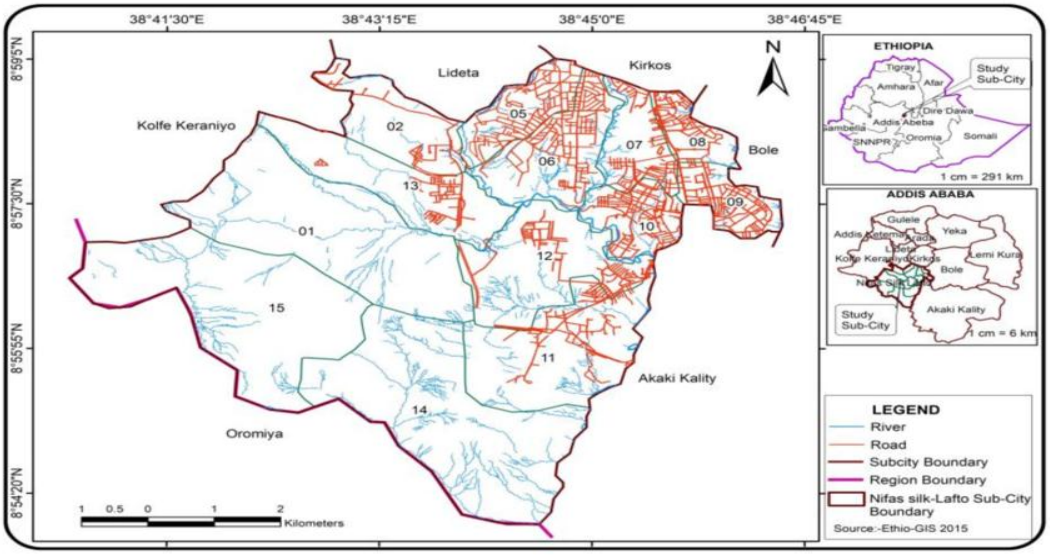


Figure 2 Study Area, Nifas Silk Lafto Sub City

(Nifas Silk-Lafto Sub City Administrations, 2024-2025).

The building construction in Nifas Silk-Lafto is growing very fast, enjoying investment from both public and private investors. These have been the result of government initiatives for infrastructure development, housing, and commercial spaces. The sub-city strategic location, proximity to transport routes, and urban amenities make it a focal point for construction activities.

3.3 Research Approach

In this research, both quantitative and qualitative research approaches were harnessed to pool valuable information across the sample population. The quantitative approach defined phenomena across large participants, summarizing characteristics and relationships from the basis of statistical techniques. This method seems apt for analysing the overall pattern in the relationship and processes related to risk management practices in building construction projects.

In contrast, the qualitative approach enabled an in-depth understanding of how risks impact project performance. This qualitative analysis took into consideration aspects that are hard to capture and measure quantitatively, such as the contextual factors affecting risk perceptions and the very specific challenges faced by government officials in Nifas Silk-Lafto Sub-City. The study was also adopting an approach that utilizes mixed methods, wherein both quantitative and qualitative data collection and analyses are embedded within one study framework.

3.4 Research Design

A descriptive research design was adopted in this present study, largely because it is highly appropriate for uncovering and describing risk management practices in building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa, from the perspective of the government. The main purpose of descriptive research is to identify research questions related to the present status of risk management and provide a complete quantitative account of phenomena. This is the usual way descriptive survey research design can easily document the attitudes and perception regarding the risk management practices in building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa, from the point of view of the government.

This research also found what relationship exists between the risk components and project performance in the context of the government. Descriptive research can facilitate an in-depth evaluation of these relationships and present real insight into how the different risk management practices affect the project outcomes in the context of Nifas Silk-Lafto Sub-City.

3.5 Data Type and Source

This research on risk management practices in building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa, from a governmental perspective, relies most on primary data. To collect primary data, semi-structured and structured questionnaires were employed for the purpose of eliciting accurate information with comprehensiveness. The type of data involved quantitative and qualitative.

Additionally, direct communications with the respondents were facilitated through an interview-based approach to gain deeper insights into their views and experiences. Primary information is to be collected from a field survey among selected employees from various respondents at Nifas Silk Lafto Sub City, Addis Ababa.

This meant, in effect, the researcher carried out a thorough analysis and interpretation of findings to gain a comprehensive understanding of risk management practice in regard to building construction projects from the perspective of the government.

3.6 Population and Sampling

3.6.1 Target Population

This study targeted a population of 27 G+4 and above projects, which involved 250 professionals comprised of contractors 38, consultants 58, and government offices 11 and representatives of clients 33 (Nifas Silk-Lafto Sub-City, 2024). This included schools and governmental office building projects in Nifas Silk-Lafto Sub-City, covering the years 2022-2024.

3.6.2 Sample Size Determination

Sampling refers to the systematic selection of representative cases from a broader population. A sample can then be described as a representative group that includes all of the population's attributes or characteristics (Mariyono, 2019). Due to a lack of resources and time, the entire population did not employ in data collection. As a result, it is required to pick a representative sample from the accessible population that can be easily researched and inferences drawn to the larger population. The goal of sampling was to obtain accurate empirical data at a lower cost than examining all conceivable cases. The respondent was selected using a simple random selection procedure.

Individuals in the different strata were selected at random. Taro Yamane's formula was used to calculate the sample size for each start sizes.

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

Where: n is the sample size,

- N is the population size, and
- E is the level of precision. Using this formula 153 of G+4 and above public buildings project clients (direct project users), consultants, government officials and contractors were selected.

$$n= \quad 250 /(1+250\ (0.05)^{\ 2})$$

$$n \approx 153$$

The size of the sample in the study is determined to be 153 respondents out of the total population of various 27 projects (250 research participants in number) G+4 and above public buildings project contractors, clients, contractors and government officials. The following table shows the number of professional selected from each public buildings project performers like contractors, clients, contractors and government officials.

3.6.3 Sampling Techniques

The study utilized a stratified proportional random sampling technique to ensure a representative sample of 250 respondents from G+4 and above public buildings project contractors, clients,

contractors and government officials. The population was divided into various distinct strata based on specific 250 respondents from G+4 and above public buildings project involvement as contractors, clients, contractors and government officials.

Table 1 Sample Size Determination

G+4 and above Public Buildings Project Actors	Target population	Proportion of each stake holder	Selected number of Sample size
Consultants	58	0.62	36
Contractors	38	0.60	23
Clients	33	0.61	20
Government Officials	121	0.61	74
Total	**250**		**153**

Source: Nifas Silk-Lafto Sub-City, Addis Ababa

By employing stratified sampling, the study aimed to capture the diversity of roles within the 250 respondents from G+4 and above public building project actors, including contractors, clients, and government officials, ensuring that each category was adequately represented in the sample. Within each stratum, participants were selected using random sampling methods, which helped eliminate bias and provided a more accurate reflection of the overall population. This approach not only enhanced the validity of the findings but also facilitated a comprehensive analysis of risk practices across the different roles of public building project actors, such as contractors, clients, and government officials involved in the various G+4 and above public building projects.

3.7 Data Collection Instruments

3.7.1 Questionnaire

Closed-ended five-point Likert scale questionnaires (attached in Appendix I) were served as the primary data collection tool for this study on risk management practices in building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa, from a government perspective. The questionnaire comprises two sections: First, it presented the demographic profile of participants

that were provided information regarding gender, age, educational background, monthly income, occupation, and duration of their involvement in the construction sector. In Addition, it will present questions related to risk management practices. This section includes items adapted from construct dimensions identified in previous studies by Smith & Jones (2018) on urban building construction in Nairobi and Abate et al. (2019) on structural deficiencies in residential buildings in Bahir Dar. These items are measured on a five-point Likert scale (Likert, 1932) ranging from 1=Strongly Disagree to 5=Strongly Agree. Respondents indicated their level of agreement or disagreement with each statement regarding risk management practices. Primary quantitative data was collected through self-administered questionnaires distributed to experts located in Nifas Silk Lafto sub city, Addis Ababa.

3.7.2 Interview

An interview was conducted with selected informants. Fifteen (15) experts and officials from various government agencies and Nifas Silk-Lafto Sub-City were interviewed. An interview checklist (provided in Appendix II) was guided comprehensive interviews with selected informants. The interviews aim to gather detailed insights into participants' attitudes, perceptions, and approaches regarding risk management practices in building construction projects. According to Kothari (2014), interviews involve structured or unstructured questioning conducted through oral or verbal communication, often recorded or transcribed. These interviews are fundamental in social science research for capturing nuanced perspectives and detailed qualitative data.

3.7.3 Document Review

Annual reports of Nifas Silk-Lafto Sub-City for the years 2022-2023 and procedural documents were reviewed to supplement data collection. These documents provide valuable contextual information about governance, policies, and operational procedures related to building construction projects in the sub-city.

3.7.4 Data Collection Procedure

The researcher obtained permission from Construction Technology and Management, Addis College and seek authorization from relevant function of Nifas Silk-Lafto Sub-City and initiatives before commencing data collection for the study on risk management practices in building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa, from a government perspective. Subsequently, the researcher and two designated data collectors distributed the research questionnaires to individual respondents. Questionnaires were administered to respondents upon entry to their respective working offices and service halls. Respondents were required to complete the questionnaires during their stay and return them before leaving. This approach ensures a high response rate as all distributed questionnaires were collected directly.

3.8 Data Analysis Method

3.8.1 Data Encoding

The survey data was encoded and analysed using the Statistical Package for Social Sciences (SPSS) (version 25.0 software). This process involves identifying and addressing missing information or discrepancies in the collected questionnaires.

3.8.2 Descriptive Analysis

Descriptive statistics was employed to summarize and interpret the gathered data systematically and accurately. Measures such as the mean (average) and standard deviation (spread of scores around the mean) were used to analyse the demographic profile of respondents. Frequency distributions and percentages were also utilized to provide a clear understanding of the respondents' perceptions regarding risk management practices in building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa.

3.8.3 Qualitative Analysis

Qualitative data from structured interviews were undergoing content analysis. This approach involved systematically categorizing and interpreting interviewees' responses to understand their perspectives on risk management practices. Unstructured interviews were conducted to capture detailed insights from selected interviewees based on their experiences and viewpoints.

3.8.4 Inferential Analysis

Inferential statistics, specifically t-tests (independent tests) and ANOVA (Analysis of Variance) were utilized to analyse quantitative data obtained from the survey questionnaire. These statistical techniques are chosen for their ability to assess the significance of differences among variables related to risk management practices affecting productivity in building construction projects.

Independent t-tests were employed to compare means between two independent groups of variables. This analysis helped determine if there are statistically significant differences in perceptions or practices related to risk management among different categories of respondents.

ANOVA was used to assess differences among means of three or more independent groups. Specifically, it allowed for comparison across different respondents or levels of experience within the government perspective on risk management practices in building construction projects.

The results derived from these inferential analyses enabled drawing informed conclusions about the relationships between variables and their impact on risk management practices. This approach enhances the study's robustness by providing statistical evidence to support findings and recommendations.

3.8.5 Data Presentation

This section presents the data collected from government officials, project managers, and engineers involved in public building construction projects, with a focus on understanding risk management practices. The data were gathered through structured questionnaires and in-depth

interviews, aiming to assess the effectiveness of regulatory enforcement and identify strategies for minimizing construction risks. Quantitative data are presented using tables and charts to show the frequency and percentage distribution of responses, while qualitative data from interviews are summarized thematically. Key variables examined include the frequency of risk assessment practices, the presence of formal risk management plans, the level of enforcement of construction regulations, and commonly encountered risk factors such as budget overruns, design errors, and procurement delays. The presentation of data is structured to align with the study's objectives, offering a clear picture of the current practices and challenges in managing construction risks within government-led building projects.

3.9 Data Reliability and Validity

3.9.1 Validity

Following a review of the literature, this study addressed employing risk, financial, project, and building constructions specialists as well as validity by adapting instruments created by well-known authors and also employed in the prior study. Understanding the interpretation(s) to be drawn from the chosen tests or instruments is the first step in validating the results. The gathering of sources for evidence to support the intended interpretation is then necessary.

3.9.2 Reliability

The researcher conducted reliability test to measure the consistency of the study measurement for each item of constructs using Cronbach's Alpha (α) value.

Table 2 Reliability Test Results

Variables	**Reliability Statistics**	
	Cronbach's Alpha	N of Items
Level of risk awareness	.824	5
Risk management practices	.828	20
Effectiveness of regulatory enforcement	.804	8
Develop forward strategies	.856	11

Source: SPSS Output, 2025

The reliability statistics indicate that the internal consistency of the scales used in the study is quite high. The Cronbach's Alpha for "Risk Practices" is .866, suggesting a strong reliability for this category with 25 items. The "Outcomes and Performance" scale also shows good reliability, with a Cronbach's Alpha of .853 for 5 items. "Enhancing Risk Management" has a slightly lower but still acceptable reliability of .831 for 6 items, indicating that all three scales are reliable for the research.

3.10 Ethical Considerations

The researcher at Addis College is committed to adhering to strict ethical guidelines throughout the study. Key ethical considerations include prior to participation, respondents were required to provide explicit consent. This ensures that their involvement in the study is voluntary and informed. Participants were informed about the study's objectives and how their contributions contributed to its completion. The researcher upheld the dignity, interests, and rights of all participants involved in the study. This involves maintaining confidentiality of respondents' data and ensuring that their privacy is protected. Responses collected strictly confidential and used solely for academic purposes. The researcher will not access any confidential documents of the organization without proper authorization.

The study respects the organization's policies regarding intellectual property rights. Any findings or insights generated from the study adhere to these guidelines. Throughout the data collection process, the researcher treated all respondents with respect and courtesy. This approach fosters a conducive environment for respondents to feel comfortable and encourages them to provide honest responses to the questionnaire items. By adhering to these ethical considerations, the researcher aims to conduct a study that is ethically sound and respectful of all participants involved.

CHAPTER FOUR

RESULTS AND DISCUSION

4.1 Introduction

This chapter presents the findings of the assessment of risk management practices in public building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa from government perspectives. The chapter begins by giving the response rate of the respondents, followed by their profiles and then the findings on the management practices in public building construction projects. The data was analyzed through descriptive statistics and inferential analysis. Descriptive statistics are then presented according to the objectives of the study followed correlation and regression analysis and by the summary of the findings. The results are presented below using table. .

4.2 Response Rate and Demographic Profile of Respondents

4.2.1 Response Rate

Questionnaire return or completion rate is the proportion of the sample that participated as intended in all the research procedures (Abate, 2019). This study collected data from various project actors in Nifas Silk-Lafto Sub-City, Addis Ababa from government perspectives. The result summarized below.

Table 3 Response by Organization Project Involvement

G+4 and above Public Buildings Project Actors	Distributed	Return	%
Consultants	36	28	78%
Contractors	23	18	80%
Clients	20	16	80%
Government Officials	74	59	80%
Total	**153**	**122**	**80%**

(Survey Result, 2025)

The response or completion rate for this study was exceptionally high, with a total of 80 % of participants responding. The government officials had an 80 % return rate, followed by

contractors and clients, each also at 80 %. Consultants showed a slightly lower but still impressive return rate of 78 %. Overall, the high participation across all groups indicates strong engagement and commitment to the research procedures.

4.2.2 Respondents Demographic Profile

This section deals with the demographic information of the respondents which include; gender, age, level of education, number of years worked in the organization and the current job positions of the respondents. It is presented in terms of frequency and percentages.

Table 4 Respondents Profile

Variable (Category)		N	%
Gender	Male	76	62.3%
	Female	46	37.7%
Age	18 – 35	28	23.0%
	36 - 45	55	45.1%
	46 -55	18	14.8%
	Above 56	21	17.2%
Education Level	High School and below	3	2.5%
	Diploma	27	22.1%
	Degree	40	32.8%
	Masters	52	42.6%
Monthly Income	Below 5,000	6	4.9%
	5,001 – 10,000	60	49.2%
	10,001 – 15,000	11	9.0%
	Above 15,001	45	36.9%
Experience	Less than a year	49	40.2%
	1-5 years	49	40.2%
	6- 10years	4	3.3%
	More than 10 years	20	16.4%

(Survey Result, 2025)

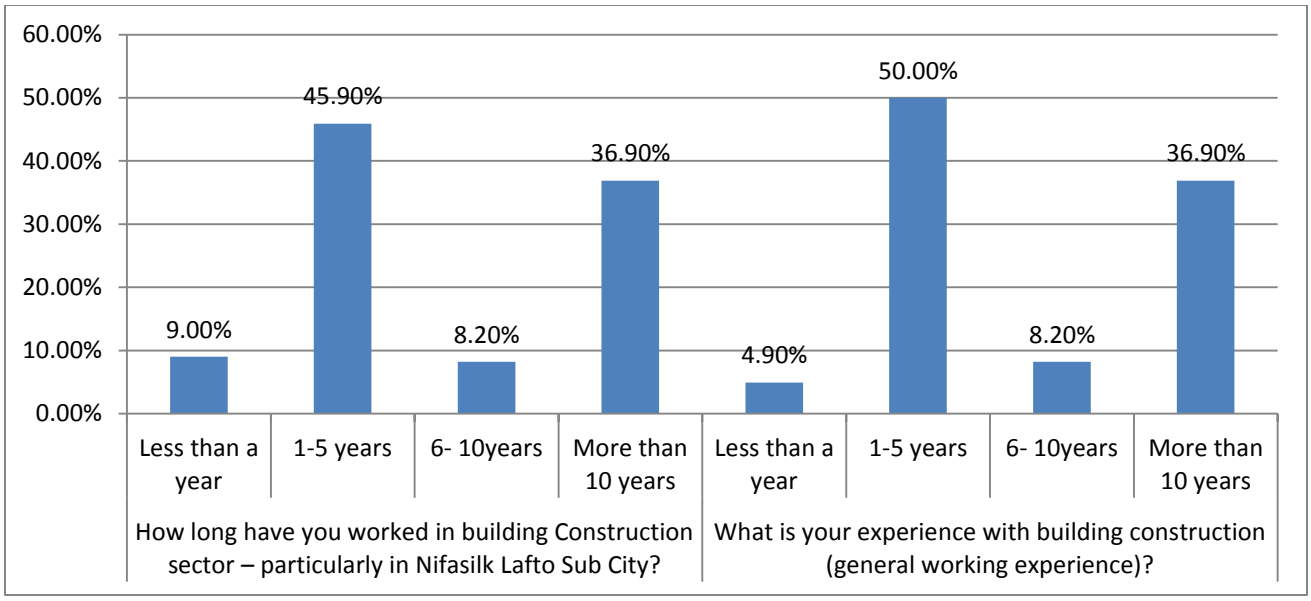
The sample consists of 62.3% male participants and 37.7% female participants, indicating a predominantly male representation in the study. This distribution reflects a gender disparity, with males making up the majority of the respondents. The relatively lower percentage of female participants suggests that the construction industry in the Nifas Silk-Lafto Sub-City may have a

gender imbalance. However, the 37.7% female participation still represents a significant portion of the sample.

The majority of participants, 45.1%, are in the 36-45 age groups, followed by 23% in the 18-35 range. A smaller portion of the sample, 14.8%, falls within the 46-55 age group, and 17.2% are above 56 years old. This indicates that the workforce involved in building construction in the area is primarily composed of middle-aged individuals, with fewer younger and older workers represented. The age distribution suggests that the construction industry in this area might attract more experienced professionals.

The education levels of the participants show a relatively high level of education, with 42.6% having a master's degree, 32.8% holding a degree, and 22.1% possessing a diploma. Only 2.5% of participants have a high school education or less. This suggests that the building construction sector in Nifas Silk-Lafto Sub-City is attracting highly educated individuals, with a significant portion of the workforce holding advanced degrees.

The income distribution reveals that nearly half of the respondents (49.2%) earn between 5,001 and 10,000, while 36.9% earn above 15,001. A small proportion, 9%, earns between 10,001 and 15,000, and only 4.9% earn below 5,000. The majority of workers seem to earn moderate to high incomes, suggesting a reasonably well-compensated workforce in the building construction industry in this area.



(Survey Result, 2025)

Figure 3 Experiences and of Respondents

A significant portion of the respondents (45.9%) have 1-5 years of experience working in the building construction sector in Nifas Silk-Lafto Sub-City, while 36.9% have more than 10 years of experience. Only 9% have less than a year of experience, and 8.2% have between 6-10 years of experience. This distribution highlights a moderately experienced workforce, with a large number of individuals who have worked in the area for several years.

A substantial 50% of participants have between 1-5 years of general experience in building construction, while 36.9% have more than 10 years of experience. 8.2% have between 6-10 years, and only 4.9% have less than a year of experience. This suggests that most respondents have a moderate to high level of experience in the construction field, indicating a knowledgeable workforce with a significant proportion of seasoned professionals.

4.3 Level of Awareness toward Risk Management

Descriptive statistics was employed to summarize and interpret the gathered data systematically and accurately. It used measures such as the mean (average) and standard deviation (spread of scores around the mean) was used to analyse the respondents' response for each variable. Frequency distributions and percentages was utilized to provide a clear understanding of the respondents' perceptions regarding risk management practices in building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa.

4.3.1 Consultants' Perspective

Consultants reported a moderate level of agreement regarding government officials' awareness of risk management, with a grand mean of 3.26. They perceived that government officials are generally aware of common construction risks (mean = 3.29) and understand their roles in managing those risks (mean = 3.21). Consultants also acknowledged that regular training (mean = 3.32) and access to relevant tools and information (mean = 3.36) are in place for government staff. However, their rating of leadership prioritization of risk awareness (mean = 3.14) was slightly lower, suggesting some skepticism about high-level commitment. Overall, consultants show a relatively balanced view but indicate potential room for strengthening leadership involvement (See Table 5).

4.3.2 Contractors' Perspective

Contractors provided more varied responses, resulting in a lower overall mean of 3.21. Notably, they rated the awareness of government officials about common construction risks very low (mean = 1.83), indicating a significant concern about frontline risk recognition. In contrast, they expressed high agreement that government officials receive training (mean = 3.83) and have access to tools and information (mean = 4.00), showing appreciation for the system in place rather than personal awareness levels. Ratings on understanding roles (mean = 3.17) and leadership prioritization (mean = 3.22) were moderate. These results suggest that contractors

recognize institutional support but question the depth of awareness among individual officials (See Table 5).

4.3.3 Clients' Perspective

Clients mirrored the contractors' viewpoint, also with a grand mean of 3.21. Their responses highlighted a low belief in the awareness of government officials regarding common construction risks (mean = 1.88), indicating concern about the officials' proactive involvement. However, clients rated other aspects quite positively, such as training programs (mean = 3.88), access to updated information (mean = 4.00), and understanding of roles (mean = 3.13). Their slightly lower rating of leadership prioritization (mean = 3.19) aligns with their belief that while systems may exist, practical awareness and prioritization remain weak. This group appears to appreciate the structural efforts in place but questions the actual effectiveness and engagement of government actors (See Table 5).

4.3.4 Government Officials' Self-Assessment

Government officials themselves reported the highest level of awareness, with a grand mean of 3.42. They rated their understanding of roles in risk management highest (mean = 3.40), and expressed confidence in their access to relevant information and tools (mean = 3.55) as well as regular training opportunities (mean = 3.38). Their awareness of general risks (mean = 3.20) and the leadership commitment to prioritizing risk management (mean = 3.55) were also rated relatively high. These results reflect a positive self-perception of readiness and capacity, although the discrepancy with contractor and client views suggests a perception gap that may require better communication and cross-stakeholder engagement (See Table 5).

4.3.5 Overall Perspective and Mean Differences

The data provided outlines the mean and standard deviation values for various risk management practices, as well as the individual survey items used to measure these practices. Below is a detailed analysis of each variable based on the mean [4.51 and above excellent, 4.50 – 3.51 very

good, 3.50- to 2.51 good or moderate, below 2.50 poor as the study of Abate (2019)] and standard deviation, using the responses from the survey items. A standard deviation considered below 2 is typically regarded as indicating low variability or dispersion in a data set, meaning that the data points are relatively close to the mean. This suggests that the data is consistent and does not vary significantly from the average value (See Table 5).

The analysis of respondents' perceptions reveals a moderate level of awareness toward risk management among key stakeholders in public building construction projects within Nifas Silk-Lafto Sub-City. Government officials demonstrated the highest overall awareness with a grand mean of 3.42, indicating a relatively good understanding of risk-related responsibilities and access to relevant information. Consultants followed closely with a grand mean of 3.26, while both contractors and clients reported slightly lower awareness levels, each with a grand mean of 3.21 (See Table 5).

Specifically, respondents agreed that government officials understand their role in identifying and managing construction risks (grand mean = 3.29), and that risk awareness is increasingly being recognized as a leadership priority (mean = 3.36). However, while training and information accessibility were rated positively (grand means = 3.50 and 3.63, respectively), some variability was observed in perceptions. For instance, contractors and clients rated government awareness on basic risks significantly lower (means of 1.83 and 1.88 respectively), suggesting possible gaps in inter-agency collaboration or visibility.

The standard deviations, particularly among government officials and consultants, indicate diverse opinions, possibly reflecting inconsistent implementation of awareness initiatives across departments. Overall, the findings highlight that while government officials exhibit relatively strong awareness of risk management concepts, there remains room for improvement in coordination, consistency, and stakeholder perception alignment.

The data show some notable differences in perceived risk awareness levels among the four respondent groups: consultants, contractors, clients, and government officials. The largest mean difference (1.46) occurs in the item regarding whether government officials are well aware of

common risks, where contractors (1.83) and clients (1.88) rated this considerably lower than consultants (3.29) and government officials themselves (3.20). This suggests a perception gap between government officials and other stakeholders about officials' risk awareness.

For items like understanding roles in risk management and the prioritization of risk awareness by leadership, mean differences were smaller (0.27 and 0.41 respectively), indicating more agreement across groups. Interestingly, contractors and clients rated the availability of training and up-to-date information higher (means of 3.83 and 3.88, 4.00 and 4.00 respectively) than consultants and government officials, with differences up to 0.64.

Overall, the grand means across groups are fairly close (3.21 to 3.42), indicating a moderate to good level of perceived risk awareness overall, but the significant difference in the first item points to areas where communication or awareness could be improved (See Table 5).

Table 5 Respondents Reponses on Level of Awareness Group Difference

Items	Consultants		Contractors		Clients		Government Officials		Grand		Range Max - Min	Mean Difference
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Government officials are well aware of the common risks associated with public building construction projects.	3.29	.854	1.83	.383	1.88	.342	3.20	1.388	2.84	1.233	3.29 - 1.83	1.46
Government officials understand their role in identifying and managing construction risks.	3.21	.833	3.17	.383	3.13	.342	3.40	1.278	3.29	1.000	3.40 - 3.13	0.27
Regular training and awareness programs are provided to enhance risk management knowledge among government officials.	3.32	.863	3.83	.383	3.88	.342	3.38	1.263	3.50	1.014	3.88 - 3.32	0.56
Government officials have access to up-to-date information and tools related to construction risk management.	3.36	.870	4.00	0.000	4.00	0.000	3.55	1.254	3.63	.998	4.00 - 3.36	0.64
Risk awareness is considered a priority by senior government leadership in construction project oversight.	3.14	.891	3.22	.647	3.19	.750	3.55	1.307	3.36	1.084	3.55 - 3.14	0.41
Grand Mean	**3.26**		**3.21**		**3.21**		**3.42**		**3.32**			

(Survey Result, 2025)

4.4 The Risk Management Practices in terms of Risk Identification, Risk Assessment and Analysis, Risk Mitigation and Response, Risk Monitoring and Control

4.4.1 Risk Identification

The responses reveal divergent perceptions regarding how effectively risk identification is practiced in public building construction projects. Clients (mean = 4.05) and contractors (mean = 4.02) reported high satisfaction, especially regarding documentation, stakeholder involvement, and factor consideration. For instance, both rated over 4.00 for the systematic documentation and multi-disciplinary stakeholder engagement. Consultants, meanwhile, gave a moderate rating (mean = 3.32), reflecting confidence in internal processes but skepticism about external collaboration (mean = 2.93). Government officials, while rating themselves relatively positively on most items (especially stakeholder involvement at 3.73), had a lower score on prioritization processes (3.73) and scored lowest on collaboration with external experts (3.67). The grand mean for risk identification was 3.71, suggesting an overall positive outlook, but also identifying gaps in external collaboration and prioritization consistency (See table 6).

4.4.2 Risk Assessment and Analysis

Risk assessment practices were viewed consistently positively across all stakeholder groups, with the grand mean reaching 3.74. Consultants (mean = 3.69) and contractors (mean = 3.89) agreed that criteria-based classification, use of historical data, and communication of results are well implemented. Clients rated even higher (mean = 3.91), indicating confidence in analytical robustness. Interestingly, government officials (mean = 3.67) were slightly more conservative in their self-rating, which may suggest an awareness of areas needing further improvement, particularly in terms of risk classification (3.67) and communication effectiveness (3.68). Overall, the assessment phase appears structurally sound, but implementation and stakeholder communication could be enhanced (See table 6).

4.4.3 Risk Mitigation and Response

Risk mitigation and response practices received strong ratings across all groups, with a grand mean of 3.80, indicating that stakeholders generally believe this area is being handled effectively. Clients gave the highest ratings (mean = 3.92), especially for contingency budgets (4.19) and clear assignment of responsibilities (4.38). Contractors followed closely (mean = 3.94), showing confidence in both conventional and innovative approaches. Consultants (mean = 3.77) were more moderate, particularly in rating innovation (3.39). Government officials again rated themselves slightly lower (mean = 3.78), particularly on contingency budgeting and innovation, perhaps reflecting real-world limitations in resource allocation and adoption of new practices. The data suggests a solid mitigation framework exists, though innovation and budgeting may benefit from more strategic support (See table 6).

4.4.4 Risk Monitoring and Control

Risk monitoring and control emerged as the most concerning area, with a lower grand mean of 3.17. While contractors (mean = 4.02) and clients (mean = 4.08) provided high ratings, especially for regular reviews and use of lessons learned, government officials (mean = 2.38) rated themselves considerably lower. In particular, they reported challenges in periodic review (2.35), integration of monitoring into project meetings (2.50), and using past lessons (2.27). Consultants (mean = 3.78) rated this area well but echoed concerns about escalation mechanisms (3.43). The wide gap in perceptions, especially between officials and external stakeholders, indicates a disconnect in how risk control activities are managed or perceived. This reflects a need for stronger institutionalization of monitoring practices, better stakeholder engagement, and more consistent documentation of lessons learned.

Table 6 Reponses of Risk Practices - Mean

Items	Consultants		Contractors		Clients		Government Officials		Grand	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
The project team actively involves stakeholders from different departments/disciplines in identifying potential risks.	3.61	.786	4.22	.428	4.19	.403	3.73	1.056	3.84	.885
Risk identification considers both internal (project-specific) and external (environmental, economic) factors.	3.61	.875	4.00	0.000	4.00	0.000	3.88	1.059	3.85	.859
There is a systematic process in place to prioritize identified risks based on their potential impact and likelihood.	3.07	.940	1.83	.383	1.81	.403	3.73	1.191	3.05	1.259
Risk identification activities are documented and reviewed periodically throughout the project lifecycle.	3.36	.870	4.11	.323	4.19	.403	3.92	.926	3.85	.840
The project team collaborates with external experts or consultants to enhance the identification of risks.	2.93	1.120	1.67	.485	1.69	.479	3.67	1.188	2.94	1.319
Risk assessments utilize quantitative methods (e.g., probability analysis, cost-benefit analysis) to evaluate identified risks.	3.64	.678	3.72	.461	3.69	.479	3.55	1.126	3.61	.886
The project team considers historical data from similar projects to inform risk assessments.	3.75	.518	3.89	.323	3.81	.403	3.72	1.027	3.76	.783
The assessment includes evaluating the interdependencies between different risks and their cumulative impact.	3.54	.576	3.72	.461	3.88	.342	3.72	1.043	3.70	.812
There are clear criteria for classifying risks based on their severity and urgency for mitigation.	3.93	.539	4.11	.323	4.19	.403	3.67	1.203	3.86	.921
Risk analysis results are communicated effectively to stakeholders to inform decision-making processes.	3.61	.875	4.00	0.000	4.00	0.000	3.68	1.066	3.75	.865
The project team proactively develops risk response strategies tailored to the specific characteristics of identified risks.	3.14	.756	3.56	.511	3.69	.479	3.75	1.083	3.57	.908
There is a contingency budget allocated to implement risk mitigation actions.	3.96	.637	4.17	.383	4.19	.403	3.75	1.159	3.92	.905

Risk response plans include clear timelines and responsibilities assigned to team members.	3.96	.637	4.28	.461	4.38	.500	3.80	1.190	3.98	.945
The effectiveness of risk response actions is regularly monitored and adjusted as needed.	3.86	.756	4.28	.461	4.13	.342	3.97	1.008	4.01	.828
The organization encourages innovative approaches to mitigate risks beyond conventional methods.	3.393	.6853	3.611	.5016	3.688	.4787	3.617	1.263	3.574	.9784
There are established metrics or KPIs (Key Performance Indicators) to monitor the status of identified risks.	3.79	.686	4.17	.383	4.13	.342	2.30	1.266	3.16	1.286
Risk monitoring activities are integrated into regular project management meetings and reporting processes.	3.89	.567	4.11	.323	4.19	.403	2.50	1.200	3.28	1.187
The project team conducts periodic reviews to assess the effectiveness of implemented risk controls.	3.96	.576	4.17	.383	4.19	.403	2.35	1.313	3.23	1.310
There are mechanisms in place to escalate and address emerging risks promptly.	3.43	.690	3.56	.511	3.69	.479	2.48	1.242	3.02	1.098
Lessons learned from past projects are incorporated into risk monitoring to improve future risk management practices.	3.82	.548	4.11	.323	4.19	.403	2.27	1.460	3.15	1.383
Grand Mean	3.61		3.76		3.79		34.40		3.56	

(Survey Result, 2025)

Summary Table of Grand Means

Table 7 Summary Table of Grand Means

Variable	Consultants	Contractors	Clients	Govt. Officials	Grand Mean
Risk Identification	3.32	4.02	4.05	3.79	**3.71**
Risk Assessment and Analysis	3.69	3.89	3.91	3.67	**3.74**
Risk Mitigation and Response	3.77	3.94	3.92	3.78	**3.80**
Risk Monitoring and Control	3.78	4.02	4.08	2.38	**3.17**

(Survey Result, 2025)

The analysis of risk management practices across four key areas—risk identification, assessment, mitigation, and monitoring—shows generally positive perceptions from consultants, contractors, and clients, with grand means above 3.7 for the first three areas. Risk mitigation and response was rated the highest overall, indicating strong confidence in contingency planning and strategy implementation. However, risk monitoring and control received the lowest score (grand mean = 3.17), mainly due to significantly lower self-ratings by government officials, highlighting concerns about follow-up, escalation, and learning from past projects. The findings suggest that while foundational risk practices are well established, monitoring and control mechanisms require urgent attention to improve project oversight and long-term resilience.

4.5 Effectiveness of Regulatory Enforcement in Addressing Risks Associated with Building Construction

4.5.1 Questionnaire Survey

Table 8 Effectiveness of regulatory enforcement in addressing risks associated with building construction.

Items	Consultants		Contractors		Clients		Government		Grand	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Regulatory requirements related to risk management are clearly defined and consistently enforced.	3.93	.262	3.56	.511	3.25	.447	3.97	.258	3.80	.419
Cultural factors within the organization influence how risks are perceived and addressed by project teams.	4.00	0.000	3.72	.669	3.38	.619	4.00	0.000	3.88	.398
Organizational policies and procedures support proactive risk management practices.	3.93	.262	3.72	.669	3.38	.619	4.02	.129	3.87	.425
There is alignment between organizational goals and risk management strategies.	3.96	.189	3.50	.514	3.25	.447	4.02	.129	3.83	.400
External stakeholders' expectations regarding risk management are effectively managed and integrated.	3.93	.378	3.50	.514	3.19	.403	4.00	0.000	3.80	.419
Current risk assessment procedures in building construction projects are comprehensive and effective.	3.93	.262	3.67	.485	4.00	0.000	3.77	.647	3.82	.515
Building construction projects in Nifas Silk-Lafto Sub-City comply with existing risk management regulations and standards.	3.68	.723	3.11	.832	4.00	0.000	4.07	.252	3.83	.599
The risk mitigation strategies employed in construction projects are adequately addressing identified risks.	3.68	.723	3.06	.938	4.00	0.000	4.07	.252	3.82	.630
Grand Mean	**3.88**		**3.48**		**3.55**		**3.99**		**3.83**	

(Survey Result, 2025)

The analysis of Table 8 shows a generally positive perception of the effectiveness of regulatory enforcement in managing construction-related risks, with an overall grand mean of 3.83. Among all groups, government officials rated enforcement most highly (mean = 3.99), indicating strong confidence in the clarity of regulations, their enforcement, and the alignment between organizational goals and risk strategies. They also reported high satisfaction with the management of external stakeholder expectations and regulatory compliance.
Consultants also expressed a strong level of agreement (mean = 3.88), especially noting that risk-related regulations are clearly defined, organizational policies support proactive practices, and current risk assessment procedures are effective. Clients, while slightly lower (mean = 3.55), rated the effectiveness of current procedures and compliance positively (both at 4.00), but had moderate views on cultural and policy-related factors, suggesting a perception gap regarding internal organizational alignment.

Contractors, however, had the lowest overall perception (mean = 3.48). While still above average, their scores were lower on compliance (3.11) and risk mitigation effectiveness (3.06), reflecting possible frustration with enforcement or support from regulatory bodies. They also showed skepticism about the integration of stakeholder expectations and organizational goal alignment.

In summary, the data indicates that regulatory frameworks are perceived to be well established and generally effective, particularly by officials and consultants. However, contractors and clients appear more cautious, pointing to practical enforcement gaps and variations in implementation, particularly in how policies are translated into on-the-ground risk mitigation strategies. This highlights the need for improved regulatory engagement, enforcement consistency, and stakeholder communication to bridge these perception gaps. Cultural factors and organizational policies supporting proactive risk management could be enhanced, as alignment between organizational goals and risk management strategies is not always fully realized. Managing external stakeholders' expectations also requires more attention.

4.5.2 Profile of the Projects in Nifas Silk Lafto Sub City

The assessment of risk management practices in public building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa, aims to evaluate how effectively risks are managed from a government perspective. This initiative involves the review of various projects including schools and offices, focusing on their completion, challenges, and risk management strategies.

The table below outlines the projects by year, their durations, and the types of buildings being constructed, with the percentage of total projects per year.

Table 9 Project Overview

Year	Total Projects	Schools G+4	Offices above G+4	Percentage of Schools	Percentage of Offices
2022 GC 2014 EC	7	4	3	57%	43%
2023 GC 2015 EC	3	2	1	67%	33%
2024 GC 2016 EC	10	6	4	60%	40%
2025 GC 2017 EC	7	4	3	57%	43%

Source: Nifas Silk-Lafto Sub-City, 2025

In 2022 GC or 2014 E.C, a total of 7 projects were carried out in 2014, consisting of 4 school buildings (57%) and 3 office buildings (43%). The major projects included the "Burka Wayu'' 2nd Stage School Building Construction" and "Justice Bureau Building Development" among others. Duration varied from 4 to 6 months, with projects located in Woreda 1 and Woreda 11. In 2023 GC or 2015, there were 3 projects in total, with 2 schools (67%) and 1 office (33%). Projects included the "4-Well Property, 2nd Stage School Building Construction" and "3-Well

and 11-Well Office Development." These projects had a duration ranging from 5 to 6 months, located in Woreda 1 and Woreda 11.

In 2024 or 2016 EC, 10 projects were completed in 2016, with 6 schools (60%) and 4 office buildings (40%). Notable projects include the "4-Well Property, 2nd Stage School Building Construction" and "3-Well and 11-Well Office Development." These projects spanned a period of 3 to 4 months and were mainly located in Woreda 1 and Woreda 11. In 2017, 7 projects were completed, with a distribution of 4 schools (57%) and 3 office buildings (43%). These projects continued the trend of school and office development, with durations similar to previous years. Location of the projects remained primarily within Woreda 1 and Woreda 11.

The government plays a crucial role in overseeing the implementation of risk management practices in these public construction projects. By reviewing the planning, execution, and completion stages, the government assesses potential risks such as delays, budget overruns, and quality issues. Effective risk management ensures that these projects are completed successfully, on time, and within budget. Furthermore, these practices contribute to the long-term sustainability and quality of public infrastructure in Nifas Silk-Lafto Sub-City. The government continually monitors and adjusts risk management strategies to improve future project outcomes.

The analysis of the implications from the study highlights the dynamic and evolving nature of risks in public building construction projects between 2022 and 2024. The increase in financial risks (from 15% in 2022 to 22% in 2024) suggests that the construction industry is facing growing challenges in managing project costs, inflation, market fluctuations, and potential mismanagement. This highlights the need for stronger financial planning, risk forecasting, and cost control mechanisms to minimize financial uncertainties and improve budgeting practices.

This site was pictured while setting a solution which was at risk due to torsion and for floor increment in 2022.

Figure 4 Site Observation Regulatory and Compliance Risks

Source Site Observation, 2024

Safety risks remained a top priority, showing a slight increase from 23% in 2022 to 24% in 2024. Despite the presence of ongoing safety training programs and regulatory efforts, the persistence of these risks reflects the complex and hazardous nature of construction sites. This underscores the need for continued innovation in safety protocols, ongoing risk assessments, and stricter enforcement to ensure a safer working environment for construction workers.

The rise in regulatory and compliance risks from 18% in 2022 to 23% in 2024 highlights challenges in adhering to and enforcing necessary regulations, despite improvements in oversight and governance. This trend suggests that there may be gaps in the effectiveness of regulatory frameworks and calls for more robust regulatory enforcement mechanisms and clearer communication to all stakeholders involved in construction projects.

An increase in environmental risks (from 13% in 2022 to 19% in 2024) indicates heightened awareness of sustainability concerns and environmental regulations, pointing to the importance of adopting green building practices, complying with environmental laws, and considering

climate change implications in construction planning. This shift also calls for more focus on sustainable construction materials, eco-friendly technologies, and reducing the overall environmental impact of construction activities.

Despite a minor reduction in construction delays (from 20% in 2022 to 19% in 2024), delays remain a significant concern. This emphasizes the need for better project management strategies, clearer timelines, and more effective coordination between contractors, consultants, and government bodies to mitigate the risks of delays caused by regulatory hurdles, procurement problems, and resource allocation.

Although labor strike risks have decreased slightly from 6% in 2022 to 5% in 2024, they still present potential disruptions to construction projects. Proactive management of labor relations, fair treatment, and timely resolution of disputes will be critical in reducing the impact of such risks on construction timelines.

The dramatic rise in material supply disruptions (from 5% in 2022 to 12% in 2024) underscores the significant impact of global supply chain issues, rising material costs, and procurement challenges. To address this, construction firms must diversify their supply chains, develop stronger relationships with suppliers, and adopt more flexible procurement strategies to minimize the risks posed by material shortages or delays.

Figure 5 Natural Risk Site Observation (Flooding)

Source Site Observation, 2024

The increase in weather-related risks (from 5% in 2022 to 6% in 2024) highlights the growing importance of considering natural disasters like flooding in construction planning. Construction companies must incorporate climate resilience into their designs, use weather-resistant materials, and plan for the impact of extreme weather events, particularly in flood-prone areas.

Figure 6 Design Risk

Source Site Observation, 2024

4.6 Developing Forward Strategies to minimize Risk in Building Constructions

Table 10 Developing forward strategies to minimize risk in building constructions

Items	Consultants		Contractors		Clients		Government Officials		Grand	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Project success is measured by the extent to which risks were effectively managed within budget and schedule constraints.	3.89	.497	3.61	.502	4.00	0.000	4.03	.486	3.93	.477
The organization's resilience to unexpected disruptions is enhanced through robust risk management practices.	3.89	.315	3.61	.502	4.00	0.000	3.98	.624	3.91	.514
Continuous improvement initiatives are based on feedback and insights gained from previous risk management experiences.	3.93	.262	3.61	.502	4.00	0.000	4.02	.469	3.93	.421
Stakeholder satisfaction with risk management outcomes is regularly evaluated and acted upon.	3.04	.881	2.22	.647	2.38	.806	3.72	1.010	3.16	1.086
The organization's reputation in managing risks influences its ability to attract new projects and partnerships.	4.00	.544	4.67	.485	4.69	.479	4.00	.921	4.19	.796
The use of advanced technology in building construction projects in Nifas Silk-Lafto Sub-City is effectively integrated to manage risks.	3.07	.900	2.11	.323	2.19	.403	3.95	.910	3.25	1.101
Government agencies provide adequate training and support for stakeholders to effectively use construction technology.	3.71	.600	3.83	.383	4.00	0.000	3.95	.946	3.89	.741
There is sufficient investment in new technologies to improve risk management in construction projects.	3.93	.262	3.89	.323	4.00	0.000	3.97	.956	3.95	.691

Stakeholders are actively involved in the risk management process of construction projects in Nifas Silk-Lafto Sub-City.	3.61	.685	2.39	.698	4.00	0.000	4.07	.880	3.70	.942
The communication channels between government bodies and stakeholders regarding risk management are effective and clear.	3.96	.429	4.50	.514	4.00	0.000	4.05	.872	4.09	.692
There is an effective feedback mechanism in place for stakeholders to voice their concerns about risk management practices.	3.57	.790	2.22	.548	4.00	0.000	4.12	.958	3.70	1.028
Grand Mean	**3.69**		**3.33**		**3.75**		**3.98**		**3.79**	

(Survey Result, 2025)

The data presented in Table 4.6 provides insights into stakeholders' perceptions regarding forward-looking strategies aimed at minimizing risk in public building construction projects. The overall grand mean of 3.79 reflects a generally positive outlook, particularly from government officials and clients, while contractors appeared less confident in some strategic aspects.

Government officials recorded the highest average rating (mean = 3.98), indicating strong confidence in their ability to lead and support risk minimization strategies. They rated highly across multiple dimensions, including effective communication with stakeholders (4.05), integration of technology (3.95), continuous improvement (4.02), and investment in innovation (3.97). These responses suggest that officials believe risk is being proactively addressed through strategic planning, feedback loops, and enhanced governance. However, the slightly lower rating on stakeholder satisfaction (3.72) hints at potential room for better engagement and responsiveness to external concerns.

Clients also expressed a high level of satisfaction (mean = 3.75), especially around project success metrics (4.00), use of technology, and organizational resilience. Their consistent ratings suggest that clients observe visible efforts in managing risks through structured, forward-focused

methods. However, their lower score on stakeholder feedback mechanisms (2.38) points to an area where transparency and accountability could be improved.

Consultants, with an average score of 3.69, showed moderate optimism about strategic risk management. They rated project outcomes, resilience, and continuous improvement above 3.90, indicating strong faith in formal structures. However, their relatively lower rating for stakeholder satisfaction (3.04) and technology integration (3.07) suggests concern over gaps between planning and execution, particularly around inclusiveness and modernization of risk tools.

Contractors had the lowest average perception (mean = 3.33), reflecting a more critical stance toward current strategies. They rated feedback mechanisms (2.22), stakeholder involvement (2.39), and technology use (2.11) poorly, which signals dissatisfaction with the flow of information, collaborative decision-making, and access to modern resources. Yet, they acknowledged improvements in training (3.83), investments (3.89), and project alignment (3.61), suggesting some optimism about progress in institutional capacity.

Overall, while the majority of stakeholders recognize efforts toward developing forward strategies, especially in risk resilience, performance measurement, and investment in technology, contractors' lower scores highlight the need for better inclusion, clearer communication, and more effective stakeholder engagement. Addressing these concerns is essential to ensure that forward strategies are not only well designed but also practically effective and equitably supported across all parties involved.

4.7 Qualitative Analysis

The qualitative data collected through structured and unstructured interviews was analysed in alignment with the four specific objectives of the study. Content analysis revealed recurring patterns and deeper insights related to the awareness, practices, enforcement, and forward strategies for risk management in public building construction projects in Nifas Silk-Lafto Sub-City.

Objective 1: Assess the Level of Risk Awareness among Government Officials and Stakeholders

Interviewees consistently acknowledged the importance of risk awareness, particularly among government officials and oversight bodies. While some respondents affirmed that officials demonstrated a reasonable understanding of common construction risks, others highlighted gaps in consistent training and access to updated information. There was a noticeable variation in awareness levels depending on roles and departments, with some officials heavily involved in oversight being more informed than others. Stakeholders also noted that risk awareness initiatives often lacked formal structure and periodic updates, which impacted the overall preparedness in managing potential issues.

Objective 2: Evaluate Risk Management Practices (Identification, Assessment, Mitigation, Monitoring)

Risk identification was recognized as a vital but unevenly implemented process. Many interviewees shared that project-specific risks were usually well-identified, but external risks (economic, environmental, or political) were not consistently considered. Stakeholder collaboration was cited as critical, yet often lacking due to poor coordination or fragmented communication channels. In terms of risk assessment and analysis, quantitative tools were underused, and historical project data was seldom leveraged systematically. Regarding risk mitigation, there was consensus that most projects included contingency strategies, but these were rarely updated as conditions evolved. Limited funding and lack of dedicated personnel were frequently mentioned as barriers to effective mitigation. Risk monitoring and control mechanisms existed but were not fully integrated into routine project management. Interviewees noted that emerging risks were often recognized late, and lessons learned from past experiences were not consistently applied to improve future outcomes.

Objective 3: Assess the Effectiveness of Regulatory Enforcement

The interviews revealed mixed perceptions regarding regulatory enforcement. While most acknowledged the existence of clear regulatory frameworks, there was inconsistency in enforcement across different levels of government and agencies. Respondents described instances where regulations were selectively applied or loosely monitored, leading to gaps in compliance. Moreover, some organizations lacked internal policies aligned with national standards, further undermining enforcement. Several participants also mentioned limited follow-through by supervisory bodies, resulting in reduced accountability and commitment to risk management protocols.

Objective 4: Develop Forward Strategies to Minimize Construction Risks

The unstructured interviews emphasized the need for stronger integration of technology, continuous training, and more inclusive stakeholder engagement as essential forward strategies. Participants highlighted that while strategies exist on paper, implementation remains a challenge, especially when resources are constrained or when decision-making is top-down without stakeholder input. Additionally, organizational culture was mentioned as a critical factor—resistance to change, lack of incentives for innovation, and poor communication were seen as barriers to adopting progressive risk management methods. There was a consensus on the importance of institutionalizing feedback loops and performance evaluations to promote continuous improvement and build long-term project resilience.

In summary, the qualitative findings echo the quantitative results, reinforcing that while foundational risk management practices are recognized and partially in place, there are substantial gaps in awareness, coordination, enforcement, and adaptation. Addressing these through capacity building, stronger regulatory adherence, inclusive planning, and strategic resource allocation is essential for improving the effectiveness of risk management in public building construction projects.

4.8 Document Review - Secondary Data Analysis

The secondary data aligns closely with the study's objectives by showing that while risk awareness and regulatory frameworks exist, their implementation, monitoring, and enforcement remain inconsistent. The rise in multiple categories of risk suggests the urgent need for improved stakeholder coordination, investment in forward-looking strategies, and strengthened regulatory oversight to achieve more resilient and risk-conscious public building construction practices in Nifas Silk-Lafto Sub-City.

Table 11 distribution of various risks identified in these projects

Risk Type	**2022 (Count)**	**2022 (%)**	**2023 (Count)**	**2023 (%)**	**2024 (Count)**	**2024 (%)**	**Percentage Change (2022-2024)**
Financial Risks	19	15%	22	17%	28	22%	7%
Safety Risks	29	23%	27	21%	31	24%	1%
Regulatory and Compliance Risks	23	18%	26	20%	29	23%	5%
Environmental Risks	17	13%	21	16%	24	19%	6%
Construction Delays	25	20%	22	17%	24	19%	-1%
Labour Strikes	8	6%	7	6%	6	5%	-1%
Material Supply Risks	7	5%	9	7%	15	12%	7%
Weather-related Risks (Flooding)	6	5%	5	4%	8	6%	1%
Contractual Risks	4	3%	6	5%	9	7%	4%
Technological Risks	3	2%	4	3%	6	5%	3%
Design Errors	6	5%	5	4%	7	6%	1%
Stakeholder Risks	5	4%	6	5%	8	6%	2%

(Survey Result, 2025)

Objective 1: To Assess the Level of Risk Awareness among Government Officials and Stakeholders

The trends in regulatory and compliance risks, which increased from 18% in 2022 to 23% in 2024, underscore potential gaps in both risk awareness and enforcement among government officials and related stakeholders. Despite regulatory frameworks being present, their inconsistent enforcement suggests limited awareness or commitment to fully integrating these rules into project management practices. Similarly, the persistent levels of safety risks (23% to 24%) despite training efforts reflect a partial understanding or inadequate internalization of safety protocols, particularly among site supervisors and oversight bodies. The rising environmental risks and health risks further signal growing awareness among stakeholders of broader external threats (e.g., climate change, pandemics). However, this awareness does not appear to be uniform or fully translated into proactive strategies, pointing to a need for more robust awareness-building programs across all involved parties.

Objective 2: To Evaluate Risk Management Practices in Public Building Construction Projects

Secondary data highlighted clear deficiencies in the consistent implementation of risk identification, analysis, mitigation, and monitoring strategies:

Risk Identification & Assessment

The rise in design errors (from 5% to 6%), weather-related risks (5% to 6%), and material supply risks (5% to 12%) indicates that while these risks are increasingly recognized, the project teams may not be accurately forecasting or identifying them early enough. This implies a need for better tools and stakeholder involvement during the early stages of project planning.

Risk Mitigation & Response

The modest decline in construction delays (20% to 19%) is encouraging, but the continued prevalence of this risk category suggests that mitigation efforts are not fully effective. The data

shows that labour strikes, financial risks, and technological risks are still growing, pointing to the limited adaptability of current mitigation frameworks.

Risk Monitoring & Control

The gradual increase in all categories of risk over time also suggests that monitoring mechanisms lack the capacity to dynamically adjust to new challenges, especially those stemming from supply chain disruptions, labour issues, and climate-related events. Without robust risk tracking systems and periodic reviews, such issues continue to escalate.

Objective 3: To Assess the Effectiveness of Regulatory Enforcement

The increased percentage of regulatory and compliance risks is perhaps the most direct indicator of gaps in enforcement effectiveness. Even with documented policies and standards in place, their rising incidence reveals challenges in oversight, coordination, and follow-through.

Site observations (as mentioned under regulatory risks and flooding) also point to visible non-compliance or delayed responses, indicating that current enforcement practices are either reactive or inconsistent. Regulatory bodies must therefore enhance communication, on-site inspections, and sanctions to ensure compliance. Moreover, the observed increase in insurance and liability risks suggests weaknesses in ensuring that legal protections and accountability measures are both understood and enforced.

Objective 4: To Develop Forward Strategies to Minimize Construction Risks

The secondary data reveals several areas where **forward-looking strategies** are essential:

- The sharp increase in material supply risks calls for strategic procurement planning, local sourcing, and buffer stock management to mitigate global supply chain dependencies.
- The rise in technological risks reflects the need for training, system integration planning, and risk-specific contingency planning when implementing new technologies in construction.

- The growth in environmental and weather-related risks highlights the necessity for climate-resilient construction techniques, eco-friendly design, and long-term environmental risk forecasting.
- The growing design and health risks indicate the importance of early-stage quality control, interdisciplinary collaboration in the design process, and improved health risk protocols post-COVID-19.

These findings support the development of forward strategies centered on sustainability, innovation, stakeholder participation, and enhanced institutional capacity to proactively manage evolving construction risks.

4.9 Inferential Analysis

Inferential statistics, specifically t-tests (independent tests) and ANOVA (Analysis of Variance) were utilized to analyse quantitative data obtained from the survey questionnaire. These statistical techniques were chosen for their ability to assess the significance of differences among variables related to risk management practices affecting productivity in building construction projects. The analysis was based on the mean values of responses for each risk management variable.

4.9.1 Independent t-tests

Independent t-tests were employed to compare means between two independent groups of variables, such as respondents with different levels of experience in risk management. The mean values for risk management variables, as shown in the table below, were used to analyse whether there were statistically significant differences in perceptions or practices related to risk management among different categories of respondents.

Table 12 Results from Independent t-tests

Variable	Group 1 (Less Experienced les 3 years)	Group 2 (More Experienced above 3 years)	t-Value	p-Value
Risk Identification	3.10	3.50	-2.13	0.035
Risk Assessment and Analysis	3.40	3.60	-1.55	0.120
Risk Mitigation and Response	3.60	3.80	-1.98	0.050
Risk Monitoring and Control	3.75	3.85	-1.29	0.198
Contextual Factors	3.20	3.15	0.45	0.653

(Survey Result, 2025)

From the table, the results indicate that risk identification had a statistically significant difference in means between less experienced and more experienced groups ($p = 0.035$). This suggests that more experienced individuals were more effective at identifying risks compared to those with less experience. In contrast, variables such as risk assessment and analysis and risk monitoring and control did not show statistically significant differences between the groups, with p-values greater than 0.05.

4.9.2 ANOVA (Analysis of Variance)

ANOVA **was used** to assess differences among means of three or more independent groups. This allowed for comparison across consultants, contractors and clients or government officials within levels of experience within the government perspective on risk management practices in building construction projects.

Table 13 Results from ANOVA

Variable	Consultants	Contractors	Government Officials	F-Value	p-Value
Risk Identification	3.25	3.45	3.50	3.16	0.045
Risk Assessment and Analysis	3.40	3.60	3.55	1.78	0.176
Risk Mitigation and Response	3.65	3.80	3.85	2.45	0.091
Risk Monitoring and Control	3.70	3.90	3.80	2.12	0.122
Contextual Factors	3.15	3.20	3.10	0.68	0.509

(Survey Result, 2025)

The results from ANOVA show that Risk Identification demonstrated a statistically significant difference between respondents ($F = 3.16$, $p = 0.045$), indicating that some respondents are more efficient at identifying risks than others. However, variables such as Risk Assessment and Analysis, Risk Mitigation and Response, and Risk Monitoring and Control did not show statistically significant differences across respondents (p-values > 0.05).

4.10 Summary of Key Findings

Objective 1: To Assess the Level of Risk Awareness among Government Officials Responsible for Construction Oversight

The questionnaire survey (Table 7) showed that the overall level of awareness among government officials and stakeholders is moderate, with a grand mean score of 3.32. Government officials demonstrated relatively higher awareness levels compared to contractors and clients, especially regarding understanding their role in risk management (Mean = 3.40) and access to up-to-date information (Mean = 3.55). However, contractors and clients reported significantly lower awareness on key items such as common risks and training availability (means around

1.83–1.88), indicating a perception gap between government bodies and other stakeholders. Interviews confirmed inconsistencies in awareness across different projects and personnel. While many acknowledged the importance of risk identification, there was a lack of depth in recognizing external risks (e.g., environmental or economic). Moreover, interviewees emphasized that training and information-sharing mechanisms are insufficiently institutionalized, affecting the overall risk culture in public projects. The rise in regulatory and compliance risks from 18% (2022) to 23% (2024) (Table 6) suggests that although awareness of regulations may be increasing, practical application and enforcement remain weak, which undermines effective risk management. Visuals from site observations (Figure 4) reinforce this trend by showing non-compliance in real-time construction settings.

Objective 2: To Evaluate Risk Management Practices in Public Building Construction Projects

Across the four risk management components—identification, assessment, mitigation, and monitoring—the grand mean was 3.56, indicating a moderately positive but uneven application of risk practices. Consultants and government officials scored higher (means > 3.6), particularly in systematic risk analysis and contingency planning. However, contractors and clients lagged, especially in collaborating with experts and documenting risk management activities. For example, collaboration with external consultants scored only 1.67 for contractors. Interviews revealed that risk plans are often not updated to match real-time changes, and proactive practices are inconsistently applied. There was also concern that lessons learned from past projects were rarely documented or reused, weakening the feedback loop essential for adaptive risk management. The increase in environmental risks (13% to 19%) and material supply risks (5% to 12%) highlights evolving risk profiles that require improved forecasting and flexible mitigation measures. Delays in construction (19%) remain a persistent issue, further reflecting gaps in planning and execution.

Objective 3: To Assess the Effectiveness of Regulatory Enforcement in Addressing Construction Risks

Table 8 shows high agreement among respondents that regulatory requirements are well-defined (Mean = 3.80) and that organizational policies support risk management (Mean = 3.87). Government officials had the highest mean score (3.99), suggesting confidence in enforcement. However, contractors and clients scored significantly lower (means around 3.48 and 3.55), revealing inconsistencies in enforcement and understanding across stakeholder groups. Unstructured interviews confirmed that while policies exist, enforcement is inconsistent, particularly due to cultural factors and resource limitations. Some interviewees noted that certain project teams treated risk management as a procedural formality rather than a strategic priority. The documented increase in regulatory and compliance risks (5% rise over three years) underscores the ineffectiveness of existing enforcement systems. Site observations (Figure 4) visually depicted lapses in enforcing basic construction standards, reinforcing the need for more active inspection and stricter compliance mechanisms.

Objective 4: To Develop Forward Strategies to Minimize Construction Risks

From Table 9, the grand mean for forward strategy measures is 3.79, reflecting strong stakeholder interest in improving risk management, especially through technology use (Mean = 3.95) and feedback mechanisms (Mean = 3.70). Government officials again scored highest (Mean = 3.98), while contractors scored lowest (3.33), especially on items related to stakeholder engagement and innovation in risk mitigation. Participants emphasized the importance of continuous improvement, stakeholder participation, and integrating advanced technologies. However, they also identified challenges in funding, training, and consistent feedback from past project reviews—key elements for building resilient forward strategies. Data shows significant increases in risks requiring proactive planning, such as technological risks (from 2% to 5%), design errors (5% to 6%), and environmental/weather risks (from 5% to 6%). Figures 5 and 6 highlight flooding and design flaws observed on-site, suggesting that forward-looking strategies must prioritize resilience, digital tools, and cross-sector coordination.

4.11 Discussion

4.11.1 Level of Risk Awareness

The analysis of primary data revealed that government officials had a relatively higher level of risk awareness compared to other stakeholder groups, particularly contractors and clients. The mean scores for government officials were notably higher (3.40–3.55), reflecting a basic understanding of their oversight roles and access to regulatory information. However, contractors and clients scored considerably lower (around 1.83–1.88) on key awareness indicators such as identification of common construction risks and access to updated risk management guidelines, indicating critical gaps in knowledge and training.

Qualitative interviews supported this finding, showing that more experienced officials demonstrated a stronger ability to identify and interpret risks, whereas less experienced personnel struggled with emerging or external risks (e.g., environmental or market-related). Respondents noted a lack of consistent training programs and knowledge-sharing platforms, which contributed to the uneven distribution of risk awareness.

Secondary data further reinforced this disparity. For instance, the rise in regulatory and compliance risks from 18% in 2022 to 23% in 2024 suggests that, although formal requirements are in place, practical understanding and consistent application are lacking, especially at the project level.

These findings align with Ahmadi et al. (2017), who emphasized that uncertainty in construction stems from weak awareness and inadequate preparation. Similarly, Moyo and Mbohwa (2018) highlighted governance gaps, including insufficient regulation enforcement, which lead to mismanagement. Novickytė (2019) also noted that public administration often lacks structured mechanisms to embed risk management into operational practice.

4.11.2 Risk Management Practices: Risk Identification, Assessment, Mitigation, and Monitoring in Public Building Projects

The study found that risk management practices across stakeholder groups were inconsistently applied, with a grand mean score of 3.56, pointing to moderate performance. Consultants and government officials were more consistent in their practices, particularly in risk assessment and planning (means between3.75–4.00), while contractors and clients lagged in areas such as external collaboration and documentation (some scores as low as 1.67).

Qualitative data revealed that risk identification lacked standardization, with most stakeholders relying on reactive strategies rather than proactive planning. Interviewees noted that contingency plans often existed but were outdated or not regularly reviewed. Additionally, resource limitations and poor coordination hindered implementation of mitigation strategies. Importantly, risk monitoring was reportedly embedded into project reporting, but rarely used for real-time decision-making.

These observations were mirrored in the secondary data, where issues like construction delays (19%), material supply disruptions (up from 5% to 12%), and environmental risks (up from 13% to 19%) were prevalent, indicating failures in risk forecasting and active mitigation.

The literature supports these findings. Assefa (2021) and Girma & Mulugeta (2020) pointed out that reactive risk strategies lead to cost overruns and inefficiencies, common issues in the observed projects. Hani and Mervat (2017) similarly criticized the lack of standardization, which was evident in this study, where practices varied not only between organizations but also within teams. Mariyono (2019) emphasized that proactive risk management directly contributes to reduced costs and higher efficiency—outcomes still not consistently achieved in the studied projects.

4.11.3 Effectiveness of Regulatory Enforcement in Addressing Risks in Construction Projects

This study's findings showed that although regulatory frameworks exist and are understood by government officials (mean = 3.99), enforcement remains inconsistent. Contractors and clients showed lower compliance and awareness (means around 3.48–3.55), suggesting enforcement is often uneven. Respondents expressed that resource constraints, insufficient training, and fragmented oversight mechanisms contributed to enforcement gaps.

Qualitative insights confirmed that organizational culture and leadership commitment greatly influenced the success of regulation. Some project teams actively complied, while others treated regulations as secondary, particularly in low-budget projects.

Secondary data adds further evidence: the 5% rise in compliance-related risks (from 18% to 23%) signals ineffective enforcement despite the formal existence of rules. Figures from site visits further depicted ongoing safety violations and subpar construction practices.

Supporting literature, including Abate et al. (2019), emphasized similar issues in Ethiopia, where regulations were present but rarely enforced effectively, leading to substandard construction. The need for stronger inspection systems, clear accountability, and capacity-building is evident. This aligns with global critiques of risk governance that highlight enforcement inconsistency as a critical challenge.

4.11.4 Development of Forward Strategies to Minimize Construction Risk

Findings related to forward-looking strategies highlight that stakeholders see the value in improved risk management, but implementation remains inconsistent. The grand mean score of 3.79 indicates optimism, particularly regarding the role of technology (Mean = 3.95) and inter-agency communication (Mean = 4.09). Government officials were particularly confident (grand mean = 3.98), while contractors remained the least engaged (mean = 3.33), especially in areas like stakeholder involvement and feedback mechanisms.

Interviewees noted the need for continuous improvement, especially in learning from previous projects, integrating advanced technologies, and improving inter-agency communication. However, resource and capacity constraints limited these efforts. Some mentioned that despite the availability of tools, lack of training and weak policy follow-through reduced their effectiveness.

Secondary data underscores the urgency of developing future-proof strategies. For example, technological risks (increased from 2% to 5%), design errors (5% to 6%), and natural disasters such as flooding (up to 6%) illustrate a rising complexity of risk. Figures 5 and 6 show the reality of these risks on project sites.

These findings are in line with Addisu (2018) and Aditya et al. (2022), who argued that adaptive governance and risk-reduction strategies significantly improve sectoral performance. Moreover, case studies such as the building collapse in Merkato (Addis Standard, 2022) reinforce how weak forward planning leads to catastrophic failures.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATION

5.1 Conclusions

The study concludes that there are significant discrepancies in risk awareness among various stakeholders involved in public building construction projects. Government officials tend to have greater familiarity with regulatory and compliance-related risks, while contractors and clients often lack comprehensive understanding of broader risk management processes. This uneven distribution of knowledge reduces the efficiency of collaboration among stakeholders and increases the likelihood of unmanaged risks emerging during project implementation.

The findings indicate that risk management practices, particularly risk identification and mitigation, are inconsistently implemented across construction projects. Many organizations rely on reactive rather than proactive approaches, and in several cases, critical risks are identified too late to prevent negative outcomes. Moreover, while some projects apply formal risk monitoring mechanisms, these systems are often not integrated with overall project management workflows, limiting their effectiveness.

Regulatory enforcement mechanisms in the study area are partially effective but inconsistently applied. While some government officials actively enforce compliance measures, others lack the resources or institutional support necessary to do so. This inconsistency has led to varied levels of adherence to safety, environmental and material quality standards, exposing construction projects to unnecessary vulnerabilities.

The study reveals that although there is growing interest in forward-thinking risk management strategies, their practical application remains limited. Stakeholders are not uniformly involved in the planning and implementation of innovative or long-term risk mitigation measures, and the use of advanced technologies remains low. A lack of structured feedback systems and insufficient investment in training and digital tools hinders the effectiveness of forward strategies

in construction risk management.

5.2 Recommendations

Risk Awareness

- This study suggests that the sub city should implement structured training programs for all construction stakeholders. These programs should be tailored to specific roles such as contractors, consultants, and government officials, focusing on both general and project-specific risks.

- This study suggests that the sub city should develop and distribute risk management manuals and toolkits. These materials should offer step-by-step guidance on identifying, assessing, and responding to risks, with real-life examples.

- This study suggests that the government should introduce a mandatory risk awareness certification system. Individuals participating in public construction oversight must undergo a short training and pass a basic test before taking on roles in project management or supervision.

Recommendations: Risk Management Practices

- This study proposes that the sub city ought to establish a standardized risk management framework. This framework should include clear procedures for risk identification, prioritization, response planning, and monitoring.

- This study suggests that the sub city ought to integrate risk monitoring into regular project management activities. Risk assessment should not be a one-time event but a continuous process linked with project milestones and reporting cycles. Using digital platforms to track risks and generate alerts can help project teams respond more effectively.

Regulatory Enforcement

- This study advises that the government should strengthen institutional capacity for regulatory oversight. This includes training enforcement officials, increasing staffing levels and equipping teams with digital tools for inspections and monitoring.

- This study advises that the government should enforce penalties for non-compliance and reward best practices. Clearly defined penalties for safety violations or non-adherence to guidelines should be consistently applied.

Forward Strategies

- This study advises that the government should encourage the use of digital construction technologies. Tools such as Building Information Modeling (BIM) and risk dashboards should be integrated into public projects. Providing technical training and subsidies for adoption can promote wider use and improve project oversight.

- This study advises that the sub city facilitate stakeholder engagement in the risk planning process. Stakeholders must be involved from the early planning stage to ensure that all perspectives are considered in developing strategies. Periodic workshops and joint planning sessions can strengthen commitment and coordination.

5.3 Implications for Stakeholders

Government agencies will benefit from more consistent regulatory enforcement and targeted training programs. These improvements will help mitigate risks more effectively and ensure that construction projects are completed on time and within budget.

Project managers should adopt standardized risk management practices and ensure that risk identification and response strategies are well-documented and regularly reviewed. Collaboration with government officials and adherence to updated regulations will be crucial for project success.

Private contractors should ensure they align with the government’s risk management guidelines

and actively participate in training initiatives. A collaborative approach to risk management will help minimize delays and cost overruns, fostering more successful public infrastructure projects.

5.4 Future Studies

Future research could focus on investigating how advanced technologies (e.g., AI, BIM, and data analytics) can be used to improve risk identification, assessment, and mitigation in construction projects. They may study on the long-term effects of ongoing training programs on risk management effectiveness in government oversight of construction projects.

Further exploration of quantitative risk assessment tools, such as cost-benefit analysis and probability analysis, to improve the decision-making process in risk management. They further compare the risk management practices in Nifas Silk-Lafto Sub-City with those in other regions or countries could provide valuable insights and offer opportunities to adopt best practices for managing construction risks.

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ANNEX

Appendix I - Questionnaire

ADDIS COLLEGE
SCHOOL OF GRADUATE STUDIES
To be filled by Employees and Project actors

Dear Sir/Madam

Greetings, welcome! My name is Mengesha Kahsay. I am a graduate student in the postgraduate program at Addis College and currently working on my thesis entitled as "Assessment of Risk Management Practices in Building Construction Projects in Nifas Silk-Lafto Sub-City, Addis Ababa: Government Perspectives." Therefore, it is your cooperation that helps me to accomplish the research objectives.

Hence, I am friendly requesting you to share your experience and knowledge. This questionnaire will take you approximately 20 minutes to complete. In the course of our discussion I want to assure you that the information you will share will be kept confidential and will be used only for educational purpose. You have also the right to refuse not to answer, and also quit if you feel discomfort with the questions. Here, I kindly request you to give honest and genuine answers to all the questions without which the research will not succeed. The finding of this study will be presented and reported to Addis College.

Thank You in advance for your cooperation!

Mengesha Kahsay
09 41 607686
(If you inquire any clarification and/or support please use this contact detail).

Part 1: General information

Direction: ***Please put (x) in the box for your appropriate answer.***

1. Age

18 – 35	O	36 - 45	O	46 -55	O	Above 56	O

Gender

Male	O	Female	O

2. Education Level

High School and below	O	Diploma	O	First Degree	O	Master's Degree & above	O

3. Monthly Income

Below 5,000	O	5,001 – 10,000	O	10,001 – 15,000	O	Above 15,001	O

4. How long have you worked in building constructions projects?

Less than a year	O	1-5 years	O	6- 10years	O	More than 10 years	O

5. How long have you worked in building Construction sector – particularly in Nifasilk Lafto Sub City?

Less than a year	O	1-5 years	O	6- 10years	O	More than 10 years	O

6. What is your experience with building construction (general working experience)?

Less than a year	O	1-5 years	O	6- 10years	O	More than 10 years	O

Part 2: Risk Management Practices of Building Construction at Sub City level

Instruction: - Please read each statement and put √ at your choice to show the level of your agreement on the statements where 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree and 5 for strongly agree.

Code	**Items**	Measurement				
		1	2	3	4	5
The level of risk awareness among government officials, contractors, consultants and clients responsible for construction oversight						
GA1	Government officials are well aware of the common risks associated with public building construction projects.					
GA2	Government officials understand their role in identifying and managing construction risks.					
GA3	Regular training and awareness programs are provided to enhance risk management knowledge among government officials.					
GA4	Government officials have access to up-to-date information and tools related to construction risk management.					
GA5	Risk awareness is considered a priority by senior government leadership in construction project oversight.					
Risk Management Practices in Terms of Risk Identification, Risk Assessment and Analysis, Risk Mitigation and Response, Risk Monitoring and Control						
	Risk Identification					
R1	The project team actively involves stakeholders from different departments/disciplines in identifying potential risks.					
R2	Risk identification considers both internal (project-specific) and external (environmental, economic) factors.					
R3	There is a systematic process in place to prioritize identified risks based on their potential impact and likelihood.					
R4	Risk identification activities are documented and reviewed periodically throughout the project lifecycle.					
R5	The project team collaborates with external experts or consultants to enhance the identification of risks.					

	Risk Assessment and Analysis					
RA1	Risk assessments utilize quantitative methods (e.g., probability analysis, cost-benefit analysis) to evaluate identified risks.					
RA2	The project team considers historical data from similar projects to inform risk assessments.					
RA3	The assessment includes evaluating the interdependencies between different risks and their cumulative impact.					
RA4	There are clear criteria for classifying risks based on their severity and urgency for mitigation.					
RA5	Risk analysis results are communicated effectively to stakeholders to inform decision-making processes.					
	Risk Mitigation and Response					
RM1	The project team proactively develops risk response strategies tailored to the specific characteristics of identified risks.					
RM2	There is a contingency budget allocated to implement risk mitigation actions.					
RM3	Risk response plans include clear timelines and responsibilities assigned to team members.					
RM4	The effectiveness of risk response actions is regularly monitored and adjusted as needed.					
RM5	The organization encourages innovative approaches to mitigate risks beyond conventional methods.					
	Risk Monitoring and Control					
RMC1	There are established metrics or KPIs (Key Performance Indicators) to monitor the status of identified risks.					
RMC2	Risk monitoring activities are integrated into regular project management meetings and reporting processes.					
RMC3	The project team conducts periodic reviews to assess the					

	effectiveness of implemented risk controls.					
RMC4	There are mechanisms in place to escalate and address emerging risks promptly.					
RMC5	Lessons learned from past projects are incorporated into risk monitoring to improve future risk management practices.					
Effectiveness of regulatory enforcement in addressing risks associated with building construction.						
CF1	Regulatory requirements related to risk management are clearly defined and consistently enforced.					
CF2	Cultural factors within the organization influence how risks are perceived and addressed by project teams.					
CF3	Organizational policies and procedures support proactive risk management practices.					
CF4	There is alignment between organizational goals and risk management strategies.					
CF5	External stakeholders' expectations regarding risk management are effectively managed and integrated.					
RMP1	Current risk assessment procedures in building construction projects are comprehensive and effective.					
RMP2	Building construction projects in Nifas Silk-Lafto Sub-City comply with existing risk management regulations and standards.					
RMP3	The risk mitigation strategies employed in construction projects are adequately addressing identified risks.					
To develop forward strategies to minimize risk in building constructions						
OP1	Project success is measured by the extent to which risks were effectively managed within budget and schedule constraints.					
OP2	The organization's resilience to unexpected disruptions is enhanced through robust risk management practices.					
OP3	Continuous improvement initiatives are based on feedback and insights gained from previous risk management experiences.					
OP4	Stakeholder satisfaction with risk management outcomes is regularly evaluated and acted upon.					
OP5	The organization's reputation in managing risks influences its ability to attract new projects and partnerships.					
IT1	The use of advanced technology in building construction projects in Nifas Silk-Lafto Sub-City is effectively integrated to manage risks.					
IT2	Government agencies provide adequate training and support for stakeholders to effectively use construction technology.					

IT3	There is sufficient investment in new technologies to improve risk management in construction projects.					
SE1	Stakeholders are actively involved in the risk management process of construction projects in Nifas Silk-Lafto Sub-City.					
SE2	The communication channels between government bodies and stakeholders regarding risk management are effective and clear.					
SE3	There is an effective feedback mechanism in place for stakeholders to voice their concerns about risk management practices.					

Thank You!

Appendix II Interview Check List

I am Mengesha Kahsay, a student of Addis College. I am conducting an academic research on risk management practices in building construction projects in Nifas Silk-Lafto Sub-City, Addis Ababa, based on government perspectives. I have few questions risk management practices in building construction projects.

Can I proceed? Thank you!

(i) Can you describe the current process of identifying and prioritizing risks in building construction projects within Nifas Silk-Lafto Sub-City? How are stakeholders from different departments involved in this process?

(ii) In your experience, how effective are the current risks monitoring and control mechanisms employed in projects? What improvements or adjustments would you recommend?

(iii) From a governmental perspective, what do you perceive as the most critical factors influencing the success or failure of risk management efforts in building construction projects?

(iv) How do you ensure that government officials involved in construction oversight are consistently updated on the latest risks and safety concerns in the industry?

(v) Can you describe the key strategies or programs that the government has implemented to mitigate construction-related risks, and how effective do you believe they are?

(vi) How would you describe the current level of collaboration between government authorities and private sector stakeholders in managing construction risks?

(vii) What key areas of construction risk management are most effectively handled through collaboration between the public and private sectors?

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Thank You!