



Addis Ababa University

College of Business and Economics

School of Commerce Graduate Program

Assessment of the practices of risk management in building construction
projects: the case of selected real estates in Addis Ababa

A Thesis Submitted in Partial Fulfillment of the Requirements for the
Award of Master of Arts Degree in Project Management

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Addis Ababa, Ethiopia

DECLARATION

I, Feven Mesfin, declare that this thesis, titled ' ASSESSMENT OF THE PRACTICES OF RISK MANAGEMENT IN BUILDING CONSTRUCTION PROJECTS: THE CASE OF SELECTED REAL ESTATES IN ADDIS ABABA', is my own work. It has not been previously submitted to any other university for evaluation or for the awarding of a degree. All sources and materials utilized in this study have been properly cited.

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STATEMENT OF CERTIFICATION

This is to certify that this Thesis paperwork, entitled “ASSESSMENT OF THE PRACTICES OF RISK MANAGEMENT IN BUILDING CONSTRUCTION PROJECTS: THE CASE OF SELECTED REAL ESTATES IN ADDIS ABABA ”, completed by Feven Mesfin in partial fulfillment of the requirements for the Master of Arts degree in Project Management at Addis Ababa University, has been conducted under my supervision and approved by me as the university advisor.

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**ASSESSMENT OF THE PRACTICES OF RISK MANAGEMENT
IN BUILDING CONSTRUCTION PROJECTS: THE CASE OF
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By: Feven Mesfin

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ACRONYMS

IRM	Institute of Risk Management
MoUHC	Ministry of Urban Development, Housing and Construction
MS	Micro Soft
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
PMLC	Project Management Life Cycle
SPSS	Statistical Package for the Social Sciences
SWOT	Strengths, Weaknesses, Opportunities, and Threats
GDP	Gross Domestic Product
RF	Risk Factor

ABSTRACT

Construction firms are known industry to face risks at every stage of a project's life cycle, necessitating effective and efficient management through the risk management process. Due to the frequent issues of budget overruns, delays, and changes in the original project scope, it is crucial to manage and control the risks causing these problems to meet project objectives. This study aims to examine the application of risk management practices in selected real estate projects to assess whether they are being theoretically applied correctly. A descriptive research design is employed to describe the research issue, and a mixed-method research approach is utilized for this study. Data were collected from selected real estate companies: projects owned by Pluto, Enyi, Phison, and Afro Sweden real estate. The study used a census technique. Primary data was collected through interview and survey questionnaires and was analyzed using SPSS statistical software, utilizing tables, percentages, charts, and using thematic analysis. Secondary data was gathered by referring articles and researches. The study's findings revealed that risk management practices exist but they are not implemented to the necessary extent. In real estate projects efforts to enhance project team members' awareness of risk and its management are lacking. Additionally, risk management practices tended to be undocumented, unstructured, and not supported by comprehensive policies and guidelines. Real estate projects are recommended to enhance their practices regarding the management of risk by improving project team members' awareness through various training programs and experience-sharing initiatives, to establish clearly defined policies and processes for managing unexpected uncertainties and to implement more structured and formalized risk management practices.

Key-words: Risk, Risk management, Real estate

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The construction industry is crucial in the socio-economic development of a country. In many developing nations, main construction projects contribute approximately 80% of total capital assets, 10% of GDP, and over 50% of the money allocated in permanent assets (Ofori, 2007). According to the United Nations Environment Program (UNEP, 1996) the real estate sector is a vital component of the global economy.

United Nations world population prospects indicate that the population of Addis Ababa has reached nearly 5,461,000, reflecting a 4.46% increase from 2022. The city's current physical infrastructure is unable to meet the growing demand caused by this population expansion. Consequently, there is a corresponding increase in demand for real estate developments in parallel with the urban population increase. Real estate is a type of housing development that is being used to address Addis Ababa's severe housing shortage.

In Ethiopia, the real estate sector has grown significantly in recent years, due to the government's policy promoting private investments. This sector is critical in the economy by directly contributing to various aspects such as providing housing, commercial construction projects, job creation, and stimulating development across other sectors. Its role in urbanization further emphasizes its importance in driving the nation's economic growth (Haddush, 2016).

According to Robbins and Judge (2013), the world we live in is changing at an ever-increasing rate, and businesses that can adjust and react to this change more quickly than their rivals will thrive. It is impossible to predict the future with absolute confidence, thus companies must constantly handle uncertainty and change if they are to thrive and have the chance to grow. Every project is subject to risk. Projects, by their inherent characteristics of novelty and uniqueness, are susceptible to risks. Uncertainties are present in even the most rigorously planned projects. Failure to manage these risks efficiently will impact the accomplishment of project goals (Kerzner, 2006).

As Vaughan, e. (1997) writes, risk is a state where there exists a chance of an unfavorable deviation from a predicted or desired outcome. This deviation could be either positive or negative, to the project. According to Lewis (2011), a risk in a project is anything that might occur and have a negative impact on the project's budget, scope, quality, or timeline.

According to Akintoye &MacLeod (1997), the construction industry, in general, is characterized by high levels of risk compared to other sectors due to its complex processes, challenging working environments, and significant financial investments. Since most of the projects undertaken in the real estate industry are construction projects, they inherently carry high levels of risk. Real estate development is known for its dynamic nature, marked by rapid changes in construction methods, technological advancements, regulatory requirements, marketing strategies, financial considerations, and property management practices (Mike et al., 2000). Real estate construction projects are among the most vulnerable to a variety of concurrent and significant risks due to their extended duration, substantial budget allocations, and strict quality requirements. Therefore, risk management is essential to achieving a competitive advantage and adhering to the budget and schedule as well as making money from it.

In today's business environment, effective risk management has grown in significance for commercial organizations (Mead, 2007; Wiegmann, 2012). Without risk management, project management is inconceivable, it is difficult to be ideal when estimating expenses, resources needed, or task length because things might always turn out differently than predicted. Risks must be identified, evaluated, analyzed, and learned to control risks (Groton et al., 2010; Wiegmann, 2012). Inability to precisely recognizing and adequately addressing the risks associated with complicated commercial and contractual agreements can result in severe results (Mead, 2007).

Risk management is the key to the success of any project. Effective risk management holds a crucial role in accomplishing project goals. Project teams and participants can execute the project successfully to meet expectations and accomplish the goals by understanding and handling project risks. The goal of this study is to examine the risk management practices in real estate development projects of Addis Ababa and to make recommendations for significant enhancement to these practices.

1.2 Background of organizations

Enyi Real Estate specializes in constructing luxury homes and apartments featuring distinctive designs. Established in July 2005, the company has received technical support from Enyi Construction 3F and other sister companies and business units. Enyi Real Estate has achieved success in constructing and delivering luxurious homes with extensive facilities. Its sister companies include 3F Furniture, Enyi Construction, Enyi Ethio Rose, Unicorn Plc, Ethio Cement, and Rainbow Paint. The mission of Enyi Real is to emerge as a premier real estate developer, offering quality housing and fostering safe, and appealing environments. The company has built and delivered luxury homes at the Roseland site on Jimma Road and is currently progressing toward delivering luxury villas and apartments on time and with quality for its first-time buyers at the Bole Palm project and other sites. Enyi Real Estate aims to meet the high demand for quality residential buildings quickly.

Phison is a real estate company dedicated to introducing modern and luxurious homes to the market in Addis Ababa, Ethiopia. It specializes in providing luxurious residential houses and apartments with unique designs and exceptional service. Phison offers these luxurious properties in the most residential-friendly neighborhoods of Addis Ababa. Its mission is to become a leading real estate company in Ethiopia by designing, developing, and delivering highly desirable houses and apartments. Phison's offerings include modern apartments featuring high quality, spacious parking, and gardens. The company has constructed and currently offers 1-bedroom, 2-bedroom, and 3-bedroom apartments, as well as G+2 Luxury Villas and G+2 Townhouses, which are its most desirable residence types, complete with spacious parking and gardens.

Pluto is a real estate developer established in 2006 EC by a group of family-based shareholders driven to create first-class properties throughout Addis Ababa. Motivated by a shared ambition to be the best in Ethiopia and beyond, the company is distinguished by its creativity, high demand for quality, and reliability. One of Pluto's construction sites, located near ALTad CMC in the heart of the capital, offers residents the opportunity to live in a quality home environment within a 65,000-square-meter gated compound. These residences feature stunning architecture, beautiful apartments with unobstructed views, and lasting benefits that combine high standards of quality and comfort. The compound includes common facilities and is conveniently located near

markets, schools, hospitals, recreation centers, and essential infrastructure, making it a prime location and a valuable investment for clients. Pluto is supported by a strong financial foundation. In collaboration with its sister company, Blue Line Building Construction Co., Pluto ensures all developments meet high standards of building quality, with attention to detail and architectural design.

Afro Sweden Real Estate is a highly esteemed organization dedicated to providing first-class, royal service at every step. It is an emerging real estate company founded by experts from the construction, law, and business sectors in Ethiopia and Sweden. Afro Sweden places great emphasis on the quality of the homes it delivers, offering affordable homes for both rent and sale. The company is currently constructing luxury apartments in the Bole and Atlas areas.

1.2 Statement of the problem

A significant proportion of building construction projects in Ethiopia diverge from their initial plans (Addis, 2014). Research on Ethiopian building construction projects indicates that many of these projects are not completed as per the initial blueprint because of a variety of issues and adjustments that cause delays, cost overruns, or compromised quality. Inadequately managed risks throughout the project's lifecycle may contribute to variations from project objectives (Alem, 1999).

The real estate sector is dynamic and demanding that involves various stakeholders such as builders, designers, and contractors. Failure to meet project deadlines and the need to adjust the price of housing units is one of the significant challenges encountered by residential real estate developers (Bewket, 2014; Muluken, 2013).

There is no project that is entirely free of risk, consequently, failure to carefully identify risks, conduct a thorough analysis, and implement effective risk management strategies significantly increases the likelihood of project failure (Mahindra et al., 2013). Despite being essential to project success, project risk management is typically overlooked throughout feasibility studies and project execution. Consistent evaluation and analysis of risks are crucial for identifying, addressing, and handling risks before they endanger the chances of success. However, in Ethiopian real estate development projects, this concept is rarely integrated into current practices for various reasons.

Yimam (2011) discovered that risk management maturity levels are considerably low in Ethiopian construction projects, with risk management being considered less important compared to every other knowledge areas with the exception of communication and safety management. Various studies indicate that there is a lack of emphasis on a comprehensive and integrated approach to risk management, particularly in terms of identifying construction risks, assessing their likelihood of occurrence, and understanding their impact on project objectives.

Befkadu (2017) revealed that risk management procedures for Ethiopian real estate projects are inadequately planned and carried out in an unprofessional manner. In feasibility studies, risk is essentially ignored. A key factor contributing to this is the absence of a workable and efficient risk analysis method to direct effective execution. Inadequate identification of different risks and assessment of their effects on project objectives result in delays and cost overruns. Additionally, they suggest implementing proactive risk planning to effectively and successfully address these risks when they arise.

Haddush (2016) argues although there is a large body of literature on risk and risk management, there is a small quantity of empirical data on risk and specifically associated with real estate development projects and very little research that focuses on risk management strategies in Ethiopian real estate projects. As stated by Gimpelevich (2011), there exists a significant disparity between theoretical concepts and practical implementation in the real estate development risk analysis. Moreover, research on the strategies employed by real estate developers to handle the challenges of their inherently risky business is scarce (Gehner, 2008). Most of the existing research on risk and risk management focuses on identifying various risk types and their origins. There are few studies that evaluate the risk awareness and management, the strategies used by real estate for risk management, and whether the risk management approach is applied successfully among certain real estate projects.

Therefore, this study intends to examine the level of risk awareness, its management, and the techniques adopted for risk management by real estate, and the discrepancy between present risk management practices and the theoretical risk management procedure of selected Addis Ababa real estate developments.

1.3 Research questions

The general research question that the study aims to answer is:

What are the risk management practices implemented in selected real estate projects in Ethiopia?

The study attempts to answer the following specific research questions:

1. What is the current level of awareness of risk and its management among real estate projects?
2. What are the risk management techniques and practices being used by real estate developers in Addis Ababa?
3. What is the gap between the theoretical risk management process and the practical implementation of risk management in real estate projects?

1.4 Research objectives

1.4.1 General objective

The general objective of the study is to evaluate the risk management practice in selected real estate projects in Ethiopia.

1.4.2 Specific objective

- To investigate the level of awareness of risk and its management among real estate projects.
- To identify the processes and techniques for risk management adopted by the real estate.
- To identify the disparity between the theoretical and actual project risk management practices.

1.5 Significance of the study

This thesis focuses on the practice of risk management in Enyi, Phison, Afro Sweden, and Pluto real estate projects. The study's findings and recommendations would be highly valuable to various project developers, practitioners, managers, and teams in real estate projects. Therefore, by contrasting the current realities and potentials of each real estate, the study's findings can be applied to other similar real estate projects.

The study provides insights to stakeholders involved in real estate projects about the actual practice of risk management at their projects, including information about the process's strengths and weaknesses. It is believed this could support the companies in progressing towards improved

In addition, it provides a general understanding of risk management and its various applications in the real estate sector to the academic and professional communities. Finally, the study will add its contribution by providing a foundation for further studies on risk management in real estate projects.

1.6 Scope of the study

The spatial scope of this study is bounded to projects in Addis Ababa, Ethiopia; this could potentially limit the applicability of the findings to all real estate projects.

Conceptually the study seeks to investigate and evaluate the practical implementation of project risk management within real estate companies in Addis Ababa. Among the nine knowledge areas in project management, this study exclusively focuses on risk management.

The scope of study in a time perspective will be limited to gathering data at a certain moment and does not include trend analysis.

Meanwhile, methodologically the research conducts both quantitative and qualitative research approaches to investigate the actual risk management techniques and processes.

1.7 Limitation of the study

The sample size of the qualitative data is relatively small, which may limit the generalizability of the findings.

The accuracy and reliability of the data collected depend on the honesty and accuracy of the respondents' answers, there may be biases or inaccuracies in self-reported data.

The time frame for conducting the research was limited, potentially affecting the depth and comprehensiveness of the analysis.

1.8 Organization of the study

The first chapter is the introduction part of the research. It contains the background of the study, problem statement, research question, significance of the study, scope of the study, and limitation

of the study. Chapter two contains the literature review; empirical review of earlier research and the study's conceptual framework. In Chapter Three the techniques and methods used in the working of research are included. It contains the research design, research method, data sources and collection method, sampling methods, and data analysis method. Chapter four is data analysis and interpretation. The findings and results of the study are discussed and interpreted. Finally, Chapter Five is the last chapter of the research it summarizes the study and contains the conclusion, recommendation, areas of future research, and reference used.

1.9 Definition of key terms

“Project **risk** is an uncertain event or condition that, if it occurs, has a positive or negative effect on at least one project objective” (PMBOK Guide, 2017).

A **project** is defined as a series of unique, complex, and interrelated activities aimed at achieving a specific goal or purpose, which must be completed within a set timeframe, budget, and according to specified requirements (Wysocki, 2014).

Real Estate Project is the execution of construction activities on, above, below, or within land, or making significant alterations to the use of buildings or land. (Millington, 2000).

Risk management is a process of identifying potential risks, evaluating them through quantitative or qualitative methods, selecting the most suitable approach for addressing them, and then overseeing and documenting the risks (Kerzner, 2006).

PMBOK (Project Management Body of Knowledge) is a guide that outlines project management processes and knowledge areas.

PMI (Project Management Institute) is the professional organization for project managers dedicated to promoting project management as a recognized profession and enhancing the status of project managers. PMI has established a certification process that awards the title of Project Management Professional to individuals who meet specific criteria (Lewis, 2011).

CHAPTER TWO: LITERATURE REVIEW

This chapter reviews the available conceptual and empirical literature to offer important insights into the concept of risk management. Moreover, the chapter provides an introduction to the real estate sector where the research is carried out. This will support the adoption of the most effective approach and procedure for investigating risk management practices.

2.1 Conceptual Review

2.1.1 Real estate development

The term "real estate" encompasses land, the airspace above it, the ground beneath it, and any buildings or structures situated on it. This category includes various property types such as residential homes, commercial offices, retail spaces like theaters, hotels, restaurants, shops, industrial facilities such as factories, and governmental buildings (Khedekar & Dhawale, 2015).

Key players in the real estate industry consist of developers, builders, real estate agents, tenants, and buyers. A developer is a person or entity that engages in the development process, assuming risks and enjoying the potential benefits of the development (Truneh, 2013).

Millington (2000) describes a real estate development project as involving construction activities on, above, below, or within land, or making substantial changes to the use of buildings or land. This practical definition is well-regarded and widely accepted in the industry.

For the purpose of this thesis, Neary's (2009) widely accepted definition of a real estate development project is preferred. According to Neary, such a project must incorporate elements of location, project concept, and capital to meet multiple objectives. These projects should be competitive at the microeconomic level, promote and sustain employment, be socially, macro economically, and environmentally acceptable, and provide positive long-term returns throughout their lifecycle. This perspective differentiates real estate development in the narrow sense, which covers the period from initiation project to deciding the next steps within the conceptual framework, in the broader sense of real estate development, it includes the planning, construction, and usage phases.

2.1.2 Overview of the real estate industry in Ethiopia

The real estate sector has emerged as one of the rapidly expanding areas of the Ethiopian economy. Access Capital Research (2010) noted that without the robust growth in this sector and its associated construction industry, Ethiopia would not have achieved double-digit economic growth over the five years leading up to 2010.

Since 2005, Ethiopia's urban population has grown at an average annual rate of 3.8%, and projections suggest it will rise from 15.2 million in 2012 to 42.3 million by 2037 (African Economic Outlook, 2016). Presently, there are approximately 630 real estate investments national wide, totaling 3.5 billion birr in investment capital. The Ethiopian Investment Commission reports that since 2015, about 117 companies have received investment licenses for 56 different real estate projects, 43 of which are in Addis Ababa. The demand for real estate in Addis Ababa remains high due to the continuous increase in housing needs (Addis Fortune, 2019).

2.2 Risk

According to the Project Management Institute (PMBOK Guide, 2000), project risk is defined as "an uncertain event or condition that, if it occurs, could impact a project objective, such as scope, schedule, cost, or quality, either positively or negatively." Al-Bahar (1990) explains uncertainty as the likelihood of an event happening, essentially the probability of its occurrence. He defines risk as the exposure to the possible consequences resulting from uncertainty.

Olsson (2007) and Hillson (2004) describe risk as measurable uncertainty and uncertainty as immeasurable risk. This implies that once uncertainty can be quantified, it is classified as risk. Additionally, Byrne (1996) states that risk is applicable in scenarios where probability distributions for likely outcomes can be established, whereas uncertainty is more appropriate when such distributions cannot be determined. Therefore, the primary distinction between risk and uncertainty lies in their measurement. Risk measurement requires probabilities for outcomes and associated losses, while uncertainty measurement only involves the probabilities assigned to outcomes.

Not all risks will have a significant impact individually; however, multiple low-level risks combined can lead to serious consequences for a project. Kerzner (2006) identifies objective sources for risk identification as life cycle cost analysis, lessons learned documents, and performance data. Conversely, a subjective source consists of insights and expertise of seasoned professionals.

2.2.1 Risk in real estate development projects

Risk is an inherent part of all construction projects, given the industry's vibrant, risky, challenging, and rewarding nature. Construction projects are always unique and are typically undertaken only once. Moreover, construction involves multiple stakeholders and long production durations which increase the potential to uncertainty.

In the construction sector, risks and uncertainty are unavoidable. It is crucial to integrate risk management principles into construction practices to effectively manage uncertainties and risks, ensuring Victorious completion of projects (KarimiAzari, 2011). Despite the crucial role of effectively handling uncertainty and risk for project accomplishment, the construction sector is not widely recognized for its adeptness in managing risk. Numerous projects do not achieve their deadlines, stay within budget, or adhere to specifications (Dey & Ogunlana, 2004).

The real estate development industry also participates the inherent risks associated with construction. Millington (2000) highlights key characteristics of real estate investment goods, including their location dependency, heterogeneity, scarcity, and constrained interchangeability. These aspects carry notable economic, legal, and practical consequences.

Real estate development presents a highly complex, constantly evolving, and multi- disciplinary challenge. The extensive duration and complexity of the development process require significant time investment, limiting the ability of real estate developers to promptly adapt to fluctuations in tenant and investment markets, thus heightening economic risk (Gehner, 2008). Additionally, real estate is distinguished by its extended life cycle and utility. Based on factors such as its intended use, capacity for third-party utilization, and conceptual design, the economic lifespan of real estate can span from 20 to over 100 years. Throughout this extended period, properties require maintenance, renovation, or repositioning (Millington, 2000).

The real estate industry typically operates within a project-oriented organizational structure and carrying out projects that are distinctive, intricate, and temporary, with limited resources and predetermined quality standards. Each real estate project is distinct due to the inevitable variations in project activities and temporary because each project has defined start and end dates. These elements contribute to the riskiness of the real estate industry, where failure to effectively manage these factors can lead to project failure, delays, budget overruns, or poor quality.

2.3 Risk management

Thompson and Perry (1992) characterized risk management as a Structured process aimed at identifying, assessing, and addressing project risks to enhance the likelihood and impact of adverse events while reducing those unfavorable to project objectives. It serves as a managerial instrument to pinpoint sources of risk and uncertainty, assess their impacts, and devise appropriate management measures. According to Koirala (2014), risk management is a structured approach to recognizing, anticipating, and mitigating potential adverse effects on projects.

Zavadskas, Turskis, and Tamosaitiene (2010) offer a comparable perspective, defining risk management as a procedure for identifying sources of uncertainty, evaluating the potential consequences of uncertain events or circumstances, and formulating response strategies based on anticipated outcomes. They emphasize the iterative nature of risk management, highlighting the continuous need for identification, analysis, and response generation during the project lifecycle to guarantee the achievement of project objectives.

2.3.1 Importance of risk management

Project risk management involves a continuous cycle of identifying, assessing, prioritizing, and addressing risks that could jeopardize a project's success in areas such as cost, schedule, quality, safety, and technical performance. Frequently, organizations and project owners perceive risk management tasks as optional rather than essential components of project oversight (Dlapiper, 2015).

As proposed by Haddush (2016), introducing a systematic risk management procedure yields advantages in both the short and long run. Every phase of the risk management process, from identification and assessment to the development of mitigation strategies, offers its own advantages. It is crucial to recognize, comprehend, anticipate, evaluate, analyze, and develop strategies to effectively manage risks (Groton et al., 2010; Wiegmann, 2012). Projects must plan for both favorable and unfavorable risk events. When risks are identified, treatments that need to be incorporated into the risk management process are identified (PMI, 2013). These treatments should be listed as activities in the work breakdown structure, with allocated time and resources.

There should be several possible advantages for an organization from an efficient risk management system. These can be classified as either internal or external advantages. Internally, it enables a deeper understanding of potential risks facing the organization, encouraging the perspective of risks as opportunities rather than mere threats. Consequently, risk management aids in making well-informed decisions that balance risks and rewards. It offers valuable insights for strategic planning and risk assessment within the organization. Formalized risk management procedures also promote knowledge sharing and best practices within the organization, fostering openness and building trust in business operations (Gehner, 2008).

On the external front, these advantages extend to capital acquisition, insurance, and regulatory compliance. A thoroughly documented risk management system assists in demonstrating compliance with regulatory standards concerning product liability, occupational safety, and data security. Consequently, proficient risk management facilitates adherence to the progressively strict demands of investors and regulatory bodies (Pezier, 2002).

2.3.2 Risk management in real estate Project

Risk management holds significant importance in real estate projects. The information gathered through risk identification, analysis, and response decisions empowers real estate developers to make informed choices regarding both strategic and operational matters. This process supports in the efficient allocation of limited resources by weighing the risks and benefits of different strategies (Barkley, 2004). As per IRM (2002), risk management enhances decision-making, planning, and prioritization by providing a thorough and organized comprehension of business operations, uncertainties, and project prospects and risks. It also safeguards and enhances the

value of the project and its stakeholders by aligning with project objectives and maximizing operational efficiency.

In general, risk management is crucial to real estate projects because it increases the likelihood of meeting goals (like delivering the product on schedule, within budget, and with acceptable quality standards), makes informed project decisions, improves stakeholder communication, maximizes customer loyalty and trust, as well as resource efficiency and effectiveness.

2.4 The Risk management Process

Lewis (2011), states that steps of the risk management process are divided into risk management planning, risk identification, risk analysis, and risk response.

2.4.1 Risk management planning

Risk management planning is a process of outlining the procedures for conducting risk management activities within a project. This process holds significant importance for project success and thus, should commence as soon as a project is conceptualized and completed during project planning (PMI, 2013).

According to Meredith and Mantel (2009), this approach's main advantage is that it guarantees the scope, type, and visibility of risk management corresponds to the risks and the significance of the project to the company. To ensure the process of managing risk is effectively supported and implemented successfully all through the project life cycle, it is essential to engage all stakeholders and get their consent and support.

The primary output of this process is the risk management plan. This plan outlines the organization and execution of risk identification, qualitative and quantitative analysis, response planning, monitoring, and control throughout the project's lifespan (PMBOK Guide, 2000).

Furthermore, a key competency of a successful risk management organization is establishing a strong link between project planning and corporate planning, especially in the context of analyzing business threats and opportunities alongside project risk analysis (Barkley, 2004). Risk management should be incorporated in to the culture of the company, driven by an effective policy from top management. This involves translating the strategy into tactical and operational objectives, with clearly defined responsibilities across the organization. Risk management should

be part of every manager's and worker's role, fostering accountability, performance measurement, and reward, thereby enhancing operational efficiency at all levels (IRM, 2002).

Tools and techniques: According to the Project Management Body of Knowledge (PMBOK Guide, 2017), the methods and strategies used in planning risk management encompass expert judgment, stakeholder analysis, data analysis, and meetings.

2.4.2 Risk identification

Risk identification stands as the initial and crucial phase in the process of managing risks (Wang & Chou, 2003). This is because without recognizing a risk, it is unable to analyze, evaluate, or control it. In practical terms, the main objective should be to identify the key, critical risks within a project, allowing for their analysis and the formulation of an appropriate response because attempting to address every potential risk is inefficient, wasteful, and ultimately bound to fail (Andi, 2006).

Risk identification aims to pinpoint the source and nature of risks, including recognizing potential risk event conditions in construction projects and defining risk responsibilities (Wang & Chou, 2003). Categorizing risks can offer insights into different types of risks and can also help structure risk identification, placing identified risks in the critical path development process of the real estate (Gehner, 2008).

Risk identification aims to pinpoint an organization's exposure to uncertainty, necessitating a comprehensive understanding of the organization itself, its market dynamics, and the broader legal, social, political, and cultural contexts in which it operates. This involves developing a solid comprehension of both strategic and operational objectives, including critical success factors, as well as recognizing the associated threats and opportunities to achieving these objectives (IRM, 2002).

The key benefit of this process is the documentation of existing and equipping the project team with the knowledge and capability to foresee potential events. Risk identification is a repetitive process, with new risks potentially emerging or becoming apparent during the project lifecycle.

Errors in identifying risks only become evident when an undetected risk escalates to a critical level, posing a potential threat to the enterprise's existence. The challenge lies in achieving a

thorough and current level of risk identification. The process of identifying risks is typically complex and time-consuming, particularly during the initial stages (Hobuss, 1999).

Jayasudha & VidiVELLI (2016) categorized risks into twelve major groups: delivery/operation risk, technology risk, financial risk, procurement-contractual risk, political risk, environmental risk, social risk, economic risk, reserve risk, credit risk, engineering risk, material risks, weather risks, insurance risks, and people risks.

Furthermore, Zavadskis et al., (2010) suggested three methods for classifying project risks: external, project, and internal risks. External risks related to factors beyond the control of the project management team, covering aspects such as political, economic, social, and weather-related uncertainties. Project risks encompass cost, time, and quality of work, construction, and technological risks. Internal risks are classified based on project participants involved in the project, such as participants, consultants, contractors, etc., and include resource, project team member, construction site, documentation, and information-related risks. Each major category mentioned above is further divided into associated sub-groups.

According to Szymanski (2017) risk factors in construction projects can be categorized into five primary groups: "Preliminary design, tender, detailed design, construction activities, and financing the project." Additionally, these main risk categories are subdivided into related sub-risks.

Tools and techniques: According to Cooper et al. (2012, p. 38) Tools and Techniques for Risk Identification comprise, Brainstorming; Checklists; Interviews and Focus Group Discussions; scenario analysis, surveys, questionnaires, analysis of work breakdown structure, and reviewing domestic or foreign experiences along with post-project completion reports and audits.

2.4.3 Risk analysis

Risk analysis entails the methodical evaluation of decision factors that are vulnerable to risk and uncertainty. This process comprises determining the likelihood of unfavorable events occurring, setting assumptive bounds to related uncertainties; and assessing the potential impact of these risk event outcomes either qualitatively or quantitatively (Edwards & Bowen, 1998, as cited by Weigelman).

2.4.3.1 Qualitative analysis

According to PMI (2013), qualitative risk analysis involves of ranking risks for additional examination or action by evaluating and combining their likelihood of occurrence and potential impact. This evaluation enables risks to be positioned along a descriptive scale ranging from high to low. The primary advantage of this process is its ability to reduce uncertainty levels and concentrate on high-priority risks.

Various tools and techniques can be employed for qualitative risk analysis, including evaluating risk probability and impact, using probability and impact matrices, assessing the quality of risk data, categorizing risks, determining risk urgency, and relying on expert judgment. A skillfully performed qualitative risk assessment will offer risk analysts valuable insights into the challenges they may face in their projects (Frame, 2002). Various principles are taken into account when assessing whether the risk level is high or low, including the probability of an adverse event, its magnitude, and the potential repercussions if it materializes.

The primary outcome of this procedure involves prioritizing the project risks, which indicates the project's overall risk position compared to other projects through comparison of risk scores. This prioritization can guide the allocation of resources or personnel to projects with varying rankings of risk, facilitate benefit-cost analyses for project decisions, or provide support for recommendations regarding project initiation, continuation, or termination (PMBOK Guide, 2000).

Tools and techniques according to Szymanski (2017) include; a preliminary evaluation of the likelihood and impact of risk occurrence; a risk index evaluation matrix; an evaluation of the significance of risk to the project; examining the project's susceptibility to changes in its assumptions and the stability of those assumptions; as well as ranking information methodologies based on their applicability to risk analysis.

2.4.3.2 Quantitative analysis

Quantitative risk analysis seeks to prioritize risks numerically rather than descriptively. While qualitative methods are suitable for small and medium-sized projects (Heldman, 2005), quantitative approaches are typically reserved for larger, more complex projects due to the substantial time and effort involved (Turner, 2009). The selection of methods should consider

factors such as the nature of the risk, scope of the project and the requirements and standard of the specific method.

The primary advantage of this approach is to assess the project's overall risk coverage and to provide additional quantifiable risk information to aid in designing risk responses.

Tools and techniques: as outlined in the PMBOK Guide (2017), the tools and techniques include expert judgment, collecting data, interpersonal and team skills, representing uncertainty, and analyzing data. In accordance with Kerzner (2009), quantitative risk analysis methods encompass, expected value, decision analysis, payoff matrices, and employing a Monte Carlo simulation.

2.4.4 Risk response

Risk response planning involves creating strategies, procedures, and methodologies to increase opportunities and mitigate threats to the project's goals. It comprises formulating courses of action to maximize opportunities and minimize threats to project objectives (Barkley, 2004).

The primary advantage of this procedure is its ability to address risks based on their priority, allocating resources and tasks accordingly within the project's budget, schedule, and management plan as required. Risk response planning should align with the risk's severity, should be cost-efficient in tackling the issue, timely to achieve success, feasible within the project's scope, agreed upon by all stakeholders, and managed by assigned person. Often, selecting the most appropriate risk response from multiple options is essential for effectively managing identified risks (PMBOK Guide, 2000).

Tools and techniques: The tools outlined in the Project Management Body of Knowledge Guide (2017), for risk response include expert judgment, collecting data, conducting interviews, utilizing interpersonal and team skills, facilitation, strategies for addressing threats and opportunities, contingency response strategies, overall project risk strategies, analyzing data, exploring alternatives, conducting cost-benefit analysis, and conducting multi-criteria decision analysis.

There are four alternative approaches or strategies for treating risks in a project.

2.4.4.1 Acceptance of risk

If the consequences of risks are minor and the expense of avoidance, mitigation, or transfer exceeds the advantages, it is recommended to "accept" it. Acceptance comes in two forms: passive acceptance, where the risk is recognized without any intervention, and active acceptance, which involves acknowledging the risks and developing contingency plans and other special measures to mitigate them (PMI, 2013).

2.4.4.2 Transfer of risk/Sharing

Risk transfer involves transferring the outcome of a risk to a third party along with the responsibility for managing it. This action only allocates the management of the risk to another party; it does not eliminate it (Barkley, 2004). Insurance serves as one approach to safeguard against loss.

2.4.4.3 Reduction/Risk mitigation/

Mitigation aims to lower the probability and/or impact of a negative risk event to a controllable level. Proactively reducing a risk's likelihood or its effect on the project is more effective than addressing the consequences after they occur.

2.4.4.4 Avoiding risk

In cases where the collective risk of the project significantly impacts and surpasses the predetermined risk limits, an avoidance tactic might be implemented. This approach involves taking specific measures to reduce the adverse impact of uncertainty on the project and to realign the project within the set limits. For instance, at the project's overall level, avoidance could include removing high-risk components from the project's scope. If it proves impossible to restore the project's risk levels within the established thresholds, the termination of the project may become necessary. Since it is the most extreme form of risk avoidance, it should solely be considered if the whole level of risk is judged intolerable and is predicted to stay that way (PMBOK Guide, 2017).

2.4.5 Risk monitoring and control

Risk monitoring is a process that assesses the degree to which operations align with planned standards across all departments. It evaluates if the defined objectives have been achieved, whether management of risk aligns with risk policy, if the company is effectively structured with

an appropriate risk culture, and whether responsibilities have been clearly defined. This process entails collecting and analyzing data using methods such as key indicator analysis and benchmark comparisons. The findings are communicated to stakeholders externally as well as internally to the relevant response functions. The objective of risk control is to actively manage identified and assessed risks, addressing all major loss exposures through specific risk management strategies (Wiegelmann, 2012).

The fundamentals of the risk monitoring and control process involve establishing a budget, developing a systematic system of schedule management and performance indicators for the program, which the program manager and other important staff use to evaluate the program's status and receive timely alerts about potential issues. This indicator system is designed to provide early warnings of possible difficulties, allowing for the implementation of management measures (Ibid).

Monitoring and controlling activities address acknowledged risks, oversee remaining risks, detect new threats, implement risk response plans, and assess their efficiency during the project phase. The key results of this process include suggested corrective and preventive measures, change requests, updated risk registers, and adjusted project management tactics.

Tools and techniques: exploration of data, such as technical performance reviews and reserve assessments, audits and gatherings, variance and trend analysis, and status meetings.

2.4.6 Awareness of risk and risk Attitudes

Risk perception and attitudes play a critical role in risk decisions, starting from the initial definition of risk to the identification of potential risks and their sources, analyzing and evaluating risks, and choosing suitable response methods. These attitudes also highlight the importance of continuous risk monitoring and review, as well as ensuring effective communication and consultation regarding risk management (Haddush, 2016). Implementing training and development initiatives centered on identifying, evaluating, and addressing risks can improve professional expertise and awareness in managing risks within actual projects. It's crucial for the project team to grasp the critical risks that might affect the achievement of project goals, thereby reducing adverse risk impacts.

2.5 Empirical Review of Literature

Most risk management practices used in Ethiopian projects lack efficiency and effectiveness, leading many projects to perform below their intended objectives.

2.5.1 Risk management in building construction projects

In the study on risk management in construction projects, Ally (2013) identified three key categories of risks that are classified as severe and significant: financial, construction, and physical risks. Financial risks involve funding availability, cash flow challenges due to delayed payments and disputes, and disruptions to business operations. Construction risks relate to ground conditions, inadequate site investigations, insufficient documentation, unforeseen issues, errors or additions in bills of quantities, and rising costs of materials and equipment. Physical risks include force majeure events like extreme weather, fires, landslides, pestilence or deadly diseases, unexpected occurrences, unforeseen circumstances, and death.

Additionally, Shahid et al., (2013) identified ten key construction risks, including payment delays, project funding issues, construction-related accidents and safety concerns, flawed design, inaccurate execution plans or schedules, inadequate performance by subcontractors, exchange rate fluctuations and inflation, poorly defined work scope in contracts, low-quality materials and equipment, and material supply shortages or delays.

Zou, Zhang, and Wang (2007) state that construction projects can be unpredictable and stress the significance of risk management in construction projects to meet project goals related to time, cost, quality, and safety. They highlight that project risk management is a continuous and repetitive process, providing the greatest advantages when methodically implemented throughout the entire project lifecycle, from planning to completion.

The study conducted by Thomas (2012) on explorations into the implementation of risk management principles in prominent European real estate development firms found a significant lack of understanding of risk management among real estate developers and identified shortcomings in addressing issues in risk management.

Likewise, Frezewd (2016) and Haddush (2016) discovered that official risk management is rarely employed and enacted in construction projects. The failure to thoroughly identify different risks and assess their consequences on project objectives often leads to delays and cost overruns.

They proposed proactive planning for risks and making arrangements to respond effectively and appropriately to potential risks.

In an empirical survey, Haddush (2016) investigated the state of risk management in Ethiopia's construction sector and the adoption of integrated risk management. The results indicate a lack of formal risk management practices, with just 28.6% of businesses adopting formal board-approved risk management policies. This absence of structured risk management approaches significantly affects industry performance and competitiveness. The researcher recommended the continuous implementation of integrated risk management practices and highlighted the importance of construction company owners, their boards, and top management fulfilling their role in integrating risk management for the industry's success and growth.

Yimam (2011) highlighted that the development construction project management's level of maturity is generally categorized as being at a casual development stage. The research described that among the knowledge areas of project management risk and safety management are the least developed. The research indicated that these areas of knowledge are generally not well-known or infrequently encountered within the construction industry. Based on empirical findings, it was observed that around two-thirds of contractors do not practice risk management, with approximately 24% exhibiting inadequate risk management practices. In response, the researcher proposed for initiatives such as offering training and mentorship to contractors, highlighting resource risk, and emphasizing change management to enhance their project management skills and practices, among other suggestions.

From the data presented, it can be inferred that risk management receives limited attention, indicating a potential lack of focus, recognition, awareness, and significance attributed to risk management by professionals in the country's construction industry.

2.5.2 Real estate industry and risk management in Ethiopia

There has been limited research done on the topic of real estate risk management in Ethiopia specifically, the fact that the real estate sector is still relatively young in the country and the recent incorporation of risk management concepts into businesses. Research carried out on real estate in Ethiopia, particularly in Addis Ababa, reveals various issues and obstacles encountered

in the real estate development sector. These challenges contribute to an environment of uncertainty in the industry.

According to data from the Land Administration and Building Permit Authority of the City Administration, developers commonly cite several reasons as major obstacles. These include delays in site handover by the City Administration, infrastructure provision delays, increasing prices of building materials, and insufficient access to loan finance.

Eshete and Teshome (2015) examined the performance, obstacles, and future potential of real estate financing in Addis Ababa. Their findings underscore issues such as obstacles in land management, inadequate infrastructure, and restricted construction capacity among developers or contracted construction firms, weak borrowing capabilities, rising prices, and affordability constraints as significant hurdles in real estate development in Addis Ababa. Additionally, Milka (2016) analyzed risks associated with real estate projects in Addis Ababa, highlighting issues such as missed milestone deadlines, escalating construction costs, fluctuations in exchange rates, and inflation, all of which heavily impact the time and cost of surveyed private residential real estate development projects.

Research conducted by Paulos (2011) on residential real estate developers identifies that two significant difficulties facing the industry are price increases and the depreciation of the birr. The study also reveals delays in project handover, primarily attributed to price escalation, material shortages, and insufficient financing. Timely delivery of housing projects is a key issue impacting the reliability of real estate developers (Bewket, 2014; Muluken, 2013). Solely a few developers have completed and transferred the houses to their clients, while some were kicked, with many projects remaining incomplete for up to a decade (Bewket, 2014). Delays result in increased initial costs initially estimated by contractors for specific projects, influenced by factors such as inflation and foreign currency fluctuations. Insufficient funding also contributes significantly to extended delays, as the primary source of financing for real estate projects are customers (Muluken, 2013).

Many developers utilize price adjustment due to the rising costs of certain construction materials and the devaluation of the birr. However, such adjustments may result in contract terminations before delivering the homes unless clients agree to revised terms and conditions, including updated pricing. This can lead to legal disputes, with customers seeking recourse to ensure

delivery of the homes they have paid for. According to Selam (2016), real-estate developers confronted with a lack of funding to finish projects, contracts were terminated for customers unwilling to accept new terms and conditions which include pricing adjustments.

A study by Kalkidan (2017) found that despite the inherent risks associated with real estate projects, there is a noticeable lack of implementation and practice of risk management, indicating a significant gap in this area. Similarly, Nardos (2020) also discovered that real estate firms often neglect to offer sufficient training and workshops to close the knowledge gap regarding risk and risk management. The study suggested that real estate companies and projects should acknowledge risk management as a crucial activity for achieving project objectives and establish a standardized risk management framework, since it is essential for cultivating efficient risk management practices.

In summary, the scarce of locally conducted research suggests that risk management practices are still in their early stages. This would have significant implications for real estate development projects in particular and also for the construction sector as a whole, in the country. Consequently, it necessitates considerable attention and dedication from professionals and organizations to enhance the current state of project management practices.

2.5.3 Research Gap in reviewed literature

Research on Ethiopian real estate, primarily in Addis Ababa, concentrated on the problems and challenges the industry faces. Most of these studies examined the issues and difficulties and failed to examine the degree of risk awareness and the administration within real estate projects, alongside the risk management approaches utilized by the real estate sector, and whether the risk management process is being applied successfully among particular real estate projects.

The studies mentioned highlight the necessity for an integrated and coordinated risk management framework. Even in risk-focused organizations, there remains a disparity between the theoretical principles of project risk management and their practical implementation. This study seeks to evaluate the risk management practices in real estate projects with the expectation that the result and recommendations provided could help narrow this gap and add to the scarce literature existing in this field.

2.6 Analytical framework

The key components that the research has examined are risk awareness, risk management structure and framework, and risk management process. To implement the study, the study variables are shown in the analytical framework. By examining the risk awareness, risk management structure, and risk management process (risk management planning, risk identification, risk analysis, risk response strategies, risk monitoring, and control), the study can provide insights into the actual risk management techniques and practices used in the selected real estate project.

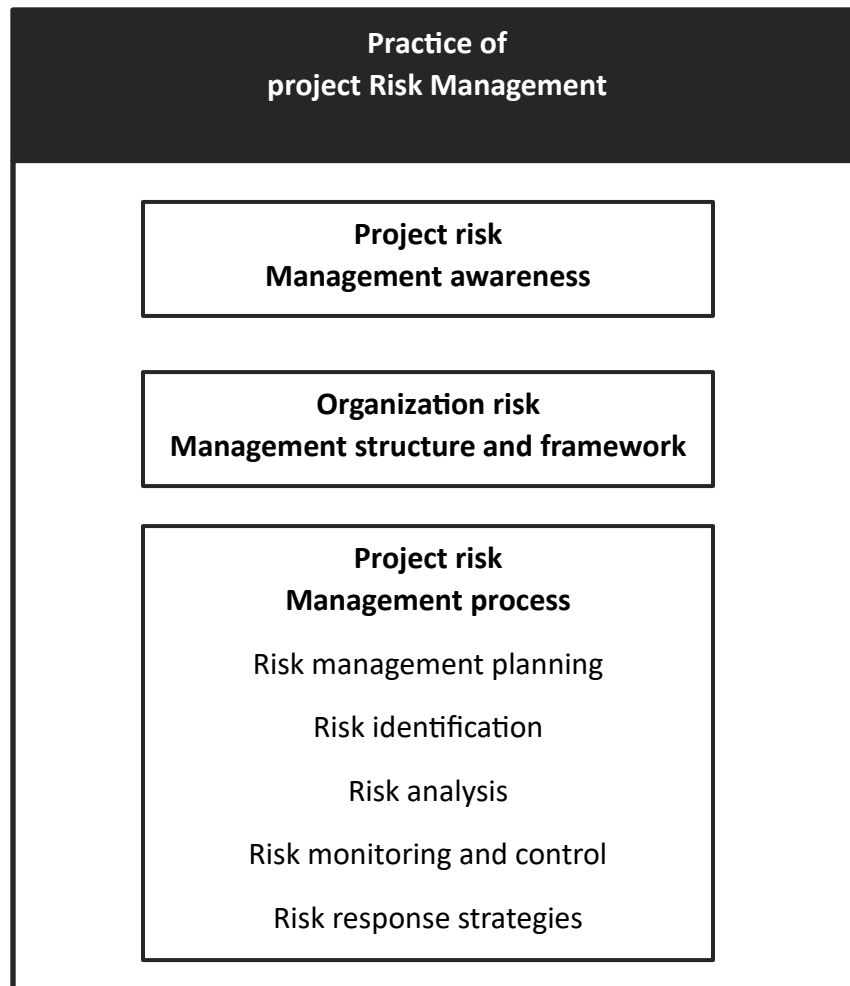


Figure 2.1: Analytical framework of the study

Source: Developed based on the objective and literature reviewed

CHAPTER THREE: RESEARCH METHODOLOGY

This section outlines the methodology utilized by the researcher in conducting the study, detailing aspects such as research design, the area of the study, sampling methods, data source, data gathering instruments, analytical approaches, and ethical considerations.

3.1 Research design

The overall blueprint that the researcher follows to address the research questions is known as the research design. It comprises specific objectives derived from the research questions, establishes the foundations for data collection, plans strategies for data gathering and evaluation, and addresses ethical considerations and anticipated limitations (Saunders et al., 2016). According to Kothari (2004), research design facilitates the efficient execution of numerous research operations, allowing for the most efficient exercise and the comprehension of the maximum outcome with the least amount of resources.

The selection of research design is determined by the objectives aimed to be achieved by the researchers. In this study, a descriptive approach is adopted to evaluate the practices of risk management practices. The descriptive approach is broadly used across disciplines and is considered one of the most common non-experimental research designs, enabling the collection of extensive survey data from a representative sample drawn from the target population. Descriptive research is aimed at describing phenomena without altering or manipulating the investigated situation, it doesn't seek to establish causal connections. This form of research is highly valuable for establishing foundational knowledge or frameworks regarding the perceived state of the world (Adams, Hafiz, Raeside, & White, 2007). This study aims to assess the risk management procedures in real estate projects. A descriptive research design is utilized to describe the circumstances and data related to the study's specific research questions.

The study's survey approach gave the researcher the ability to gather quantitative data that can be analyzed quantitatively utilizing descriptive statistics and the interview used to gather qualitative data that can be analyzed qualitatively. Therefore this study employed a concurrent mixed-method research approach. Data from both methods are integrated during the analysis to draw comprehensive conclusions.

3.2 Description of study variables

The Study has three variables. These study variables collectively provide insights into the actual risk management practices within the selected real estate companies.

Organization's risk awareness: This variable concerns to the level of awareness and understanding within the selected real estate companies regarding potential risks associated with their projects. It includes the degree to which individuals and teams within the organizations identify and accept different kinds of risks that may have an influence on the results of projects.

Organization's Risk Management structure and framework: This variable focuses on the structure and systems established within the selected real estate companies to manage risks effectively. It encompasses the existence of formal risk management policies and procedures and the allocation of responsibilities for risk management tasks.

Risk management process: This variable describes the systematic approach adopted by the selected real estate firms to identify, assess, and monitor risks throughout the project lifecycle. It includes the specific methodologies, tools, and techniques conducted to manage risks effectively, comprising risk planning, risk identification, risk analysis, risk monitoring and control, and risk response strategies.

3.3 Description of study area and target population

The study is conducted in Addis Ababa. The survey is performed on real estate developers who have completed at least one housing project and are presumed to have relevant experience to contribute. This study evaluates the risk management practices of Pluto, Enyi, Phison, and Afro Sweden real estate organizations' projects as well as the awareness and attitudes of risk management among their staff. Informal approval has been obtained from the real estate organizations.

The target population of the study is project managers and project team members actively involved in the project during the study period as they are the representatives and key players in the preparation and execution of the projects. The number of project managers and project team members that are working at the Pluto real estate CMC site project is 41, at the Afro Sweden real estate Bole atlas site is 21, at the Enyi real estate piazza site is 9, and at the Phison real estate

Ayat site is 24. Hence, the study's entire population consists of 95 individuals. In this study, the researcher utilized the census method.

3.4 Data collection – source, types, instruments

To fulfill its objectives, the study utilized both primary and secondary data sources. Primary data was gathered through questionnaires distributed to a sample of project managers and team members actively involved and play significant roles in the risk management process of selected real estate projects. Additionally, further primary data was acquired through interviews with key project personnel possessing relevant expertise. Face-to-face interviews were employed to cross-reference questionnaire responses and get deeper into the subject matter. The questionnaire and interview questions were adapted and a bit adjusted to suit the study's requirements. Secondary data was sourced from various academic journals, articles, and research publications.

To gather data, the researcher used a guide for the survey questionnaire and conducted key informant interviews. Self-administered questionnaires served as the primary method for quantitative data collection in the study. This approach was chosen because it allows each respondent to answer the same set of questions efficiently, facilitating data collection from a sample before quantitative analysis. Selected informants received survey questionnaires to ensure a substantial amount of data was gathered. The study predominantly utilized a closed-ended questionnaire format with a few open-ended questions for primary data collection. This decision was made because closed-ended questions tend to give in higher response rates in surveys and provide clarity and consistency in responses by offering predefined response choices. Likert-style rating, utilizing a five-point scale, was employed, asking respondents to indicate their level of agreement or disagreement with a series of statements. The questionnaire is divided into three Sections. In Section I, Personnel, qualifications, experiences, etc. are asked and Section II contains questions concerning organizational Risk awareness and risk management structure, in Section III different questions are asked regarding the risk management process. Key informants offer information and details on particular circumstances, situation, and events within the study's area of focus. Key informant interviews were undertaken in this study by the researcher in order to obtain richer, more in-depth data straight from the experts.

Each item on the questionnaire and interview is with the intention of gathering the target information, addressing the objectives of the research, connecting to the main research issue, and measuring different variables about risk and risk management.

3.5 Data analysis – model, techniques, software

After gathering the surveys, the data underwent editing, cleaning, encoding, and error checking processes, constituting data processing. Data processing encompasses a sequence of tasks executed on data to validate, structure, convert, merge, and extract data into a suitable output format for future utilization.

Analysis includes preparing data for examination, performing the examination, presenting the results, and discussing the findings. Quantitative data from the questionnaire was analyzed using quantitative descriptive statistics. This involved computing descriptive statistics like tables, charts, percentages, frequency distributions, mean values, and standard deviations to show the attributes of the study's variables. Subsequent to gathering quantitative data through questionnaires, it was entered into SPSS version 20 for analysis.

For the qualitative data thematic analysis techniques were employed to identify significant and relevant themes aligned with the research objectives and questions. This approach involves closely examining and analyzing the collected interview data items. Thematic analysis is widely utilized in qualitative research, focusing on identifying, exploring, and documenting themes or patterns within the data (Braun and Clarke, 2006).

3.6 Reliability and validity analysis

The researcher employed Cronbach Alpha (α), an internal consistency measure, to evaluate the reliability of the data by assessing how consistently the items or measurements reflect the underlying concept.

The study used different data sources and methods to cross-check and validates the information. The data validity uses parallels to measure the equivalent of the questionnaire by using triangulation, cross-checking the information obtained from key informant interviews, questionnaires, and personal observations with adequate descriptions of contexts. Additionally, the content validity of the questionnaire was evaluated to ensure it aligns with the study's objectives. This was achieved by conducting a pilot test on five respondents before the main data

collection to identify and fix any issues with the questionnaire items. The responses from the pilot administration of the questionnaire were utilized to enhance the content values of the questions for the main administration.

In general, to enhance reliability and validity, individual questions were thoughtfully included, thoughtful attention was given to ensuring the questionnaire was clear and visually appealing, the purpose of the survey was clearly explained, and careful planning was undertaken for its administration.

Table 3.1: Measurement of reliability Analysis

Project risk management practice	Number of attribute	Cronbach's alpha
Organization risk awareness	4	0.746
Organization risk structure and framework	10	0.949
Risk management planning	4	0.920
Risk identification	5	0.798
Risk analysis	5	0.924
Risk monitor and control	7	0.943
Overall reliability analysis	36	0.979

3.7 Ethical consideration

Ethics concerns the suitability of the researcher's actions regarding the rights of individuals who are involved in or impacted by the research (Saunders et al., 2009). When conducting the study, acceptable ethical considerations were taken into account. It used appropriate citations, informed the respondents about the study's goals and how the data would be used, and reported the results in an ethical manner. Prior to data collection, verbal consent was obtained from each participant, and all participants were made aware of the goal of the study. Participants were informed of their right to withdraw or decline participation in the study. The respondent's name was left off the questionnaire in order to maintain confidentiality.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

In this section the gathered data is analyzed and interpreted. It includes tables displaying percentage, mean values and standard deviations, accompanied by comprehensive descriptions. The results and findings from this analysis form the foundation for the study's conclusion and recommendation section.

4.1 Questionnaire response rate

The researcher distributed 95 questionnaires to sample companies.

Table 4.1: Respondents response rate

Response rate	Sample size	Percentage (%)
Returned questionnaires	67	70.53
Un-returned questionnaires	28	29.47
Total	95	100

Source: Own Survey (2024)

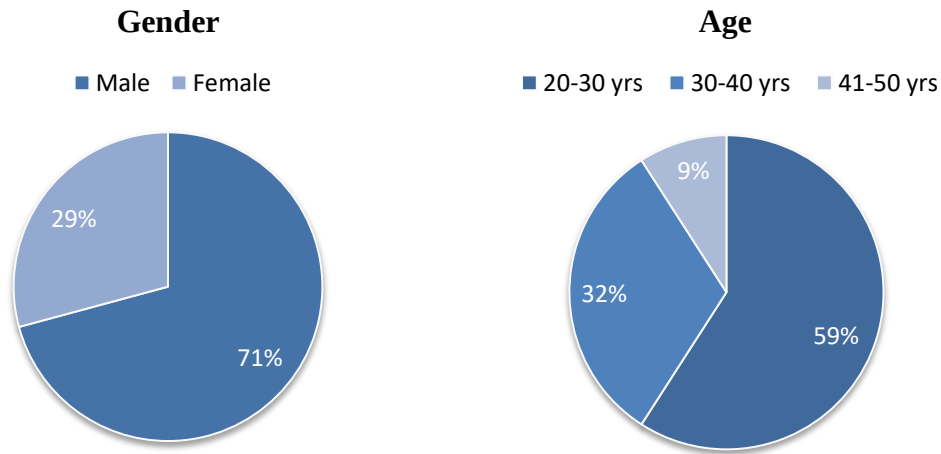
From the 95 distributed questionnaires, 67 of them were filled out and sent back, resulting a 70.53% response rate and a 29.47% non-response rate. Mugenda (2003) states that a 50% response rate is good, while anything above 70% is regarded as very good. The response rate of this study is 70.53%. Therefore, it can be viewed as a highly representative, providing sufficient data for analysis and drawing conclusions.

4.2 Demographic information of the respondents

Of the 67 questionnaires that were completed and returned, 46 were from males, making up 70.8% of the total sample, while only 19 were from females, representing 29.2% of the respondents.

As seen from Figure 4.1, the respondents varied in age, with 59.1% in the 20-30 age group, 31.8% in the 31-40 age group, and the remaining 9.1% in the 41-50 age group.

Figure 4.1: Respondents Gender and Age



Most respondents have attained higher educational levels, with 73.1% holding a bachelor's degree and the remaining 26.9% a postgraduate degree. This suggests that the respondents are well-educated, which may contribute to their understanding and insights regarding the research study's focus on risk management practices in real estate projects.

Table 4.2: Respondents level of education, Professional background, Years of experience and Years of involvement in this project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Degree	49	73.1	73.1	73.1
	Postgraduate	18	26.9	26.9	100.0
	Total	67	100.0	100.0	
Valid	Architecture	7	10.4	10.4	10.4
	Civil engineering	23	34.3	34.3	44.8
	Construction management	19	28.4	28.4	73.1
	Other	9	13.4	13.4	86.6
	Architecture and project management	1	1.5	1.5	88.1
	Civil engineering and construction management	2	3.0	3.0	91.0
	Civil engineering and project management	4	6.0	6.0	97.0

	construction management and project management	2	3.0	3.0	100.0
	Total	67	100.0	100.0	
Other professional background					
Valid		58	86.6	86.6	86.6
	Electrical engineering	4	6.0	6.0	92.5
	Hydraulic and water resource engineering	5	7.5	7.5	100.0
	Total	67	100.0	100.0	
Valid	Below 2 yrs	9	13.4	13.4	13.4
	3-5 yrs	30	44.8	44.8	58.2
	6-10 yrs	15	22.4	22.4	80.6
	11-15 yrs	9	13.4	13.4	94.0
	Above 15 yrs	4	6	6	100.0
	Total	67	100.0	100.0	
	Below 1 yr	12	17.9	17.9	17.9
	1-2 yrs	15	22.4	22.4	40.3
	2-3 yrs	24	35.8	35.8	76.1
	Above 3 yrs	16	23.9	23.9	100
	Total	67	100.0	100	

Source: Own survey, 2024

The respondents possess significant experience in the real estate industry, with 86.6% having worked in construction for over three years. As shown in the table above, 59.7% have been involved in their projects for more than two years. Longer tenure on projects implies that the respondents provide more informed answers due to their extensive knowledge of the project's activities.

4.3 Descriptive Statistics

Percentages and mean score measurement is utilized for interpreting the survey data.

Table 4.3: Mean score interpretation

Mean score	Interpretation
1.00 – 1.81	Very Low
1.81 – 2.60	Low

2.61 – 3.20	Medium
3.21 – 4.20	High
4.21 – 5.00	Very High

Source: Moidunny (2009),

4.3.1 Risk perception and awareness

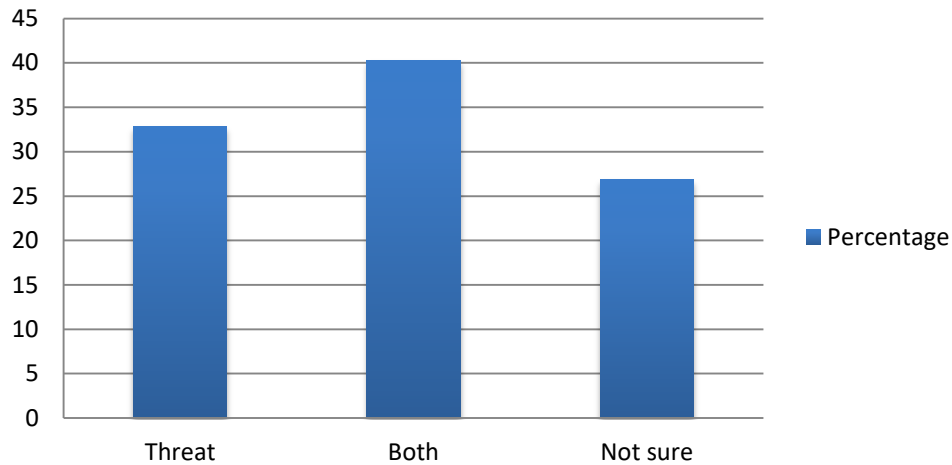
Risk awareness involves understanding the existence of risks, their potential impacts, and the methods used to manage them. Essentially, it involves understanding risk management. Establishing a risk management culture is vital because it fosters open discussions about uncertainties and opportunities, motivates staff to raise concerns, and ensures there are mechanisms to escalate these concerns to the appropriate levels, ultimately resulting in effective project risk management. Developing such a culture primarily involves equipping organizational personnel with the ability to think and plan projects efficiently, supported by company systems that promote this mindset. Effective project risk management typically results from an organization successfully incorporating the significance of risk management process in its staff members.

To evaluate project team members' awareness regarding risk management, the questionnaire included several questions regarding to risk management training and the teams' comprehension of the risk concept.

Regarding the definitions of risk, the results indicate that 40.3% of respondents view risk as both opportunities and threats, 32.8% link risk solely to unfavorable outcomes, and the remaining 26.9% were not sure. Recognizing risk in dual manner allows organizations to better identify and capitalize on opportunities while simultaneously mitigating potential threats, leading to more holistic and effective risk management strategies. The view of risk as purely negative can limit the organization's ability to exploit potential benefits and might result in overly cautious decision-making. Such a perspective may hinder innovation and growth, as it prevents the organization from taking calculated risks that could lead to significant advantages. The finding implies that most respondents agree with the perspective that risk encompasses both positive and negative aspects. Despite the majority of responses acknowledging risks both threats and opportunities; a significant number of respondents still viewed risk as purely negative and a

notable percentage remains uncertain. This highlights a gap in the perception of risk that requires attention.

Figure 4.2: Respondents' understanding of the concept of risk



In contrast to the findings of this study, Kalkidan (2017) found that most respondents associated risk primarily with adverse occurrences, with only a minority acknowledged that risk can represent both opportunities and threats. This suggests that by focusing solely on negative risks and preparing for threats, projects might be overlooking opportunities. The discrepancies between these two studies could result from disparities in their findings, where the current study involves relatively large and various participants from different companies.

Table 4.4: Organizational risk awareness

Items A	1 %	2 %	3 %	4 %	5 %	Mean	SD
The entire organization has a shared understanding of risk management	7.5	22.4	20.9	41.8	7.5	3.19	1.10
All project staff know the main risks and the plan for managing them.	9.0	25.4	35.8	26.9	3.0	2.89	1.00
Team members get training on major risks that could impact project goals.	14.9	43.3	19.4	22.4	0	2.49	1.00

The company holds meetings and events to increase employees' risk awareness.	7.5	37.3	14.9	31.3	9.0	2.97	1.16
Average						2.88	1.06

Regarding the existence of a shared understanding or terminology in relation to risk management throughout the organization, 49.3% of respondent affirmed their agreement with the statement. 20.9% were uncertain and 29.9% of the survey participants disagreed indicating that risk management practices have not yet been fully integrated into many organizations. The mean value is 3.19 with a standard deviation of 1.10. These values indicated most respondents moderately agreed depending on the value of the mean. The response with a standard deviation of 1.10 shows moderate consistency. These findings are crucial as a common understanding and terminology in risk management are foundational for effective risk communication and management. Without a shared language, it becomes challenging to ensure that all team members are on the same page regarding identifying, assessing, and responding to risks.

On the question asked to determine if all project staff understood the main risks of the project and the plan for managing them, the findings indicated that 35.8% were uncertain, 34.4% disagreed, and 29.9% agreed. This indicates a notable lack of understanding of key risks between project team. This lack of understanding can severely impact project outcomes, as effective risk management relies on all team members being aware of potential risks and the strategies in place to mitigate them. Without this awareness, teams may fail to identify and respond to risks quickly, leading to potential project delays, increased costs, and compromised quality. The mean and standard deviation is 2.89 and 1.00, respectively. This suggests that the majority of respondents gave moderate responses on comprehending the primary risks and plan for managing them. The standard deviation indicates consistency in the findings.

For the question if team members receive training and seminars to enhance their understanding of major project risks, a majority (58.2%) of respondents disagreed and 19.4% were uncertain, while only 22.4% of respondents reported their agreement with the statement. The study's mean value is 2.49 with a standard deviation of 1.0. This indicates that the majority of the respondents disagree with having any training opportunity to raise their awareness of risks. The standard

deviation suggests consistency among the responses. This demonstrates inadequate approaches to enhancing team members' comprehension and awareness of risk management concepts and environments, which could affect how companies handle risks. This issue may be due to budget constraints or other limitations.

Both the interview results and questionnaire responses indicate that projects and parent organizations have created very few opportunities for expanding team members' awareness of risk through training and seminars.

Contrary to the survey finding, one respondent from the interview on May 11, 2024, at CMC responded as follows:

'All employees involved in the project Mostly, people who work in construction sites receive different trainings and seminars monthly regarding to safety risks help to eliminate and reduce Accidents.'

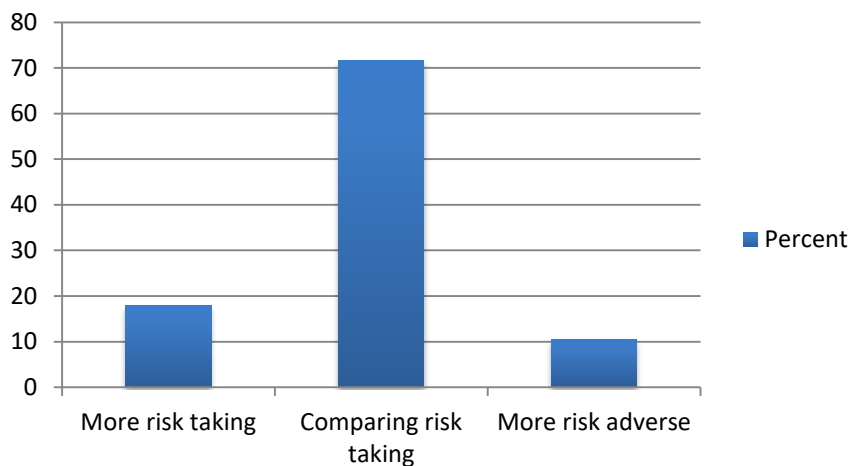
The variation might be because the project manager answers the question considering only safety risk types.

Similarly, on the question asked to participants if their company organizes various meetings and events to increase risk awareness among staff, 44.8% of respondents disagreed, 40.3% agreed with the statement, and 19.4% were uncertain. This indicates although some organizations facilitate meetings related to risk many real estate developers in Addis Ababa need to focus more on providing training and awareness programs about risk management. It also implies that developers might pay less focus to risk management procedures. The study revealed a mean value of 2.97 with a standard deviation of 1.10. These values indicated most respondents gave moderate responses in preparation for risk-related meetings and events. The standard deviation shows that there is moderate consistency among the findings. Regular meetings and events dedicated to risk management are essential for keeping staff informed about potential risks, emerging threats, and strategies for mitigation. They also provide a platform for open discussion and collective problem-solving, fostering a proactive risk management culture.

The question about the respondents' perceptions of their organization's risk appetite compared to their competitors aimed to understand the respondents' self-perception. As shown in Figure 4.3, respondents generally view their approach to risk as similar to or even more risk taking than their

competitors. 71.6% of participants indicated a comparable risk perception compared to their competitors, even though 17.9% positioned themselves as more risk-taking. Only 10.4% stated having a higher risk adverse culture than their competitors, suggesting that there might be missed opportunities for taking calculated risks that could lead to innovation and competitive advantage. This indicates the majority believe their risk approach to be comparable with or even more cautious than that of their competitors.

Figure 4.3: Risk culture in relation to its competitors



4.3.2 Risk management structure and framework

The organization's structure and the degree to which its procedures facilitate risk management were the subjects of questions, with the findings outlined in the table below.

Table 4.5: Organizational risk management structure and framework

Items B	1 %	2 %	3 %	4 %	5 %	Mean	SD
There are clear, written statements on risk management.	14.9	32.8	40.3	10.4	1.5	2.50	0.92
The company has a standard risk management process	13.4	32.8	28.4	25.4	0	2.65	1.00
Risk management is a continuous process in projects	9.0	19.4	14.9	40.3	16.4	3.35	1.22

The company has an enterprise-wide risk management strategy.	13.4	23.9	34.3	28.4	0	2.77	1.01
There is a policy for managing unexpected uncertainties.	16.4	34.3	34.3	14.9	0	2.47	0.94
The company provides tools to support risk management	9.0	28.4	26.9	35.8	0	2.89	1.00
A person or department is assigned to handle risk when it occurs.	11.9	28.4	14.9	29.9	14.9	3.07	1.29
The company knows its risk tolerance in achieving objectives.	9.0	11.9	20.9	43.3	14.9	3.43	1.15
Risk information is consistently shared throughout departments and projects.	7.5	20.9	14.9	32.8	23.9	3.43	1.15
There is integration between the project risk management plan and other plans.	13.4	20.9	35.8	19.4	10.4	2.92	1.17
Average						2.94	1.08

The survey participants were asked if their organizations have written statements regarding risk management. This question derived from an initial assumption that many developers do not rely on written guidelines for their risk management practices. As illustrated in Table 4.5, this assumption is largely confirmed, with 32.8% of respondents disagreeing and 14.9% strongly disagreeing. The survey findings indicate that clearly outlined, written risk policies are not commonly observed. Additionally, 40.3% of respondents were unsure, suggesting that a comprehensive, organization-wide approach to risk management is not yet established in many organizations. Only 10.4% agreed, and 1.5% strongly agreed that they utilize written risk management statements. In this context, while risk-policy objectives appear well-established at the management level, they are not adequately documented, indicating potential for improvement. The mean and standard deviation values are 2.50 and 0.92, respectively. These

values suggest that most respondents provided low ratings regarding the availability of clear and written risk management practices within their organizations. The standard deviation indicates consistency in the findings.

The interview also acknowledged that there is a gap in the surveyed real estate organization regarding clearly written and documented statements on risk management. This gap can lead to inconsistent risk management practices, reduced accountability, and potential misunderstandings about risk procedures among staff. It suggests that the absence of written guidelines could hinder the effective implementation and dissemination of risk management practices throughout the organizations.

The result presented in the table above, which details responses concerning project risk management practices, demonstrate that 13.4% of respondents strongly disagreed and 32.8% disagreed regarding the existence of a defined or standardized process of risk management in their projects. This lack of a formalized process can lead to inconsistent risk management practices across different projects, resulting in varied levels of risk identification, assessment, and mitigation. In contrast, 28.4% were uncertain, and the remaining 25.4% agreed that such a process exists. This indicates that the majority, comprising 46.2%, disagreed with the presence of a standardized risk management process. The mean and standard deviation are 2.65 and 1.00 respectively, indicating that most respondents provided moderate responses. The standard deviation implies consistency in the findings.

Similarly, the interview supported the survey findings, admitting the absence of standard and well-defined risk management in most organizations. The data shows that although organizations recognize potential risks early on, attention is given when the risk event happens. The absence of a standardized process can have several implications. First, it may reduce the effectiveness of risk management efforts, as teams may not be following a unified approach to identify and address risks. This can result in overlooked risks or duplicated efforts, leading to inefficiencies and increased project vulnerabilities. Second, the inconsistency in risk management practices can hinder the ability of organizations to learn from past projects and improve their risk management strategies over time.

Given that projects continuously face risks from external forces beyond the control of the internal company and project management, it is essential to regard risk management as an

integral aspect throughout the project life cycle. This involves a continuous sequence of individual and collective decisions in both planning and managing a project. Concerning if management of risks is perceived as a continual process within the project, 40.3.4% of respondents agreed, 16.4% strongly agreed, and 14.9% were uncertain while 19.4% and 9.0% disagreed and strongly disagreed. This suggests that developers generally view risk management as an ongoing process involving various connected activities. The mean and standard deviation values are 3.35 and 1.22 respectively. These values indicate most respondents gave high responses in terms of treating risk management as a continuous process in the project.

The survey result is similar to the qualitative data. A project manager in one of the selected real estate on May 6, 2024, at Bole states that:

“Due to the continuous risk from inside the organization and external environment, Risk management is applied in our company throughout the project.”

Participants were requested to give details regarding the presence of an organization-wide risk management strategy, the outcomes of this study show the majority 34.3% of respondents were uncertain, also 23.9% disagreed and 13.4% strongly disagreed on having an enterprise-wide risk management strategy, while 28.4%, agreed that such a strategy exists. It is evident that there is an absence of a well-defined and regularly communicated risk management strategy in organizations. The high percentage of uncertain responses combined with disagreed responses suggests that a significant portion of employees either do not perceive or are not informed about the company's risk management strategy. This can hinder an organization's ability to effectively identify, assess, and mitigate risks. Without a clear strategy, employees may not fully understand their roles and responsibilities in the risk management process, leading to potential oversights and inefficiencies. This can result in reactive rather than proactive risk management, where risks are addressed only after they have materialized, rather than being anticipated and managed early in the project lifecycle. The 2.77 mean value indicates that respondents have a moderate perception of their company's enterprise-wide risk management strategy. This implies that while some aspects of risk management strategies might be in place, there is likely room for improvement in communication and implementation.

Moreover, responses from Table 4.5 show that, 34.3 % and 16.4% of respondents disagreed and strongly disagreed, respectively, regarding the existence of policies or guidelines outlining how

to address risks, as well as the absence of a defined standard risk management process within projects. While 34.4% were uncertain and 14.9% agreed on the availability. Consequently, it can be inferred that the majority of respondents (50.7%) expressed disagreement regarding the existence of guidelines. The study's mean value was calculated at 2.47, with a standard deviation of 0.9. This indicates that most respondents provided low ratings regarding the availability of policies or guidelines for managing unexpected risks. The minimal standard deviation suggests consistency among responses. This consistency implies that respondents generally share similar perceptions regarding the availability of policies or guidelines for managing unexpected risks.

Furthermore, interviews revealed the absence of any formal guidelines or procedures for managing risks. Instead, risks are primarily handled based on project managers and other managers with respect to their hierarchy instincts regarding the most appropriate response.

On the contrary, the finding of Nardos (2020) shows that the majority of respondents agreed that there exists a policy or guideline recommending on the management of unforeseen risks. The variation of findings could be differences in the sample populations surveyed.

Achieving successful implementation of an organization-wide risk management process necessitates the utilization of suitable and sufficient tools and solutions for managing risks. Concerning the usage of appropriate tools for supporting risk management, the survey findings reveal that 35% of respondents agreed that certain tools have been established indicating that some organizations have made efforts to implement tools for managing risks, while 28.4% and 9.0% disagreed and strongly disagreed, respectively suggests that these tools may not be sufficiently integrated or communicated within their organizations. Another 26.9% were unable to respond to this question as they were unsure of the answer. The mean and standard deviation is 2.89 and 1.00, respectively, indicating that most respondents provided moderate responses. The standard deviation suggests consistency in the findings. The findings highlight the importance of ongoing evaluation and improvement of risk management tools. This iterative process can help ensure that the tools remain relevant and effective in addressing the evolving risk environment.

To evaluate the risk management structure, participants were asked about the presence of a assigned individual or department responsible for handling risks. As illustrated in the provided table, 29.9% of respondents agreed, with an additional 14.9% strongly agreeing, concerning the availability of such assigned person or department. Conversely, 28.4% and 11.9% of respondents

disagreed, while the remaining 14.9% expressed uncertainty. The mean and standard deviation values are 3.07 and 1.29, respectively. These values suggest that most respondents provided moderate responses regarding the assignment of a responsible individual or department to manage risks.

Similarly a project manager at one of the selected real estate on May 11, 2024, at CMC reported as follows:

“There is a department and a safety officer responsible for preventing various safety risks by providing different training sessions and necessary equipment as well as managing these risks when they occurs by mitigating their effects on the project.”

The result of the survey is similar to the findings of Kalkidan (2017) and Nardos (2020). The findings of these researches reported that there is an assigned person or department to deal with issues related to project risk management.

In contrast to the survey data, through interviews it was found there is lack of special risk management department, the project manager and all personnel participating in the project are the one who mostly handles risks when they occur in most organizations.

When asked whether their company understands the extent of risk it can take to fulfill its objectives, 43.3% of respondents agreed, with an additional 14.9% strongly agreed, that their companies are aware of the risks necessary to achieve their goals. However, 20.9% of respondents indicated they were unaware of the risks they must undertake. Another 20.9% of respondents (including 11.9% who disagreed and 9% who strongly disagreed) expressed the belief that their company lacks an understanding of the level of risk required to achieve its objectives. This suggests that these organizations may encounter challenges in determining their appropriate risk appetite. This can lead to strategic misalignments and inadequate decision-making, without a well-defined risk appetite, organizations may either take on excessive risk, potentially leading to significant losses, or be overly cautious, missing out on strategic opportunities. The mean and standard deviation are 3.43 and 1.15 respectively, indicating that most respondents provided high responses and a general consensus that organizations have a fairly good understanding of their risk appetite. The standard deviation suggests moderate consistency in the findings.

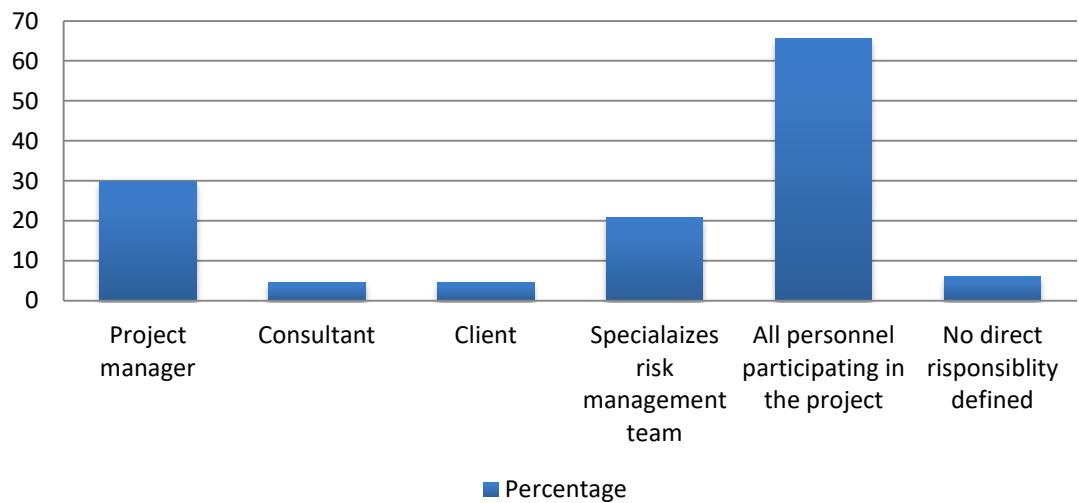
Effective communication of risk information is essential for aligning team efforts, making informed decisions, and implementing risk mitigation strategies. With 32.8% agreeing and 23.9% strongly agreeing, more than half of the respondents perceive that risk information is effectively communicated. This suggests that the majority agreed that risk information is consistently shared throughout departments and projects. However, 14.9% expressed uncertainty, 20.9% disagreed, and 7.5% strongly disagreed, indicating that a considerable portion of respondents believe that communication could be enhanced and suggests that these organizations may face challenges in ensuring that risk information reaches all relevant stakeholders in a timely and comprehensible manner.. The mean score of 3.43 suggests a high level of agreement with the statement. The standard deviation of 1.15 indicates a moderate level of consistency in the responses.

Regarding the integration of risk management plans into other plans such as strategic plans, operational plans, and project plans, the largest group, 35.8%, was uncertain, suggesting a lack of clear communication or understanding regarding this integration. With 20.9% disagreeing and 13.4% strongly disagreeing, a significant number of participants believe that risk management is not well integrated into other planning processes, indicating an area for potential improvement in ensuring cohesive risk management practices across different levels of planning. However, 19.4% agreed and 10.4% strongly agreed. The mean score of 2.92 falls into the medium range, indicating a moderate level of agreement in the statement. The standard deviation of 1.17 indicates a moderate spread in the responses. Also, the Qualitative data from the interviews reinforces these findings. Interviewees noted that while there are some efforts to include risk management in planning, these efforts are often fragmented and inconsistent. This lack of cohesive integration can lead to gaps in risk management practices, potentially leaving organizations vulnerable to unexpected risks.

As shown in the chart below, 65.7% responded that all personnel participating in the project handle risks when they occur. This suggests a culture of shared accountability and collaboration in managing project risks. However, a significant portion of organizations also rely on project managers (28.8%) and specialized risk management teams (20.9%) to handle risks, highlighting different strategies and structures in place for risk management across various organizations. The 6% of respondents stated that there is no direct responsibility defined which

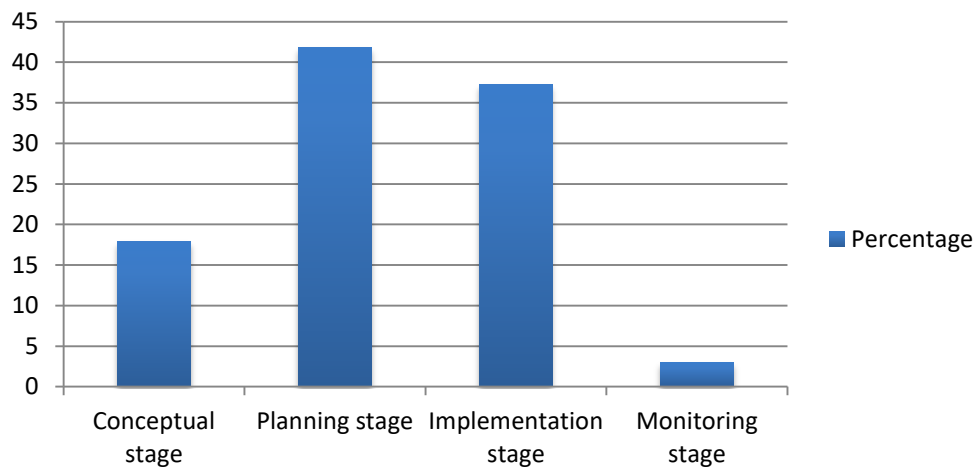
points to a potential area for improvement in clearly defining and assigning risk management responsibilities to ensure effective risk management. The findings suggest that while a culture of shared accountability is common in many organizations, there is still a need to clearly define and assign risk management responsibilities. Organizations need to balance shared responsibility with clear accountability to ensure that risks are managed effectively and efficiently.

Figure 4.4: Primary responsibility for managing risks



Concerning the project phase in which risk management is executed, the largest proportion of respondents, accounting for 41.8%, indicated that it occurs during the planning stage. Meanwhile, 37.3% of respondents mentioned that risk management is implemented during the implementation stage, with 17.9% reporting it to take place in the conceptual stage. A small percentage, 3%, stated that risk management is executed during the project's monitoring phase. Early risk management allows for proactive measures, helping to prevent potential issues from escalating. The significant percentage of respondents who identify the planning stage as the point of implementation underscores the importance of anticipating and mitigating risks early in the project lifecycle. Also, the result highlights that many organizations prioritize addressing risks as they actively work on the project.

Figure 4.5: Risk management implementation stage



4.3.2 Risk management process

i. Risk management planning

Planning for risks and their management in advance is essential to avoid unexpected issues once the project begins. It is crucial to determine the strategies and approaches for conducting risk management activities. During project planning, risks are uncertain because they have not yet occurred. However, some of these planned risks will materialize, and they must be addressed when they do. According to the PMBOK (2000), project managers, project teams, key stakeholders, and individuals tasked with risk management duties are advised to organize planning sessions to create a risk management plan.

Table 4.6: Risk management planning

Items C	1 %	2 %	3 %	4 %	5 %	Mean	SD
Relevant stakeholders are involved in planning of risk management	6.0	17.9	19.4	41.8	14.9	3.41	1.13
The project team plans risk management activities before the project starts.	3.0	19.4	23.9	31.3	22.4	3.50	1.13
Expert judgment or meetings are used to plan for potential project risks.	10.4	11.9	19.4	32.8	25.4	3.50	1.28

Environmental factors are considered during risk planning.	4.5	10.4	16.4	44.8	23.9	3.73	1.08
Average						3.53	1.15

Respondents were questioned in relation to the participation of relevant stakeholders in planning project risk management. As indicated in the table above, 56.7% (41.8% agreeing and 14.9% strongly agreeing) of respondents believe that all significant project stakeholders are engaged in the risk management planning process indicating that a significant portion of the respondents recognize the importance of involving all relevant stakeholders in risk management planning. Conversely, those who disagreed and strongly disagreed accounted for 17.9% and 6% of the whole population, respectively. Meanwhile, 19.4% of participants expressed uncertainty. This indicates most people see relevant stakeholders' participation in risk management planning positively, but there is a notable percentage of uncertainty and disagreement indicating potential areas for improvement in stakeholder engagement. To maintain the successful implementation of the risk management process, it is still essential to consult with and obtain consent and support from all relevant parties throughout the project life cycle. Effective stakeholder participation ensures that diverse perspectives are considered, leading to more comprehensive risk management plans. The mean score of 3.41 and standard deviation value of 1.13 indicate a high level of agreement on this area. The standard deviation indicates moderate consistency in the responses. This means that while there is some level of agreement, there are still diverse opinions among the respondents. This variation could be attributed to the involvement of different organizations, each with its own distinct risk management processes.

Qualitative data gathered from the interviews reinforces these findings by acknowledging the engagement of relevant parties in risk management planning.

When examining the practices within the projects under study, 31.3% of respondents strongly agreed and 22.4% agreed with the statement that The project team plans risk management activities before the project starts. 23% of respondents expressed uncertainty, while the remaining 22.4% disagreed with the involvement of the project team in making risk management decisions before the project starts. The survey result reveals a mixed perception among

respondents regarding the engagement of the project team in pre-launch risk management activity planning. While a significant portion of respondents agree that the project team is involved, there is also a notable percentage of uncertainty and disagreement, highlighting a need for clearer risk planning processes. The mean value of 3.50 suggests a high level of agreement among respondents regarding the statement.

However, interviews revealed that the majority of tasks involving risk components are addressed informally. These activities are often discussed in meetings without formal documentation or structured planning processes. The dependence on informal discussions without formal documentation raises concerns about the effectiveness of risk management efforts. Formalizing risk management processes could enhance clarity, accountability, and effectiveness in identifying, assessing, and mitigating project risks. Clear documentation ensures that risks are systematically addressed and tracked throughout the project lifecycle, thereby improving project outcomes and minimizing potential disruptions.

In terms of expert participation in the risk management process, respondents were surveyed, and the majority, comprising 32.8% who agreed and 25.4% who strongly agreed, indicated that expert judgment is taken into account during advanced planning. Conversely, 11.9% and 10.4% of respondents disagreed and strongly disagreed, respectively. 19.4% of respondents were uncertain about the involvement of expert judgment, suggesting some ambiguity or lack of knowledge regarding this aspect. The mean value of 3.50 suggests a high level of agreement among respondents. This indicates that, on average, respondents tend to agree that expert judgment is utilized in this aspect of project planning. This positive perception aligns with best practices in literature review, where diverse expertise can enhance the identification and mitigation of project risks. Clear communication regarding the contributions of experts in risk management is essential to align stakeholders' expectations and ensure effective decision-making.

When questioned about the consideration of environmental factors in project risk planning, respondents indicated positive results, with 68.7% in agreement (comprising 44.8% who agreed and 23.9% who strongly agreed) that in planning of risk management, environmental issues are considered. Conversely, 16.4% were uncertain, and 14.9% disagreed with the inclusion of environmental and external factors in risk planning. The mean and standard deviation values are

3.73 and 1.08, respectively, suggesting that major participants provided high ratings. The standard deviation implies consistency in the findings, indicating that environmental factors are generally well-addressed during risk planning. However, a small percentage of respondents expressed uncertainty or disagreement, highlighting a need for consistent inclusion of environmental factors. Similarly one of the respondents on May 9, 2024, at Ayat stated as follows:

“Although we cannot control certain environmental factors, we recognize these factors and plan the project accordingly. Since these factors can delay a project or influence its outcomes, we consider them during risk planning.”

ii. Risk identification

Every project carries risks. Failure to recognize these risks early in the project lifecycle can lead to significant obstacles in meeting project deadlines, adhering to budget constraints, and fulfilling quality standards. Identifying the sources of project risks, assessing their areas of impact, determining their root causes, and evaluating potential consequences should be undertaken from the project's inception to compile a comprehensive list of risks that could hinder the accomplishment of project objectives. It is crucial to proactively address tasks with potentially high risk, assign probabilities to the processes involved, and formulate contingency plans. Thus, a methodical and comprehensive risk identification process is necessary for project success.

Table 4.7: Risk identification

Items D	1 %	2 %	3 %	4 %	5 %	Mean	SD
Risks are identified at the project's initial stage.	7.5	22.4	34.3	29.9	6.0	3.04	1.03
Risks are identified when their effects become apparent.	4.5	14.9	11.9	46.3	22.4	3.67	1.11
Potential risks are identified and assessed methodically.	4.5	19.7	32.8	32.8	10.4	3.25	1.03
Sources of risks, impact areas, causes, and	1.5	16.4	26.9	40.3	14.9	3.50	0.99

potential effects are identified.							
All possible risk factors are identified at each project stage	7.5	26.9	32.8	26.9	6.0	2.97	1.04
Average						3.28	1.04

Regarding the identification of risks during the project's initial stages, the majority of respondents, 34.4%, expressed uncertainty. 29.9% agreed, and 6% strongly agreed that risks are recognized early in the project. Conversely, 11.9% and 10.4% of respondents disagreed and strongly disagreed. 29.9% and 6% agreed and strongly agreed with the statement, respectively. The mean value is 3.04 with a standard deviation of 1.03. These values suggest that major participants moderately agreed, depending on the mean value.

The interview also supports the early identification of risks indicating that most organizations begin identifying risks in the planning stage of the project. However, the identification process is conducted through meetings without the creation of formal, documented records. This suggests a lack of standardized procedures and highlights the need for more structured and documented approaches to risk identification to ensure consistency and accountability in managing project risks. Such measures can also enhance comprehensiveness in early risk recognition, thereby improving overall project risk management practices.

The respondents are also asked about whether risks are identified when their effects become apparent. Their responses show that a considerable number of risks are indeed recognized at this stage, with 66.7% of the respondents agreeing (46.3% agree and 22.4% strongly agree). 11.9% were uncertain while the rest 14.9 disagreed and 4.5 % strongly disagreed with the statement. The data result reveals a strong perception among respondents that risks are typically identified when their effects are observed, indicating a reactive approach to risk management. The mean score of 3.67 and standard deviation value of 1.11 indicate a high level of agreement that risks are identified upon observing their effects. The standard deviation suggests moderate consistency in the findings.

Similarly one of the respondents on May 6, 2024, at Bole stated:

“while major problems are identified in the early phase of the project, various unexpected risks arise during implementation of the project.”

While it's crucial to respond quickly to emerging risks, relying solely on reactive strategies can lead to increased project disruptions and costs. Organizations could benefit from adopting more proactive risk identification practices earlier in the project lifecycle to anticipate and mitigate potential threats before they escalate. This shift could enhance overall project adaptability and minimize adverse impacts on project outcomes.

The researcher inquired whether respondents believe that risk is systematically assessed. Respondents, who agreed and were uncertain, account for 32.8% each, additionally 10.4% of the respondents strongly agreed with the statement. Conversely, 19.4% disagreed and 4.5% strongly disagreed on the systematical identification and assessment of risks. The mean value of 3.25 indicates a high level of agreement that risks are assessed methodically. The standard deviation of 1.03 indicates moderate consistency in the responses. This means that while there is some level of agreement, there are still diverse opinions among the respondents about the systematic assessment of risks.

Similarly, Nardos (2020) reported major respondents acknowledged that risks are identified and assessed systematically. In contrast to this study, Kalkidan (2017) confirmed the lack of systematic approaches to identifying project risks. However, Kalkidan's analysis revealed that most of respondents agreed that the main technique for detecting potential dangers is brainstorming.

The data indicates that a majority of respondents (55.2%) believe that projects effectively identify sources of risks, impact areas, causes, and potential effects, with 40.3% agreeing and 14.9% strongly agreeing. The next observed higher value was neutral, with 26.9% of participants expressing uncertainty. Conversely, 16.4% disagreed and 1.5% strongly disagreed. The mean value of 3.5 suggests a generally positive perception, while the standard deviation of 0.99 indicates consistency in the responses. This distribution suggests that most projects have established practices for risk identification, though there is still a notable minority who are unsure or dissatisfied with these processes.

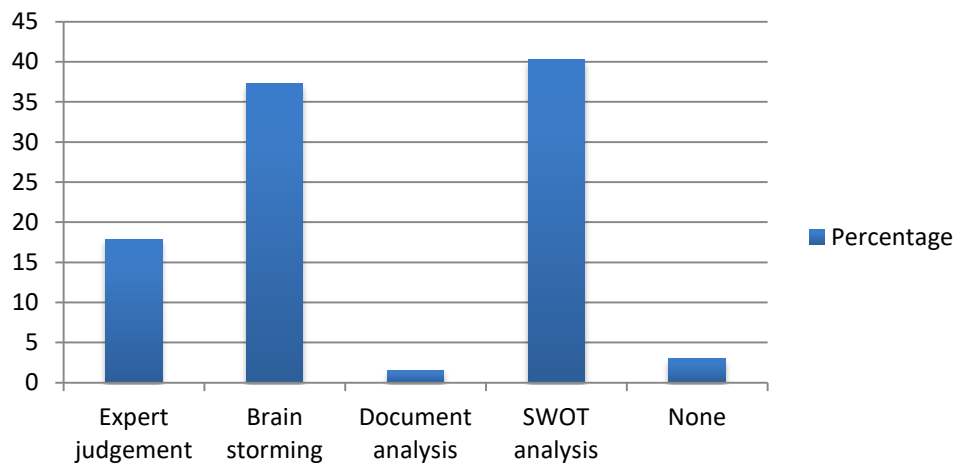
Similarly, the interview shows that in the risk identification process, companies identify the origins of risks, assess their areas of impact, and evaluate their potential effects on the project. Clear and effective risk identification not only helps in expecting and preparing for potential disruptions but also enhances decision-making by providing stakeholders with a comprehensive view of project vulnerabilities.

Respondents are also asked if they identify all possible risk factors and risks at each stage of the project (initiating, planning, executing, controlling, and closing). The majority of respondents 32.8% express uncertainty. Those who agreed and disagreed with the statement account for 26.9% each, while the rest 7.5% strongly agreed and 6% strongly disagreed with the statement. The mean score of 2.97 indicates a medium level of agreement, suggesting that respondents have a moderate perception of the thoroughness in identifying risk factors across project stages. The standard deviation of 1.04 implies that there is moderate consistency among the responses, indicating that most respondents share similar views on this aspect of risk management.

The data from the interview revealed that most organizations in the risk identification process consider risk factors and risks involved in the implementation stage of the project, but risks associated with the controlling and closing stages of the project are given less attention. This highlights a potential gap in the comprehensive risk identification process across the project lifecycle.

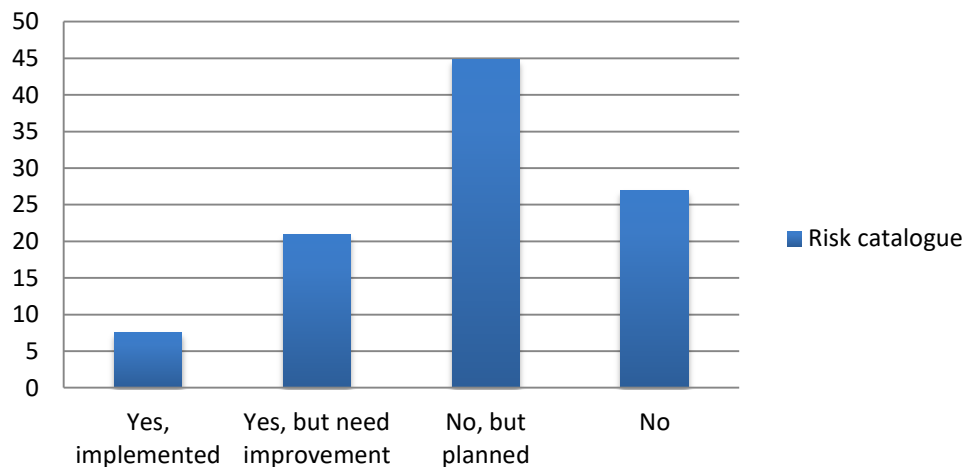
Based on a literature review four risk identification methods were selected for evaluation. The result indicates that 40.3 % of the respondents believed that SWOT analysis is the primary method used for identifying risks. Brainstorming is the next most common method, cited by 37.3% of respondents, while 17.9% reported that expert judgment serves as the primary tool utilized in the risk identification process. These findings suggest varied techniques in risk identification practices, with organizations and project teams utilizing different methods based on their specific needs, capabilities, and project requirements. The widespread use of SWOT analysis and brainstorming reflects a preference for structured yet flexible approaches that can adapt to different project environments and stakeholder interactions.

Figure 4.6: Primary risk identification method



The approach organizations use to identify risks seems to be unsystematic, as only a few respondents reported using a risk catalog for this purpose. 71.7% reported that they do not keep any risk catalogs. Only 28.4% of respondents possess and use some form of risk catalog and 7.5% recognize that there are deficiencies. This suggests that the majority of organizations lack a structured method for risk identification, relying on incomplete tools. The absence of comprehensive risk catalogs could lead to overlooked risks and insufficient preparation for potential issues. This highlights the need for improvement in this area. Implementing formal risk cataloging processes could help organizations capture, assess, and prioritize risks more effectively. Such approaches not only facilitate better risk awareness but also enable proactive risk management strategies that can enhance project and overall organizational performance.

Figure 4.7: Consistent risk catalogue for identification



iii. Risk analysis

Following the identification of project risks, the following step involves risk analysis. At this stage, the identified risks undergo formal assessment and numerical analysis to determine their likelihood of occurrence and the extent of their impact. Based on this evaluation, the risks are then prioritized accordingly.

Risk assessment involves evaluating the identified risks and understanding their interrelations. Consistent application of risk assessment methods is crucial for effective risk management, providing a framework to determine the significance and probability of risks, which in turn helps in developing suitable risk management and monitoring strategies.

Table 4.8: Risk analysis

Items E	1 %	2 %	3 %	4 %	5 %	Mean	SD
Risks are formally assessed for likelihood and impact.	4.5	14.9	31.3	37.3	11.9	3.37	1.02
Risk assessments are timely at both strategic and operational levels.	9.0	29.9	25.4	28.4	7.5	2.95	1.12
Overall project risks are ranked relative to other company projects.	10.4	17.9	37.3	22.4	11.9	3.07	1.14
Project documents and the risk register are updated following risk assessments.	19.4	37.3	16.4	20.9	6.0	2.56	1.19
Risk exposure is quantified to determine necessary cost and schedule reserves.	11.9	25.4	31.3	23.9	7.5	2.89	1.12
Average						2.96	1.11

The result indicates that the vast majority 37.3% agreed and 11.7% strongly agreed that risks are systematically evaluated regarding their likelihood of occurring and the severity of their effects. 31.3% of respondents indicated their uncertainty, while 14.9 disagreed and 4.5% strongly

disagreed. The data shows that while there is a general trend towards agreement on the formal assessment of risks, there is still a significant proportion of uncertainty and disagreement. The mean value of responses is 3.37, which means a high level of agreement suggesting formal risk assessment practices are in place for many organizations. The standard deviation of 1.02 indicates a moderate level of consistency in respondents' experiences or perceptions of risk assessment processes.

Similarly, a study by Milka (2016) indicates that projects were performing reasonably well in tracking identified risks, monitoring residual risks, and implementing risk plans to assess their effectiveness.

However, the interview revealed that the probability of occurrence and impact magnitude of risks are assessed only qualitatively in most organizations.

The survey results on if developers conduct timely risk assessments across the organization at both strategic and operational levels reveal a notable gap. A majority, 38.9% (with 29.9% disagreeing and 9% strongly disagreeing), indicated that strategic or operational aspects are not adequately considered. Additionally, 25.4% were uncertain, further highlighting this issue. Conversely, 28.4% agreed and 7.5% strongly agreed that regular risk assessments are carried out at both levels. The mean score of 2.95 falls into the medium range, indicating that risk assessments are somewhat performed in a timely manner at strategic and operational levels. The standard deviation of 1.12 suggests a moderate level of consistency in the responses. Effective risk management requires not only periodic assessments but also a comprehensive understanding of how risks at different levels can impact organizational objectives.

After assessing risks and identifying their immediate causes and effects, the next step involves ranking these risks. This ranking process helps to identify the most severe risks, enabling appropriate actions to be taken. The majority 37.3% of the respondents were uncertain if their projects' overall risks are ranked to reflect their position relative to other company projects. Additionally, 10.4 % of respondents strongly disagreed and 17.9 % disagreed. Conversely, 34.3% (22.4% agreeing and 11.9% strongly agreeing) recognize that their organizations rank project risks. The mean score is 3.07 with a standard deviation 1.14, indicating that most respondents provided moderate responses. The standard deviation indicates moderate consistency in perceptions of ranking overall risks. The mean value shows that some practices are in place, but

these practices might not be uniformly implemented or communicated across the organization. These findings emphasize the importance of refining and standardizing approaches to risk ranking within organizations. Clear and systematic methods for prioritizing risks can enhance decision-making processes, facilitate resource allocation, and mitigate potential threats more effectively.

Risk registers and databases need to be updated for every encountered risk, maintaining a formal and permanent record of identified risks, mitigation strategies, and resolutions. Effective project risk management requires incorporating lessons learned from actual project experiences into documentation and training programs to ensure that project teams can benefit from past incidents. With regard to this, 56.7% (37.3% disagreeing and 19.4% strongly disagreeing), do not believe this practice is followed, indicating a significant gap in good project risk management practices. Only 26.9% agreed that project documents and risk registers are updated, while 16.4% were uncertain, highlighting the need for improvement in capturing and utilizing lessons learned from real project experiences. The mean score of 2.56 reflects generally low responses, and the standard deviation of 1.19 suggests moderate consistency in perceptions.

The interview also supports this finding confirming that there is a lack of formal documented risk register and risk register updates in most organizations. Effective project risk management requires not only identifying and mitigating risks but also systematically documenting these efforts and incorporating lessons learned into future projects. The failure to update risk registers and databases with relevant insights can lead to repeated mistakes, missed opportunities for improvement, and inefficiencies in risk response strategies.

Risk assessment involves prioritizing risks and monitoring them accordingly it's crucial to prioritize high-risk, resource-intensive tasks since it's impractical to address every task simultaneously. Quantitative risk analysis is particularly useful for identifying risks precisely, enabling risk responses to be based on quantitative measures. Responses to questions about whether risk exposure is quantified in order to establish the amount of schedule and cost contingency reserves show that 31.3% were uncertain with 25.4% disagreeing and 11.9% strongly disagreeing with the statement. Conversely, 23.9% agreed and 7.5% strongly agreed. This suggests that there are issues in numerically analyzing risks to estimate the necessary amount of cost and schedule contingency reserves if risks occur. The mean score of 2.89 reflects

generally moderate responses, and the standard deviation of 1.12 suggests moderate consistency in perceptions.

Additionally, the data through interviews shows that most organizations conduct risk assessments qualitatively based on past experience and historical data. They conduct quantitative assessment or numerical analysis after the risk event occurs.

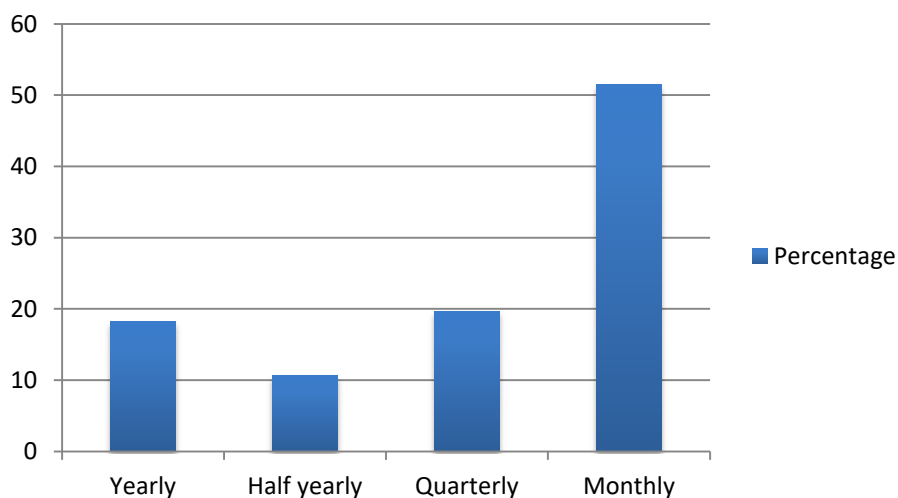
On the contrary, a project manager at one of the selected real estate on May 11, 2024, at CMC stated:

"When calculating the project schedule and cost, we assess and quantify potential risks and allocate additional time and budget accordingly."

However, the project manager also noted the lack of accuracy in estimating these additional costs and extended schedules.

The results of the survey on the question frequency of general overviews of the current risk situation revealed that monthly assessment is mostly used by 51% of respondents. Yearly assessments are conducted by 18.2% of respondents, quarterly by 19.7%, and 10.6% by half-yearly analyses. Similarly, Milka (2016) reported the existence of monthly meetings focused on risk and risk management.

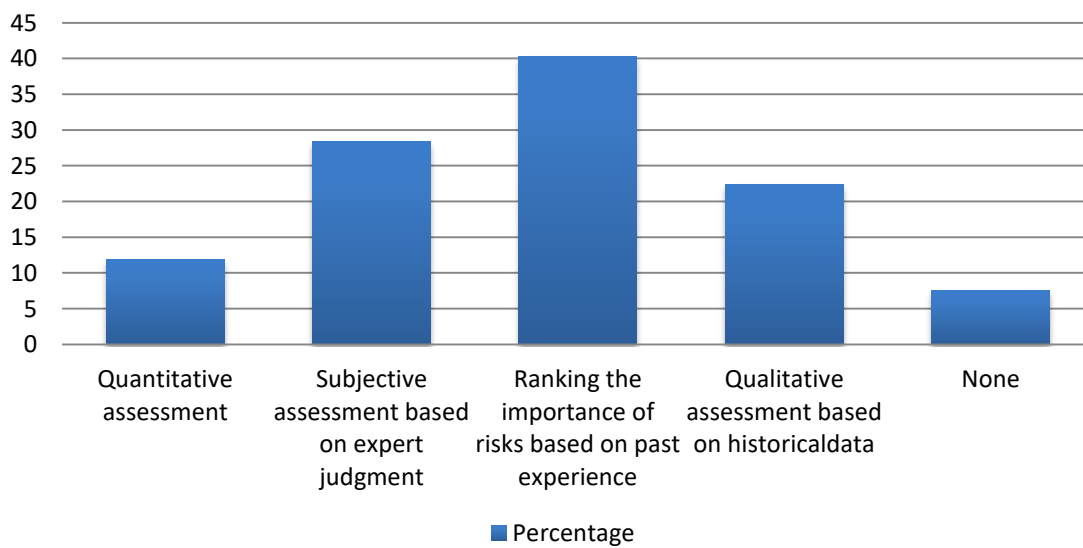
Figure 4.8: Time dimension of risk assessment



Respondents were also questioned about the method of risk assessment the company uses. Most respondents (40.3%) indicated that ranking the importance of risk based on past experience is a

commonly used method, this approach can be valuable in capturing complex insights from previous projects or similar scenarios, thereby informing current risk management strategies. 28.4% indicated they use subjective assessment based on expert judgment. While subjective assessment can provide quick evaluations and adaptability to unique situations, it may also introduce biases and variability depending on the expertise and perspective of the individuals involved. 22.4% of respondents show that Qualitative assessment based on historical data is used. Only 11.9% use quantitative or numerical analysis to assess risks. Quantitative analysis offers rigor and objectivity, it requires substantial data availability and analytical expertise to implement effectively. Qualitative data from the interviews reinforces these findings.

Figure 4.9: Risk assessment method



iv. Risk monitoring and control

Monitoring and controlling risks involve the ongoing process of identifying risks and determining the best strategies to manage them. This encompasses tracking residual risks, recognizing new risks, implementing risk mitigation plans, and evaluating their performance throughout the lifecycle of the project. It begins at the project's outset with the identification of all potential and known risks and continues throughout the project as these initial risks are monitored and new risks emerge as work progresses and changes occur.

Table 4.9: Risk monitoring and control

Items F	1 %	2 %	3 %	4 %	5 %	Mean	SD
The project tracks identified risks, monitors residual risks, and ensures implementation of risk plans to assess their effectiveness.	3.0	23.9	20.9	38.8	13.4	3.35	1.08
The company has a clear policy and process for reporting risks and risk management.	11.9	26.9	29.9	23.9	7.5	2.88	1.13
A functional reporting system has been designed and implemented successfully.	10.4	32.8	25.4	22.4	9.0	2.86	1.15
Changes to risks are continuously assessed and reported for their impact on objectives.	9.0	22.4	20.9	34.3	13.4	3.20	1.20
The company routinely reviews the effectiveness of risk management controls.	0	29.9	22.4	35.8	11.9	3.29	1.03
Responsibilities for risk management and ongoing risk monitoring are defined.	3.0	31.3	26.9	28.4	10.4	3.11	1.06
Key risk indicators and their threshold values have been established.	6.0	31.3	29.9	25.4	7.5	2.97	1.05
Average						3.09	1.1

Effective risk management entails providing project team members with tools for monitoring risks and detecting potential issues early. Regular reviews and communication among stakeholders about risk developments are crucial. Concerning monitoring and control of risks, the majority of the respondents 38.8% agreed and 13.4 strongly agreed that the project effectively tracks identified risks, monitors residual risks, and ensures the implementation of risk plans to assess their effectiveness. However, it can be drawn from the 20.9% respondent's uncertainty and 26.9% disagreement that the practice still needs improvement. The mean

response score of 3.35 suggests a generally high level of agreement, while a standard deviation of 1.08 indicates moderate consistency in responses. This highlights that while many recognize good risk management practices, there are still inconsistencies that need to be addressed.

Effective risk management strongly depends on transparent and consistent reporting practices to ensure that stakeholders are informed and aligned regarding potential risks and mitigation strategies. A well-defined reporting policy can facilitate timely communication, enhance accountability, and support informed decision-making at all levels of the organization. Respondents were asked whether there exists a well-defined policy and procedure for reporting risk management is available in their company. Accordingly, 29.9% were uncertain about the availability and 38.8% disagreed (26.9% disagreed and 11.9% strongly disagreed) with the statement. This indicates that there is a need for improvement regarding to a clearly defined risk management reporting policy. On the contrary, 23.9% agreed and 7.5% strongly agreed that there is a policy for reporting in their company. The mean value is 2.88 generally moderate agreements among respondents highlighting the need for better-defined risk management reporting policies and standard deviation 1.13 indicates moderate consistency in their responses.

Similarly, the survey results on the designed functional reporting concept and its implementation show majority 43.2% (32.8% disagreed and 10.4% strongly disagreed) stated that they have no functional reporting concept, while 25.4 % indicated uncertainty, highlighting a significant gap regarding this area. Conversely, 22.4% and 9% of respondents agreed and strongly agreed with the statement. The mean and standard deviation values are 2.86 and 1.15 respectively. These values indicated most respondents gave moderate response and consistency. Functional reporting is crucial for ensuring that relevant stakeholders receive timely and accurate information regarding project statuses, risks, and performance metrics. A well-designed reporting concept helps simplify communication channels, enhance transparency, and facilitate informed decision-making at various organizational levels.

When asked about the ongoing assessment and reporting of changes to the company's risk, 47.7% of respondents (34.3% agreeing and 13.4% strongly agreeing) expressed confidence in the adequacy of controlling changes that could impact corporate goals. However, 31.4% of organizations indicated a lack of attention to alterations in their risk environment or their evaluation and reporting, while 20.9% remained uncertain. This suggests that many

organizations have yet to adopt appropriate concepts, tools, and measures for continuous risk assessment and reporting. The mean value of 3.20 reflects a moderate agreement and the standard deviation of 1.2 shows moderate responses variability, it's evident that there's a mixed perception regarding the management of changes in risk situations. Management of changes in the risk environment requires organizations to adopt strong frameworks and tools for ongoing assessment, timely reporting, and proactive mitigation strategies. This includes implementing mechanisms for monitoring of risk indicators, regular updates to risk registers, and clear communication channels for reporting changes and their potential impacts on corporate goals.

The results from the survey reveal that most (47.7%) of respondents routinely review the effectiveness of control in risk management activities. However, 22.4% were unable to provide an answer for this question and 29.9% do not routinely review the effectiveness of these controls. This lack of consistent review can hinder the timely identification and communication of changes in the organization's risk positions. The mean value of 3.29 shows a high level of agreement with routine reviews, while the standard deviation of 1.03 indicates moderate consistency in responses. This suggests that although many organizations conduct effective risk control reviews, a significant portion still lacks this essential component of risk management. Effective risk management requires regular and systematic evaluations of control mechanisms to ensure they remain aligned with evolving risks and organizational objectives. Organizations that consistently review control effectiveness are better positioned to identify and address vulnerabilities quickly.

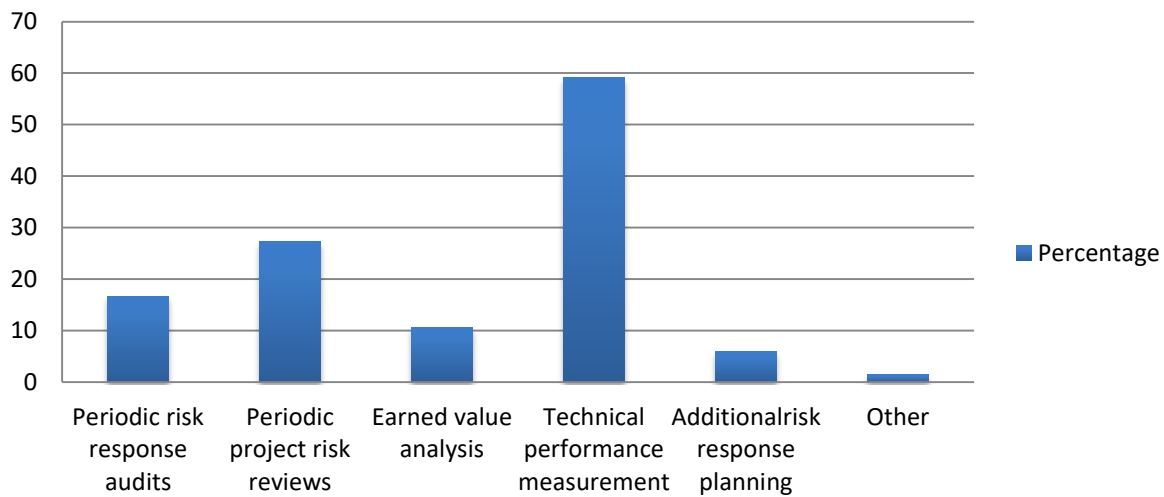
The survey findings regarding the definition of responsibilities for risk management and the ongoing monitoring of risk categories reveal a lack of consensus among respondents. About 31.3% disagreed with 3% strongly disagreeing that these responsibilities are well-defined, while 26.9% expressed uncertainty. In contrast, 28.4% agreed, and 10.4% strongly agreed that certain responsibilities have been established, though without clear ultimate accountability in their organizations. The 3.11 mean value and 1.06 standard deviation indicates moderate overall agreement and moderate consistency in the responses. These findings suggest that while some organizations have clear risk management responsibilities and monitoring practices, a significant number still experience uncertainty and disagreement in this area, suggesting a need for improvement. Clear definition of responsibilities ensures that all stakeholders understand their

roles in monitoring, and mitigating risks effectively. It promotes accountability and fosters a culture of proactive risk management.

The respondents are also asked about the establishment of key indicators and threshold values for risk control. 36.3% of respondents stated that they don't use defined indicators and threshold values and 29.9% were unaware of any indicators. Without clear indicators and thresholds, organizations may struggle to proactively identify emerging risks or take timely corrective actions, potentially exposing them to avoidable vulnerabilities. Conversely, 32.9% of the survey population agreed that they use indicators. The mean and standard deviation values are 2.97 and 1.05 respectively, indicating that most respondents provided moderate responses and a standard deviation suggests consistency in the findings. Effective early risk identification relies on having relevant data matrix containing key indicators and early warning signs, a requirement that may constitute a significant challenge to the implementation of such systems.

The survey participants were also questioned about the tools employed by their company for managing the effectiveness of risk management. Most respondents 59.1% stated technical performance measurement is the main method and 27.3% indicated they use periodic project risk reviews. Technical performance measurement can provide objective data on how well risk strategies are working, allowing organizations to make data-driven decisions and Periodic reviews can facilitate continuous improvement in risk management practices by providing regular checkpoints for evaluating performance and making necessary adjustments. 16.7% of respondents' show that they use periodic risk response audits and 10.6% use earned value analysis to monitor risk management effectiveness. Only 6% prepare additional risk response planning. Additional risk response planning involves developing fallback plans and secondary strategies to address risks that may arise despite the primary risk management measures. The lack of focus on this area suggests that many organizations may not be adequately prepared for unforeseen events, potentially leaving them vulnerable to significant disruptions.

Figure 4.10: Risk management monitor and control tools



v. Risk response strategies

After identifying and analyzing risks, strategies and methods are formulated to maximize opportunities and mitigate threats to the project's goals. Understanding the project and evaluating the consequences of various corrective measures throughout implementation are necessary when planning a response to risk.

Table 4.10: Risk response strategies

Items G	1 %	2 %	3 %	4 %	5 %	Mean	SD
The project has a well-developed risk response strategy.	10.4	22.4	25.4	37.3	4.5	3.02	1.10

When asked about the existence of a well-established strategy to address risks within the project, findings reveal that 37.3% of respondents agreed and 4.5% strongly agreed indicating a positive perception among a significant portion of respondents, which is crucial for fostering a culture of proactive risk management and ensuring that teams are well-prepared to handle potential challenges. Meanwhile, 25.4% remain neutral, suggesting a substantial amount of uncertainty regarding the strategy's development. Among those who disagreed and strongly disagreed, they represent 22.4% and 10.4% of the respondents respectively. This perception is concerning as it

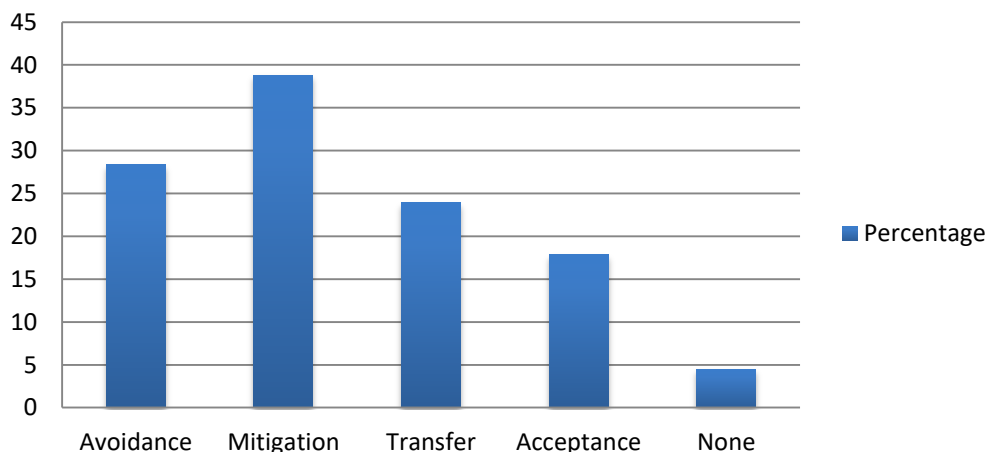
suggests that these organizations may be vulnerable to risks that are not adequately anticipated or mitigated. The absence of a well-defined risk management strategy can lead to uncoordinated responses to risks, potentially resulting in significant project delays, cost overruns, or even project failures. The mean value of 3.02 reflects moderate agreement on the presence of a well-developed risk response strategy, and the standard deviation of 1.1 indicates moderate consistency among the responses. Overall, while there is a tendency towards agreement, there is still a considerable amount of neutrality and disagreement, highlighting the need for further improvement and clarity in risk response strategies.

When expressing their views on the tools and techniques utilized by projects, 38.8% of respondents choose Mitigation, followed by 28.4% for Avoidance. Additionally, 23.9% indicate a preference for transference, while the remaining 17.9% lean towards Acceptance. According to Barkley (2004), Acceptance involves planning for the likelihood of risk occurrence and preparing to address the resulting cost and schedule impacts. However, this risk response strategy is generally not advisable as it often leads to cost overruns and delays in scheduling.

Similarly, one respondent on May 13, 2024, at Piazza stated as follows:

“Depending on the type of risk and its effect on the project objectives we use various risk response strategies to a certain level, however, most of the time unexpected risks arise so we usually reduce the impacts of the risk on the project. For example, price escalation is accepted up to a certain level, we try to avoid accidents and mitigate its effect when it occurs and transfer to insurance if it is beyond our capacity.”

Figure 4.11: Commonly utilized risk response strategies



The respondents were asked to comment on any issues they want to raise concerning risk management practices on their project and their response revealed that they face various risks in their project and emphasized the need for greater focus on risk management.

Additionally, the data through interviews indicated that most organizations don't conduct proper risk management practices. The main obstacles preventing the implementation of risk management include negligence by top management, limited financial capacity, limited manpower, and lack of awareness of risk management. The major challenges in the implementation process of risk management are inaccurate financial forecasts, unreliable data and assumptions, difficulties in analyzing and evaluating risks, and difficulties in collecting necessary information about project risks are the major challenges.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

This section outlines the outcomes of the research, draws conclusions from the analysis of data, and proposes recommendations aimed at improving risk management practices within real estate firms.

5.1 Summary of findings

The results from both the questionnaire and interviews with participants regarding organizational risk perception and awareness indicate a consensus on the shared understanding of risk management terminology within companies and the majority of developers have an understanding of the concept of risk as both opportunities and threats. However a notable number of respondents consider risk as only negative and disagree and are uncertain on the availability of common risk management terminology throughout the organization. The result also confirmed that awareness gap is further emphasized by the uncertainty on understanding among project personnel regarding major risks and risk management plans. Additionally, there is a lack of effective implementation regarding the organization of events and training initiatives aimed at enhancing team members' understanding and awareness of risk management concepts and environments. Despite these gaps, a majority believe their risk approach is comparable to their competitors, though some see themselves as more risk-averse.

According to questions regarding the general structure and techniques of risk management revealed that most organizations lack clearly defined and documented statements pertaining to risk management. Also significant numbers of respondents expressed disagreement and uncertainty regarding the presence of a clearly defined or standardized risk management procedure. Many of the participants recognize risk management as an ongoing process indicating a continuous reinforcement of risk management practices throughout the project lifecycle. A gap in organization-wide risk management strategy is evident, with many respondents uncertain about its existence. Furthermore, inadequate practices were noted in terms of developing policies or guidelines aimed at addressing project uncertainties, indicating a deficiency in project-specific standards regarding risk management. The utilization of suitable risk management tools also seems to be restricted, with moderate consensus on their accessibility.

Most respondents agreed upon that responsible individuals or departments are allocated to handle risks when they arise, though the extent of this practice varies. However most respondents reveal

that all personnel participating in the project and the project manager has the primary responsibility for managing risk .The majority of developers have an understanding of the risk appetite even though smaller minorities are unaware of the risk appetite of the organization. The transmission of risk information among projects and departments shows some positive response. The integration of risk management plans with other organizational plans appears moderate, with many respondents uncertain or disagreeing about such integration, suggesting potential areas for improvement.

The findings regarding risk management planning reveal that there is generally a positive perception among respondents regarding the involvement of relevant stakeholders in risk management planning. There is also a high level of agreement regarding the involvement of the project team in planning risk management activities before project launch even though Many tasks involving risk are addressed informally, without formal planning processes. Expert judgment plays a crucial role in risk planning, and environmental factors are considered during this phase.

The findings on risk identification indicate moderate agreement in the identification of risk at early stage of the project. Also risks are often identified reactively when their effects become apparent. The research noted that risks are systematically identified in which Most of the respondents indicated their agreement that SWOT analysis is primarily used. The results demonstrate that various sources of risks, their impacts, causes, and potential effects are identified within projects. However, many respondents do not utilize a comprehensive risk catalogue for identification purposes. The identification of risks across all project stages is perceived as moderate, with a particular gap in addressing risks in the controlling and closing stages.

The research findings regarding risk analysis indicate that risks are formally evaluated in terms of their probability of occurrence and the magnitude of their impact through qualitative means. The methods of risk assessment vary, with many organizations relying on ranking risks based on past experiences and subjective assessments. However, the outcome of quantitative risk analysis highlights a challenge in this aspect of risk management. Most respondents expressed uncertainty regarding the numerical determination of risks concerning the magnitude of cost and schedule contingency reserves required in case risks occur. When it comes to the timely implementation of

risk assessments at both strategic and operational levels is not consistently practiced. The process of ranking project risks is recognized by many respondents, yet a significant degree of uncertainty and disagreement exists. Furthermore, the absence of risk registers and databases for updating when new risks arise is evident.

The findings concerning risk monitoring and control indicate a widespread consensus on the importance of monitoring identified risks, tracking residual risks, and ensuring the execution of risk plans to evaluate their efficacy. Participant feedback on risk monitoring tools suggests that technical performance measurement is primarily utilized within projects. However, regarding the existence of well-defined policies and procedures for reporting on risk management, a considerable portion of respondents expressed uncertainty. Similarly, there are concerns about the implementation of functional reporting concepts. Most respondents agreed on continuous assessment and report of changes to the company's risks and routinely review the effectiveness of control in risk management activities. Moreover, significant respondents do not use and are unaware of key indicators and threshold values for controlling risks.

The findings on risk response strategies indicate the presence of well-developed strategies within projects, while some of the respondents disagreed and are uncertain. Moreover, regarding the tools and techniques used most organizations use mitigation as the primary method.

5.2 Conclusion

The objective of this study is to evaluate the approaches, awareness, methodologies employed, and deficiencies in project risk management within real estate projects in Addis Ababa

From the study's results, it can be inferred that despite the inherent risks associated with real estate projects, existing risk management practices are inadequate and there is a noticeable disparity between the theoretical best practices of risk management and their actual implementation in these projects, as illustrated by the following observations.

The results of the study indicate a shared comprehension of risk. It indicates that the current state of awareness regarding risk and its management among real estate projects in Addis Ababa shows both strengths and weaknesses. While there is a general consensus on common risk management terminology and an understanding of risk as both opportunities and threats among the majority of developers, a significant number of respondents still perceive risk only as

negative, highlighting awareness gap. Furthermore, there is the absence of practice of organizing events and training programs to enhance the knowledge and comprehension of risk management among team members.

Findings of the study reveals that many organizations lack clear, written statements on risk management, pointing to inadequately documented or communicated practices. The absence of project-specific standards and guidelines for managing uncertainties, along with the limited use of suitable risk management tools, highlights gaps in the existing practices. While there is some allocation of responsibility for risk management, the extent of this practice varies, with everyone involved in the project and project managers often bearing the primary responsibility.

The study findings clearly demonstrate that while risk management is acknowledged as an ongoing process, many organizations lack a standardized approach to it. The practice of risk identification is often reactive rather than proactive, and comprehensive risk catalogues are seldom used. Risk analysis is based on qualitative assessment, lack of numerical risk assessments and the determination of contingency reserves indicates quantitative methods are being underutilized. This highlights a significant gap in the consistency and reliability of risk analysis practices. The lack of risk registers and databases for updating new risks hinders the ability of organizations to systematically track and manage emerging threats. Additionally, the inconsistent implementation of risk assessments at strategic and operational levels further highlights the need for better alignment with theoretical frameworks.

5.3 Recommendation

Based on the research findings and conclusions, several recommendations are proposed. Implementing these recommendations is expected to advance real estate projects and the industry in terms of risk management practices.

Real estate companies should enhance risk management perception and awareness among project team members by offering training programs, seminars and facilitating knowledge sharing about risk and risk management practices. Additionally, regular meetings and awareness campaigns should be implemented to educate staff about risks and risk management practices.

It is recommended that real estate companies prioritize the development of clear and written statements on risk management. This includes establishing comprehensive policies or guidelines

outlining how uncertainties encountered in projects should be handled. By creating project-specific standards and protocols for managing risks, organizations can ensure consistency and effectiveness in their risk management approach. Real estate firms should establish a standardized risk management system as it is a requirement for creating an effective risk management culture and practice. Companies should establish clear protocols and mechanisms for incorporating risk management strategies into strategic, operational, and project plans, ensuring alignment with overall organizational objectives and priorities.

Real estate projects should implement more structured and formalized risk planning processes. This involves ensuring that all activities involving risk are systematically planned and documented, rather than addressed informally. Providing clear guidelines and frameworks for risk planning will help standardize practices and improve overall risk management effectiveness.

Project risks should be identified during the early stages of the project lifecycle. To strengthen risk identification and analysis, companies should shift from reactive to proactive risk identification practices by implementing forward-looking strategies. Developing comprehensive risk catalogues or risk register will aid in thoroughly identifying potential risks across all project stages, enabling companies to respond effectively and obtain insights from past experiences when similar risks arise.

It is recommended to conduct quantitative risk analysis to accurately determine the size of cost and schedule contingency reserves needed for potential risks. Maintaining risk registers to track identified risks and update them as new risks emerge is also recommended.

Real estate companies should establish clearly defined policies and processes for reporting on risk management activities to improve transparency and accountability. Identifying and using key indicators and threshold values will facilitate effective risk control.

Each identified risk necessitates a carefully planned response strategy to optimize opportunities and mitigate threats to the objectives of the project. Formulating comprehensive risk response strategies that address all identified risks, including those at the controlling and closing stages of projects, will ensure a robust approach to managing risks. Top management must recognize the critical importance of risk management and allocate adequate resources, including financial and human capital, to this function.

5.4 Research limitation and areas of future research

5.4.1 Limitation of the study

The relatively small sample size of the qualitative data may restrict the generalizability of the findings. Moreover, the limited timeframe for conducting the research could have impacted the depth and thoroughness of the analysis. The accuracy and reliability of the collected data depend on the honesty and precision of the respondents' answers, which may include biases or inaccuracies in self-reported data.

5.4.2 Suggestion for future research

This study concentrates solely on four real estate projects. Therefore, future researchers would benefit from expanding their inquiries to encompass the experiences of numerous real estate firms in Addis Ababa. A broader and more comprehensive study is needed to gain a deeper insight into risk management practices within the real estate sector.

Furthermore, while this research focused on aspects of the risk management process, risk awareness risk management, and techniques, there is a require for future research examining other aspects of risk management. Further studies could explore the challenges and benefits of applying risk management to Real estate projects and whether there exists a causal relationship between risk management practices and enhanced outcomes. Organizations may be more inclined to adopt effective risk management practices on their own if they recognize their positive impact on performance.

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APPENDIX A
SURVEY QUESTIONNAIRE

Addis Ababa University School of Commerce

Department of Project Management

Post Graduate Program

Company Name _____

Your position in this company _____

Dear respondent,

I am a student at School of Commerce, Addis Ababa University. I am currently working on a research entitled “Assessment of the practices of risk management in building construction projects: the case of selected real estates in Addis Ababa” for the fulfillment of MA in Project Management. The purpose of this data is to assess and evaluate the current practices of risk management specifically within building construction projects undertaken by real estate companies in Addis Ababa. This survey is purely for academic purposes, and the data will be used only for writing the research report. All information provided will be kept strictly confidential. Your response is highly valuable and will significantly contribute to the research outcome. Therefore, you are kindly requested to complete the questionnaire accurately and honestly.

I thank you in advance for taking the time to complete the questionnaire.

Contact info: 0913090852

Email: fevenmesfin123@gmail.com

General instruction

The questionnaire is categorized into three major parts. Please provide responses to all questions by marking "√" in the appropriate number or marking the corresponding box for multiple choice questions to indicate your opinion on how risk management is implemented in the project.

Part I: Demographic characteristics of respondents

1. Gender: ☐ Male ☐ Female
2. Age: ☐ 20-30 years ☐ 31-40 ☐ 41-50 ☐ 51-60
3. Level of Education: ☐ Diploma ☐ Degree ☐ Postgraduate
Other please specify _____
4. Professional background: ☐ Architecture ☐ Civil Engineering ☐ Quantity surveyor
☐ Construction management ☐ Project management
Other please specify _____
5. Years of experience: ☐ < 2 years ☐ 3-5 ☐ 6-10 ☐ 11-15 ☐ above 15
6. Years of your involvement in this project: ☐ < 1 year ☐ 1-2 ☐ 2-3 ☐ above 3

Part II: Risk awareness and Risk management practices

Please answer the questions by marking "√" in the box that corresponds to your choice
(1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree and 5 = Strongly Agree)

Q	Items	A	1	2	3	4	5
1.1	There is a common understanding/terminology of risk management across the company.						
1.2	All project personnel have an understanding of the major risks and the risk management plan of the project.						
1.3	Team members within the project receive trainings and seminars to develop enough knowledge on major risks that might affect project objectives						
1.4	The company facilitates different meetings and events to raise employees awareness towards risk						

2. Risk is looked upon as _____ in the achievement of the company's objectives.

- ☐ Opportunity ☐ Threat ☐ Both ☐ Not sure

3. Does the company overall regard itself as having a risk taking or risk averse culture compared to its relevant competitors?

☐ More risk taking ☐ Comparing risk taking ☐ More risk adverse

Q	Items B	1	2	3	4	5
4.1	There are clear and written statements on risk management					
4.2	The company has a defined or standard risk management process					
4.3	Risk management is treated as a continuous process in the project					
4.4	The company formulated an overall, enterprise-wide strategy for managing risks					
4.5	There is a policy or guideline that recommends how to manage unexpected uncertainties.					
4.6	There are appropriate tools in place to support risk management (e.g. standard templates, modeling tools, valuation tools)					
4.7	There is a responsible person or department assigned to handle risk when it occurs.					
4.8	The company knows how much risk it may take in the achievement of its objective					
4.9	Risk information is consistently communicated and shared across projects and departments within the company					
4.10	Project risk management plan is linked or integrated into other plans(strategic plan, operational plans, project plan etc)					

5. Who has primary risk management responsibility? Multiple response are possible

☐ Project manager ☐ Consultant ☐ Client

☐ Specialized Risk management team ☐ All personnel participating in the project

☐ No direct responsibility define

☐ Other please specify _____

5. Risk management is usually implemented at the _____ stage of the project

- ☐ Conceptual stage ☐ Planning stage ☐ Implementation stage ☐ Monitoring stage
- ☐ Closing stage

Part III: Risk management process

Please answer the questions by marking the box that corresponds to your choice (1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree and 5 = Strongly Agree)

Q	Items C	1	2	3	4	5
7.1	Relevant stakeholders are involved in risk management planning					
7.2	The project team decides how to approach and plan risk management activities before the project is launched					
7.3	Expert judgment is considered or meetings are conducted while planning for risks that might occur in the project					
7.4	Environmental factors are taken into account during risk planning					
Q	Items D	1	2	3	4	5
8.1	Risks are identified at initial stage of the project or early in the project					
8.2	The risks are identified when their effects are seen					
8.3	Potential risks are identified and assessed in a methodical way					
8.4	Sources of risks, areas of impacts, and their corresponding causes and potential effects are identified in the project					
8.5	All possible risk factors are identified at each stage of the project(initiating, planning, executing, controlling & closing)					

9. The following method is primarily used to identify risks within the project.

- ☐ Expert judgment ☐ Brain storming ☐ Document analysis ☐ SWOT analysis
- ☐ None ☐ Other please specify _____

10. Do you have consistently defined risk catalogue to be used for risk identification purposes?

☐ Yes, implemented ☐ Yes, but need improvement ☐ No, but planned ☐ No

Q	Items	E	1	2	3	4	5
11.1	Risks are formally assessed with respect to their likelihood of occurrence and impact magnitude						
11.2	Risk assessment is performed at timely way at strategic and operational level across the company						
11.3	Overall risks for the project are ranked to indicate the overall risk position of a project relative to other projects undertaken by your company						
11.4	Project documents and risk register are updated after assessment of the risk that might occur.						
11.5	Risk exposure for the project is quantified to determine the size of cost and schedule contingency reserves that may be needed						

12. How do you prepare a general overview of the current risk situation?

☐ Yearly ☐ Half yearly ☐ Quarterly ☐ Monthly

13. Which method does your company use for the assessment of identified risks? Multiple responses are possible

- ☐ Quantitative assessments/Numerical analysis
- ☐ Subjective assessments based on expert judgment
- ☐ Ranking the importance of risks based on past experience
- ☐ Qualitative assessment based on historical data
- ☐ None
- ☐ Other please specify: _____

Q	Items F	1	2	3	4	5
14.1	The project keeps track of identified risks , monitor residual risks and ensure execution of risk plans to evaluate their effectiveness					
14.2	The company has clearly defined policy and process for reporting of risks/risk management					
14.3	A functional reporting concept has been designed and successfully implemented					
14.4	Changes to the company's risks are assessed and reported on an ongoing basis as to their impact on objectives					
14.5	The company routinely review the effectiveness of controls in place to manage risk					
14.6	The responsibilities for risk management and continuous monitoring of risk categories have been defined					
14.7	The key indicators for controlling risks have been determined and threshold values have been defined					

15. The project uses the following tools to monitor and control risk management effectiveness

- ☐ Periodic risk response audits ☐ Periodic project risk reviews ☐ Earned value analysis
☐ Technical Performance measurement ☐ Additional Risk response planning
☐ Other please specify _____

Q	Items G	1	2	3	4	5
16.1	There is a well-developed strategy within the project to respond to risk.					

17. Which of the following risk response strategies are usually used in the project?

- ☐ Avoidance ☐ Mitigation ☐ Transfer ☐ Acceptance ☐ None

18. Please comment on any issues you want to raise with respect to the risk management practices of your project.

Thank You!

Interview Questions

1. Can you please brief me on the projects' risk management practice? How do you manage risks in the project?
2. Is there a standard risk management process which is being followed within the projects or formal documented process on how to manage risks within the project?
3. Is there a special department or person that's specially assigned to handle risks that occur within the project?
4. Are team members within the project aware of the major risks that the project might face and the ways to handle them? Are they given any kind of activities or trainings to develop their knowledge and awareness on risk and its management?
5. Are sources of risks, areas of impacts, and their corresponding causes and potential effects clearly identified early in the project? Is planning done carefully by considering environmental factors and involving stakeholders? Who is involved in the planning process?
6. At which stage of the project do you identify the risks that the project may encounter? And what methods do you use to identify them?
7. Did your risk register contain the basic constituents of risk register such as likelihood impact, description, prioritization, responsible person and existing control method of the risks?
8. How do you analyze and prioritize risks? How do you monitor them?
9. Do you consider factors such as schedule, budget and objective of the project considered in responding for risk that occur? What are the common risks your project faces? What risk response method do you use usually in the project?
10. Does the project prepare contingency and fallback plan in addition to risk response plan?
11. Is there any kind of integration between risk management plan and corporate plan? How do you integrate the project risk management plan with other plans and project objectives?
12. How do you manage risk in the concept of project lifecycle? Do you try to identify risks at each stage of project (initiating, planning, executing, controlling & closing)?
13. Does the project evaluate risk events that have occurred to understand why the risk occurred and if there were failures in the project's risk management processes? How does the project identify and implement changes to improve its project risk management processes?
14. What are the common challenges faced in the company when applying risk management in projects? And what are the approaches that can be applied overcome these challenges?