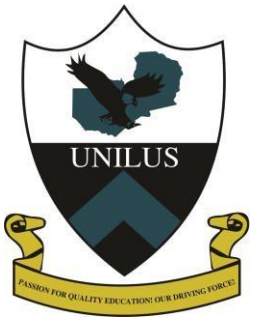


UNIVERSITY OF LUSAKA

School of Postgraduate Studies

EVALUATION OF RISK MANAGEMENT STRATEGIES AND PRACTICES USED ON CONSTRUCTION PROJECTS: A STUDY OF LUANSHYA DISTRICT

BY:

Annie Ngoma

MSCPM211462321

SUPERVISOR:

DR. ENG. Michael Kalumbu Nsefu

Submitted to the school of Postgraduate University Lusaka in partial Fulfilment of the requirement for the award of the Degree of Master of Science in Project Management

DECLARATION

I, ANNIE NGOMA, declare that the contents of this study are a result of my original work and that to the best of my knowledge have not been previously presented for any award in any other University. All sources of the information used in this Document have been duly acknowledged.

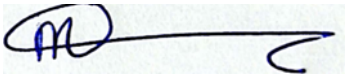
Name: Annie Ngoma

Student ID: MSCPM211462321

Signature: …….

Date: ….04/01/2024…….

Supervised by: DR. Eng. Michael Kalumbu Nsefu

Signature: 

Date:04/01/2024

DEDICATION

This work is dedicated to all participants of the study whose responses and knowledge have been the centre of this document. On a personal note, to my Son, Adaiah Mwale, my Husband, Chisomo Mwale and my Parents Patrick and Anna Ngoma who have been patient and offered limitless financial and emotional support.

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I would like to thank the Heavenly Father who even in my shortcomings gave me the strength to pursue this study and gave me determination and encouragement all through the journey.

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ACRONYMS AND ABBREVIATIONS

ISO	International Organization for Standardization
LMC	Luanshya Municipal Council
LGSC	Local Government Service Commission
PMBOK	Project Management Body of Knowledge
RMP	Risk Management Plan
RMS	Risk Management Strategies
RMSP	Risk Management Strategies and Practices
RMP	Risk Management practices
RM	Risk Management
SPSS	Statistical Package for Social Science

ABSTRACT

Projects undertaken in the Country play a significant role in economic development. Projects influence the use of natural resources towards achieving structural change and development. However, there have been major challenges in the construction industry having recorded poor performance due to cost overruns, time and quality issues.

The study adopted a mixed methodology approach using sequential exploratory designs which entails the collection and analysis of quantitative data followed by qualitative data. The study sample size was 93 which was obtained by purposive sampling. Results were obtained by collecting data using questionnaires for quantitative data and semi-structured interviews with open ended questions for qualitative data. Quantitative data was analyzed using descriptive statistics. In addition, Cronbach's alpha was used to ascertain the reliability of the data and Pearson correlation coefficient to analyze the validity of the data. Qualitative data was analyzed using content analysis to identify patterns and later categorize the data in coded words or themes.

The findings revealed challenges faced by construction projects included risks not being ranked, identified and assessed with no appropriate use of risk management strategies this was indicated by 75% of the respondents. Risk avoidance was the most used strategy as indicated by 51% of the respondents. 43.1% agreed that risk management strategies play a pivotal role in achieving desired construction outcomes. 44.1% indicated that political interference risk has the highest occurrence while 26.9% indicated poor quality has the highest severity of impact. Through correlation analysis, the study established that there is a moderate degree of positive correlation ($r = 0.542$, $p= 0.01$) between Project performance and risk management strategies. Critical success factors for project performance included documentation of risk and inspection of the project as indicated by 76.4% of respondents, stakeholder involvement 76.34% and utilization of budgeting techniques by 76.4% of respondents. The study concluded the application of risk management strategies ensures that the organization undertaking the project achieves its goals and that the project concludes within specified requirements. The Study recommends the improvement of the risk management process, stakeholder involvement in construction projects and creation of a risk management strategic framework and plan for management of risk. Lastly, the study contributes to the body of knowledge by the development of the risk management strategic framework for the measurement of the effectiveness of risk management strategies on the completion of construction projects and enhancing project performance.

***Keywords**: Projects, Construction Projects, Strategies, Practices.*

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

The Construction industry in an ever-changing world faces many disruptions and uncertainty. Because of this, risk management is necessary for every Organization/Industry (McManus, 2022). Risks are quite common in the Construction Industries, this is so because construction projects involve various activities (Jones, 2018). Muthukrishrian (2021) states that ‘‘Risk management is an effective weapon for limiting negative impacts and unwanted consequences’’.

With its contribution to Economic Development, the construction industry has a significant effect on ending the recession and improving Gross Domestic Product (Durdyev & Ismail, 2015). Its importance in generating wealth and improving quality of life cannot be ignored (Abdulan, 2017). Owari (2018) states that its contribution to long-term development in developing countries remains highly acknowledged. However, the construction industry has become difficult to manage (Hyari, 2015). With the rapid development of the world economy and society more construction projects are growing, raising the need for management of risk in the construction industry (Xu, et al., 2016).

Construction risk management requires the use of strategies to keep it in check. These strategies make it easier for an organization to address uncertainty (Blackman, 2022). Construction projects are organized processes and efforts toward making a building or structure through renovating, refurbishing, retrofitting and constructing (Ramos, 2015). Martins (2022) states that construction projects involve processes of assembling infrastructure/building and incorporate numerous other mini-projects thus, a construction project is a group of activities. Similarly, Macealios (2023) deduces that construction projects are projects within projects that range from; buildings construction projects, heavy or Civil construction projects and Industrial construction projects. Furthermore, (Abdulah, 2017) agrees that because of the several activities found in construction projects, each one will require a different risk management strategy as they have different needs and specifications.

To determine the influence of risk management strategies on the successful completion of the project or accomplishment of project objectives, the study aimed to assess the relationship between project risk management strategies and project performance undertaken by the Local Authorities in Luanshya District.

1.2 Background to the Study

Maiti (2021) states that risk management encompasses the process of identification, analysis and response to risk. In addition, the Author concludes that effective risk management is the attempt to control future outcomes by being proactive. Each organization needs to create a unique plan for effective management of risks (Hubbard, 2019). Risk management empowers the organization with the requirements to manage the risk that could hinder objectives (Pedamkar & Tawade, 2023). Furthermore, (Kumar, 2021) states that risk management is about managing the threats to ensure that the organization achieves its Economic goal thus making risk management cardinal for the survival of construction industries.

Risks and uncertainty's inherent in the Construction industry hence, no project is free from them (Landage, 2016). Ranong & Wariya (2019) state that risk management in the construction industry regards the following processes; eliminating, reducing and controlling negative opportunities while achieving business methods and desired goals. Akatov, et al. (2019) define risk as 'an uncertain condition or event that disrupts timeline, cost and quality of projects. Globally there has been a rise in awareness that risk management is essential for handling uncertainties in projects (Yakob & Yakob, 2022). Malsam (2022) states that the answer to managing the complexity of risk in construction is risk management. According to Akhtar (2023), the fundamental goal of risk management is to protect industries from potential losses. The Author states that this is done by employing a variety of strategies that work to identify, assess, monitor and manage risk. These strategies can be in the form of policies, training planning, and incident responses. The importance of risk management for an organization is to help minimize losses and protect organization profits while aiding in decision-making, safety enhancement, prevention of reputation damage, reducing cost and ensuring compliance (Jardine, 2022).

Risk management strategic plans are defined by (Glossop, 2021) as plans that detail how organizations will deal with risk (pre-emptively and as incidents occur). Blackman (2022) likewise, states that stakeholders across the organization must make decisions and be aware that risk management strategies are a vital part of the industry. Essentially, strategies for risk management involve risk avoidance, risk transference, risk avoidance and risk reduction. (Gantz & Philpott, 2013). Furthermore, the Author deduces that a risk management strategy reflects an organization's view about risk and how they intend to formulate policies, standards and procedures for the management of risk. The best risk management strategies seek to combine several techniques, expert advice and protocols for risk (Deborah Gonzalez, 2014). Thus, the overall goal of risk management strategies is

to create a framework for addressing risk and is implemented as a continuous cycle which considers risk constraints, priorities risk tolerance and acceptance criteria (PMI, 2013).

Wanhocho (2023) states that Organizations need to understand the type of risks involved in their projects to ensure that the project meets objectives. The Author mentions that risk assessment is important in helping organizations effectively evaluate risk and set in place risk strategies and practices. Additionally, risk management strategies are part of an organization's governance and leadership (Adams, 1997). Furthermore, the International Organization for Standardization (ISO 31000:2018) infers that risk management strategies contribute to the improvement of management systems. Risk strategies consider the management of external and internal risk in the context of an organization (Brown, 2022). Risk management strategies in construction are the methods used to evaluate and implement procedures to reduce the impact of risk in projects, (Masam, 2022). In construction, risk strategies help with the development of frameworks that enable project managers to easily track, monitor, rank and respond to risk according to its probability of occurrence and level of impact (Ruturi, 2022). Studies by (Wasford, 2018) state that risk management strategies employed in construction projects have an effect project's cost, time, and scope.

Globally the Construction industry has a profound economic and social impact on the Global Economy (Green, 2020). It accounts for 6% of the Global Gross Domestic product which is a growing percentage. In parts of the developing world, it accounts for 8% of a country's Gross Domestic Product rising about 100 billion dollars annually (World Economic Forum, 2023). Rhodes (2013) believes that these characteristics mean it contributes to Job creation and the reduction of Global poverty. The Author further states that the benefits of the industry lie in its power to produce economic growth and physical infrastructure. The construction industry makes a significant contribution to the Capital Formation and Development of new environmental assets (Organisation for Economic Co-operation and Development, 2010). Secondly, the industry is responsible for between 3 - 10 percent of the Global Gross Domestic Product taking into consideration raw site-based construction activities and between 10 – 30 percent of a country's Gross Domestic Product when the broader construction supply network and employment levels are considered (Austrian Government Department of innovation, 2011). The World Economic Forum (2023) states that the revenue for the construction of projects undertaken by the Government is expected to grow steadily over the coming years and the latest market data undertaken in 2023 amounted to 8.2 trillion dollars in 2022 (Akhtar, 2023).

Construction projects undertaken by Local Authorities in India contribute to about 18 million job opportunities and about 9% of the Country's Gross Domestic Product contributing about 670,778 crore rupees making the economy a fast-growing economy (Asanduff, 2020). Meanwhile, In the United Kingdom, construction projects which are undertaken by the Government contribute about 17 billion pounds to the economy and approximately 6% of the Country's Gross Domestic Product (Finserv, 2018). Furthermore, the industry in Australia plays a major role in economic growth and increasing the value chain. Local authority projects account for 6.8% of the Gross Domestic Product. Additionally, the industry has contributed to 7 years of economic growth coupled with the introduction of Goods and Service Tax in 2000-01 which saw a rise in Gross Domestic Product making it one of the largest industries in the country (Australian Bureau of Statistics, 2010). Similarly, the United States Local authority projects had an approximation of $23 trillion United States Dollars (USD) in market size in 2021 with Construction contributing a total of $959 billion and an annual turnover rate of 68% while employing 7.5 million workers by January 2022. All this was done despite the challenges and the impact of the Covid-19 Global Pandemic (Simonson, 2022).

In Africa, as of 2018, Nigeria stands as Africa's biggest economy ranking over 441.54 billion dollars in Gross Domestic Product (Faminu, 2021). Despite the disruptions associated with the COVID-19 pandemic, the projects carried out by the Local Authority have demonstrated resilience after achieving a 2.8% growth rate as of 2020. The sector has been instrumental to the Economic growth of the Country (Adeleke, 2018). Similarly, the Tanzania construction industry has recorded steady growth resulting in a Gross Fixed Capital Formation (GFCF) of 47.3% thereby contributing 8.7% in 2001 and 15% as of 2023 to the economy (Malongo & Muhegi, 2023).

In Zambia, The Construction industry is very important to the economic development of the nation as of 2022 the industries in Zambia including Construction contributed to 33.8% of the country's Gross Domestic Product (The World Bank, 2023). The Central Statistics Office states that the Construction industry contributed a total of 3496.70 (ZMK million) as of March 2023 (Kayula, 2023). Furthermore, the Author states that the construction project is critical in delivering quality infrastructure and influences the use of natural resource revenue towards structural change and development. Cheelo & Liebenthal (2020) state that in Zambia, the sector is critical for how successful the Economy will be in converting its resources and investment efforts into physical assets. The success of building social infrastructure such as schools, health facilities, water and sanitation depends on the

competitiveness of construction companies in the country (Silungwe, et al., 2015). Additionally, the construction industry in Zambia has improved the development of the Country causing it to remain consistent in exploring development through infrastructure (Kapulande, 2021). Cheelo & Liebenthal (2020) infer that the development of two major infrastructure development projects namely; the link Zambia 80000 road project also known as the Accelerated National Road Construction Program (ANRCP) to transform the country into a land-linked country and the creation of new Districts and revamping of the old ones which led to an expansion of 72 districts, the country has seen great heights of Economic Development (Katongo, 2006). Furthermore, the Author states that the industry has remained committed to its goal to consistently remain strong particularly in development through construction making it reach a nominal expenditure of ZMK 2.5 billion to ZMK 8.3 billion as of 2010.

According to reports by Global Data, the construction industry is one of the key sectors to a Country's Economic Development and towards ending the Recession (Musarat & Alaoul, 2021). The construction industry in Zambia has employed over 7,505,00 workers as of July 2019 and is projected to raise the number by 864,700. Furthermore, Zambia like many other countries faced an Economic contraction due to the Pandemic (Covid-19) but Gross Domestic Product grew by 3.7% year-on-year thereafter (Kabwe, et al., 2021). According to the Zambia Development Agency (ZDA), the country recorded 3.3 billion in Foreign Direct Investment (FDI) mainly from construction this was prompted by the government having increased the allocation of the construction budget (Ngoma, et al., 2014).

In 2022, the Zambian Government launched the 8th National Development Plan (8NDP) which is to run from 2022-2026 and is in support of infrastructure development (Mulenga, 2023). Infrastructure development through the construction industry has helped the Country to be ranked 8th in the Southern African Development Community (SADC) and 4th in the Common Market for Eastern and Southern Africa (COMESA) (Aheisibwe, et al., 2020). Nel & Teffo (2020) state that the Country ranked 8th most competitive country in Africa on the Global Competitiveness Index and recently country ranked 7th by Forbes as the best country for doing business. In conclusion (Mabuyuyahulu & Krugar, 2023) inferred that due to the spur in Economic Development contributed by the construction industry the government to promote further local development announced an increase in the Constituency Development Fund budget of 2022

Table.

Table 1.1 Gross Domestic Products from Construction Projects from selected Countries highlighted in the study for the year 2022

Country	Gross Domestic Product 2022 4th Quarter (Measured in Zambian Million)
Australia	39,360
Nigeria	729,456
India	3,047
South Africa	110,686
Tanzania	5,192,938
Thailand	74,915
United-Kingdom	32,964
United States of America	568
Zambia	3,664

Source: Trading economics.com

Despite the great performance towards the Economic growth of various countries, (Wood & Gidade, 2015) state that the construction industry particularly projects undertaken by Governments/Local authorities has shown poor performance, under-achievement and failure to meet project objectives. Consequently, projects run cost overruns, face major delays and run huge budgets despite efforts to improve project success. (Jones, 2018). All projects by nature are complex and so have high risks attached thus, before actual construction, projects need to identify stakeholders and assign a project manager, thereafter, develop a concept and effective plan for risk management (Luo, et al., 2017). The complexity and nature of projects are why they require proper risk management strategies (Mishra, 2014). The Author further states that to deliver infrastructure, the construction industry requires a range of critical inputs and raw materials.

The Key Performance Indicators (KPIs) in a project consist of various specific measurement tools for indicating how well a project is achieving specific goals that had been agreed upon at the start of the project (Wootton, 2020). Gao, et al (2019) state that the choice of strategy used to manage risk is a critical factor for project success. In Thailand, the construction

industry value dropped from 1.8% in the 1st quarter of 2021. This was attributed to the slowdown in the Country's property and construction industries amid the tightening of the country's regulatory control. Projects in Thailand were reported as not being completed on time and not meeting desired specifications (Ogunlana & Stephen, 2012). The risk management strategy used has a major effect on the failure and/or success of a project and will essentially correlate with the performance (time, budget, cost, quality, specifications and quality) (Kishan, et al., 2014).

In Europe/Asia, the Turkish construction industry was sluggish this was a big hit as the Economy depended largely on construction. Major causes were that to do with the Pandemic and lack of risk management consequently leading to increased material prices and high-cost overruns (Caglayan, 2021). Similarly, in Africa, a study done by (Garikai, 2017) found that the majority of the projects run by Local Authority had delays in completion and difficulties in financing. delay is defined by (Awari, et al., 2016) as the time overrun and cost overrun either beyond the completion date specified in a project contract or beyond the date that parties had agreed upon. Furthermore, in Zimbabwe 70% of projects are likely to fail due to escalated costs Evidence is present in the duration and cost overruns it requires to complete projects (Klerk, 2022). The construction industry in South Africa is engulfed with risk due to its uncertain environment (Renault, et al., 2016). Most construction projects are executed in an environment where the probability of risk occurrence is unknown and once risks are not handled properly, it results in poor performance, increased cost and time delays. The construction industry in South Africa has many unknown, undesirable and unpredictable risks (Oke, et al., 2022).

The construction Industry in Zambia and sub-Sahara Africa (SSA) is characterized by poor delivery of Sustainable Development with slow adoption of Sustainable Construction Practices (Zulu, et al., 2023). Many projects fail in performance and the policies set do not help with the problem (Oke A, 2019). An inspection carried out by the National Council of Construction (NCC) in 2021 highlighted that from the 519 projects inspected the major challenges found were that projects paid inadequate attention to health, safety and the environment possessing risk to humans and most projects 291 projects were abandoned (Kabwe, et al., 2021). In addition, another inspection done in the Muchinga District indicated that Forty-Six Zambian contractors had abandoned projects. Only 6 of the 50 projects inspected had contractors on site while the rest had been abandoned (Sichone, 2015). Furthermore, in another inspection undertaken in the Manyinga District in 2022, it was discovered that the Civic Centre in Manyinga District had been abandoned. the contractor

had not delivered after being paid for the works thus the project has stalled since 2015 (Mwewa, 2022). Consequently, all these abandoned projects cost the Government huge amounts of money and further delay service provision to the community.

To ensure that Construction projects are done within acceptable standards, every Country has a regulatory body responsible for the regulation of Construction projects. A regulatory body is a Public 0rganization or Government Agency that is responsible for legally regulating aspects of human activity with the role of establishing and strengthening standards to ensure compliance (Opedia, 2021).

In Malawi, projects are regulated by the National Construction Industry Council (NCIC) which was established under act an of parliament in 1996 (NCI Act) with a mandate to regulate, develop and promote the construction industry in Malawi. The NCIC ensures that all contractors, consultants, material manufacturers, suppliers and stakeholders are operating within the governing rules as stipulated (National Construction Industry Council of Malawi, 2022). Similarly, projects in Tanzania are regulated by the National Construction Council (NCC) which was established under a parliamentary Act No. 20 of 1979 revised in 2008 (National Construction Council Act, Cap 162, RE.2008) and has been operational since 1981 with the promoted need to ensure the development of the construction industry in Tanzania (National Construction Council of Tanzania, 2023).

The regulation for compliance by construction projects is done by the National Council for Construction (NCC). A statutory body governed by the National Council for Construction Act no 10 of 2020 under the laws of Zambia and it is charged with the responsibility of providing for the promotion, training, development and regulation of Construction projects in Zambia which in turn will ensure a robust and competitive Zambian construction industry (National Council for Construction, 2021).

Local Authorities undertake a series of construction programs. Construction Projects done by Local Authorities are crucial to the development of the Country. In 2022, the Constituency Development Fund (CDF) was substantially increased to K4,416,968,713.00 while the Local Government Equalization Fund (LGEF) was increased to K1,322,104,356.25. The increment in these amounts was to aid the local authority with service delivery and construction of various projects (Musama, 2022).

Construction is a major key sector in the District. This is because the District is still in its developmental stages thus Economic and Developmental growth are cardinal. (Anderson, 2008). After receiving the 3.2 million Constituency Development Fund, the Municipal used

up to K258,165.00 to construct the Kamirenda Maternity Clinic and K90,000 for completion works such as electricity installation. Other projects included the construction of the Ndeke Police post, Misaka Clinic, the electrification of Baluba Primary School and other projects in the District. This was to provide community support (Sichone, 2019).

However, despite the existence of risk management strategies employed by the Local Authority projects are still being handled with inefficiency. This can be attributed to a lack of implementation of proper project-specific strategies. In addition, most projects go beyond the expected delivery date and are completed with poor quality while others are abandoned. Other challenges being faced by construction projects include; inadequate funds, procurement of poor-quality materials and the delay in the delivery of procured materials, lack of transportation to the project site, poor coordination of activities, poor supervisory skills and poor contract management (Kabwe, 2022).

Based on this background, the research developed a risk management strategic plan for the analysis of the relationship between proper risk management and the completion of construction projects. The strategic plan is expected to help key Stakeholders in the management of projects by identifying appropriate ways to use risk management to improve projects and enhance development in the Luanshya District.

1.3 Statement Problem

Globally, the construction industry faces challenges from deteriorating infrastructure due to undesirable project performance (Page, 2019). There are eight (8) top problems affecting construction projects. These include; Cost overruns, delays (77% of Construction projects are at-least 40% late), slow adaptation technologies, inadequate communication, Labor shortages, poor planning, lack of organization (delay in commissioning/handover), haphazard document management and the problem of cash flows.Other issues in construction projections by Local authorities according to (Kabwe, 2022) include; late procurement and delivery of poor quality, unavailability of transportation, poor coordination of activities, poor supervisory skills and poor contract management (Anderson, 2008). A successful project is defined by (Hampson & Brandon, 2020) as one that meets organization objectives, goals and desired deliverables within schedule and budget. Similarly, in Luanshya District, 85% of projects go beyond the expected delivery date, 20% are delivered with poor quality and 8% are abandoned consequently causing a delay in service delivery, wastage of funds and depreciation of materials

Despite the implementation of risk management strategies and strategic plans, projects still face challenges with quality completion. There is insufficient data to support the relationship between risk management strategies and project performance. Ideally, the construction project is supposed to meet set goals while adhering to risk management strategic plans (Brown, 2022)

The research strives to establish the relationship between risk management strategies applied by the Local authority and the successful completion of projects. Thereafter attempts to develop a risk management strategic plan to help enhance project risk management.

1.4 Research Objectives

1.4.1. Main Objective

The overall objective of the study was to evaluate the Risk management strategies and practices used by Local Authorities in the Luanshya District and their effectiveness in the timely completion of Construction projects.

1.4.2. Specific objective

a) To explore the risk associated with Construction projects.
b) To examine the probability of the risk and impact on the project.
c) To develop a risk management strategic plan for the Local Authority

1.5 Research Hypothesis and Questions

a) What are the risks associated with construction projects?

b) What is the probability of risk and its impact on projects?

c) How can the risk management strategic plan be of aid to the local authority?

1.6 Significance of The Study

The findings of this study are expected to be of benefit to Government policy makers, Local Authorities, project Sponsors and Developers, Contractors, Projects Manager, Consultants and all Stakeholders by providing an understanding of the risk management strategies being applied in construction and their relevance to completion to maximize service delivery.

The study will be expected to equip policy-makers to understand the weaknesses and strengths of the risk management practices thereby helping them formulate better policies to improve the current ones.

The study will act as a reference for future researchers undertaking similar studies and is expected to contribute value to the existing body of knowledge. The study will aid other researchers in identifying potential areas of research and allow them to fill the necessary research gap.

1.7 Scope of The Study

The study was focused on assessing the relationship that exists between the risk management strategies for the effective completion of construction in Luanshya District, thus the scope included a selection of Construction projects in the District.

The key respondents for the study included project end-users and various stakeholders which included Government Ministries (Education, Community Development, Agriculture, Health etc.), Political parties and Luanshya District Community at large. While key informants included the Local Authority and Construction firms

1.8 Operational Definition

The following under listed terms and concepts are the phrases that will cover the meanings related to the study which are as follows.

Risk

a) Risk as defined by (management-London, 2022) is a combination of the probability of an event and its consequences and is defined further by the International Organization for Standardization (ISO 31000:2018) as the effects of uncertainty on an organization or industrial objectives.
b) According to the Association of Project Management (association of project management, 2000) Risk is defined as the combination of the probability or the frequency of occurrence of a defined threat or opportunity and the magnitude of the consequences of the occurrence.
c) Risk = (Probability of the occurrence of a defined event) x (consequences of the occurrence of that event)

Risk Management

Linda Tucci (2001) defined risk management as the process of identifying, assessing, and controlling threats to an organization’s capital and earnings. these risks stem from a variety of sources including financial uncertainty, legal liabilities, technology issues strategic management errors, accidents, and natural disasters.

Risk Management Strategy

A risk management strategy is defined by Jennifer Bridges (2019) to provide a structured approach to identify, access, and manage risks as they provide a process to regularly update and review the assessment based on changes.

1.9 Outline of the Research

The outline of the study research was organized as follows;

Chapter One: Introduction and Background- The chapter introduces the topic and gives a background to the study. It outlines and defines the research problem, identifies the main and specific objectives (s), identifies the research question and the significance and scope of the study.

Chapter Two: Literature Review – Gives a review of the literature on the topic and highlights various theories related to the topic.

Chapter Three: Theoretical and Conceptual Framework- The chapter constructs the theoretical and Conceptual framework relevant to the study

Chapter Four: Research Methodology- Identifies the research methodology for the study and defines the method to be used in the research process. The chapter highlights the research approach, research design, philosophy study population, sample size, data collection tools, data analysis, reliability, validity and ethical considerations.

Chapter five: Data finding and presentation- Gives the presentation of the findings to the study based on the questionnaire distributed and collected from eligible respondents. The response analysis would be based on the relation of the identified variables and done through the application of the Statistical package of social science (SPSS)

Chapter 6: Discussion and analysis: Discusses the significance of the research findings in light of what is already known about the study and gives an analysis and interpretation of the study findings. The chapter explains any new understanding of the research problem and considers it. The chapter will connect the introduction to relevant literature and answer the research questions.

Chapter Seven: Conclusion and Recommendations- The chapter presents the conclusion and gives recommendations for the study based on the research findings.

1.10 Chapter Summary

This chapter included the Background of the Study, and it gave insight into the introduction of the topic, problem statement, objectives of the research, hypothesis and

significance of the study and the contribution the study would hold to the already existing body of knowledge.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will focus on the overview of the performance of the Construction industry and overview of the performance of the Risk Management strategies on construction projects using past studies from various researchers. The Chapter will give a comprehensive review of the Literature on the concepts and theories regarding the relationship between risk management strategies and the effective completion of construction projects. Furthermore, the chapter will highlight the requirements needed for the formulation of the risk management strategic plan as well as give a theoretical analysis of the knowledge gaps identified between documented research and this study.

2.2 Global Overview of the Performance of Construction Project

The Construction Industry is a significant contributor to the Economic Development of many countries (Harinaran, 2023). However, this researcher deduces that the construction industry needs quality upgrades to achieve better Organizational results. The World Economic Forum estimates that the industry is reliable for approximately 10 trillion (USD). The construction industry is the second largest industry after Agriculture and employs large numbers (Ashcraft, 2022). Besides enabling Socio-economic Development, the industry contributes to the growth of other Industries (Abdulah, 2017). Recently, there has been a positive correlation between construction investment and the Gross Domestic Product growth of the Globe. At the same time, challenges are inevitable in construction and thus negatively impact its performance (Skitmore, et al., 2016). Despite its importance to the World economy, it has been noted Globally that the construction industry has been suffering from challenges such as low quality, high cost and poor health and safety (Haupt, 2016). Furthermore, the author states that the most serious effects of risk present in construction can be summarized as follows;

a) Failure to keep with cost
b) Failure to accomplish the completion date
c) Failure to attain the desired quality and requirement

Worldwide, the construction industry has been suffering with service delivery (on time, on budget and meeting customer satisfaction) (PBSRG, 2016). Popular belief would have individuals believe that construction in developed countries is doing better than 3rd world or developing countries this is because they have huge budgets and better technology for projects. However, the poor performance of the construction industry has been the same in every country (Geng & Bridge, 2016). To support these arguments, (Ken & institute, 2015;) identifies that recent worldwide construction faces the following challenges;

a) $4 billion-$12billion spent to resolve construction industry disputes (delays in project conclusion)
b) Cost overruns of $15billion-$36billion
c) 6.5 % of projects defined as completely successful (in terms of scope, schedule, cost and customer satisfaction)
d) 25%-50% waste in the coordination of labour

Construction projects in Europe (United-kingdom, Norway and Sweden) undergo reworks. Consequently, this leads projects to be completed beyond the budget by approximately 6% of the budgeted sum (Ashford, 2019). Reworks add on 2-20% of expenses and are mainly due to design errors (Moore, 2019). Additionally, construction projects indicated high-cost overruns (the difference between the total budget and the actual cost of the project). In Europe, 50% of the projects go beyond budget amounting to over 29% of the budgeted amount (Rahman & Azis, 2021). Despite Europe being geographically and economically developed, in Portugal, the construction projects run beyond schedule (late completion of work beyond planned schedule) with an estimated 53% of the projects delaying to complete (Love & Li, 2020). What's more, construction projects in Europe receive feedback of dissatisfaction resulting in customer dissatisfaction (the degree to which end users perceive a project as complete and successful) (Proverbs, et al., 2019). It is greatly noted that customer satisfaction plays a fundamental role in the success of a project, thus in Turkey construction projects do not meet customer satisfaction which is a major setback for the construction industry (Rivera, et al., 2016).

Reworks account for 5.6% of the budget increase for Standard Industrial Construction and about 10% for Heavy Industrial Construction in Asia and North America (Canada, United-States, Malaysia and Thailand) (Love & Li, 2020). In addition, it has been noted that construction runs huge cost overruns with only 30% of projects being completed within the 10% of the planned cost (Flyvbjerg, et al., 2018). Secondly, construction projects in Indonesia experience delays with the duration going beyond 42% of the original scope. As

a result, there is low customer satisfaction (Rahman & Azis, 2021). This was supported by (KMPG, 2017) which states that project failure had been 53% with its highest rate originating from Government projects. The construction industry has failed to successfully execute and complete major projects on time, budget and with minimal re-work resulting in customer dissatisfaction.

The construction industry In Africa has not been spared from challenges. It had reported similar performance as the rest of the globe (Alhammadi, et al., 2021). In Nigeria, issues pertaining to design change, poor contract management and failure to foresee site conditions have persisted to be a huge challenge for the industry (Adeleke, 2018). Similarly, in Tanzania, Uganda and South Africa projects face issues of rework, ‘‘rework happens on every major project…however it becomes a challenge when reworks cause projects budget to overrun beyond’’ (Groff, 2014). Projects go beyond budgeted cost by 29% leading to more schedule delays (Ashford, 2019). Likewise, the Kenyan Construction industry faces a huge concern with approximately 74% of the projects experiencing delays in completion coupled with lower quality causing poor customer satisfaction (Rivera, et al., 2016).

As earlier noted, the global construction industry is facing serious challenges and Zambia has not been excluded from the challenges. The Zambian construction industry faces many challenges, this is evident in projects undertaken by the Government (Kabwe, 2022). The industry's performance in terms of time, cost and quality is undesirable. Activities such as planning, design and development are vulnerable factors to the successful completion of projects (Khodier & Mohamed, 2015). Many projects undertaken by the Government face schedule delays resulting in huge costs. Schedule delays cause the scope of work to increase and eventually lead to customer dissatisfaction as end users perceive projects to not meet their specific needs (Cheelo & Liebenthal, 2020).

Table 2.1: Overall Analysis of Performance-negative Perspective

Continents	**Delays (Schedule)**	**Cost-Overruns (Over Budget)**	**Customer Satisfaction**	**Reworks**	**Scope**
Europe	53%	50%	Partial	5%	37%
Asia	68%	59%	Partial	3%	3%
North America	98%	98%	Very Dissatisfied	6%	10%
Africa	75%	69%	Dissatisfied	9%	9%
Zambia	80%	75%	Dissatisfied	2%	20%

Source (PBSRG, 2016).

2.2.1 Global Overview of Risk Management Strategies in Construction the Industry

The definition of risk is dependent on the project objectives and the importance placed on risks by the management of an organization (Zavadskas & Tamosaitiene, 2010). Every decision in a project leads to possible outcomes. Probabilities attached to the outcome is a risk (Tayib, et al., 2022). The last decade has seen a huge growth in the industrial revolution. Presently, many developing countries are trying to adapt to the industry, however, there has been a lack of attention given towards effective management of risk to enhance project performance (Adeleke, 2018).

Furthermore, the Author alludes that to be effective, each of the aforementioned phases must be fully integrated within the organization. Even in a digital environment, the construction risk management process stays the same with a few changes within the steps (Kendrick, 2016). Successful implementation of the risk management process facilitates effective communication, migrates stakeholder uncertainty, builds trust among parties and facilitates informed decision-making (Peruzzi, 2022). Despite efforts to curb risk, there has been an increase of risk in the construction industry. This is partially driven by an increase in the cost of materials and increased labour (Cross & Cross, 2019). Firstly, it has been noted that risk management Strategies at the planning stage affect project performance. It is therefore recommended that more attention be placed on planning towards risk management (Aheisibwe, et al., 2020). Secondly, Strategic risk management helps to strengthen the project and helps project owners assess and manage the risk to prevent a

problem that can disrupt developmental progress (Gilbert, 2021). Additionally, the impact of risk management strategies on projects results in reduced delays in project completion and delivery dates (Demski, 2022).

The Risk Management process

The risk management process begins with the identification of potential and relevant risks associated with the project (Neeraj & Murugesan, 2015). The process is cardinal as it helps the process of risk analysis and evaluation be performed well. After risk identification, risk analysis and evaluation are the steps that follow. (Szymanski, 2017). Once the risk associated with the project has been identified, analyzed and evaluated, an appropriate method of treating risk should be adopted (Kansal & Sharma, 2014). Within the framework of risk management, project stakeholders should decide on how to handle and treat risk. Furthermore, Project stakeholders should also formulate suitable risk management strategies or measures for risk mitigation (Faminu, 2021). In addition to giving a wide understanding (Sahat, 2012) listed the risk management process as follows;

1. Risk Identification: -This step involves the identification of the risk in a project. There are many types of risk as identified in the introduction of the Literature. The risks identified are then noted down manually or inserted into a system.

2. Risk Assessment/Analyze: -This process involves analyzing the identified risk and the scope. The process also includes determining the severity and probability of occurrence of the risk to the organization.

3. Risk Prioritizing: -This step gives a holistic view of the project and pinpoints where the focus should be. It helps in the identification of workable solutions. The risks are ranked factoring in the likelihood of occurrence and potential effect on the project.

4. Risk Treatment: -Every risk needs to be treated or eliminated as it poses a threat or an opportunity. The risk treatment is a response to how identified can be treated. These solutions include risk mitigation, transfer, avoidance and many more.

5. Risk Monitoring and Control; - After a treatment plan has been placed. Risks are then monitored and controlled against set procedures. This step can also be used to identify some risks which had not been present at the beginning of the process

In construction projects, the management of risk is more about using defensive strategies. This is because modern risk management strategies not only protect the organization but also provide value to the industry (Ferede, et al., 2021). The growth of the Construction

industry requires an understanding of risk management strategies and other procedures for the management of risk (Augustine, et al., 2015). In addition, (Bahamid, et al., 2019) state that the industry is burdened with several uncertainties resulting in cost overruns and poor quality. Construction Companies are operating in a volatile environment because of the increase in Globalization, Technology Development, International Markets and the Liberation of trade (Baker, et al., 2021). Therefore, risk management is an important tool that is a helpful part of the decision-making in construction. Risk management strategies are done to increase positive probability and impact and reduce negative probability and impact (Alhammadi, et al., 2021). In addition, risks can increase with the number of tasks and phases introduced at each project phase. The critical part of risk management is mitigation to minimize the risk effects (Finserv, 2018).

Risks associated with construction projects often have a significant impact on the project budget and play an important role in the overall cost of the project (Zaghloul & Hartman, 2003). Construction risk is a global problem. This is because they have become a source of global wealth and economic sustainability (Befrouei & Taghipour, 2015). In addition, construction Industries are aware of the risks that projects present but have failed to manage and place strategies on said risks successfully (Hodgson, 2022). A successful risk management strategy requires the application of appropriate methods, knowledge and experience. This is because project success depends on a balance between timetable, resources and the client's desirable service.

Successful construction projects undertaken In the United Arab Emirates have shown that careful planning, an experienced and qualified team, clear scope, adequate resources (material and finance) and the integration of a risk management strategy have led to the success of Construction projects (Khan, et al., 2021). Organizations need to have a steady risk management plan. Furthermore, all project team members need to be involved in the risk management process (Sayegh, 2014). In Pakistan, (Iqbal, et al., 2015) state that there are over 37 risks associated with construction. However, each risk varies in degree of impact. The Author further infers that risk management is an important field in the construction industry but it needs to gain more popularity. There are two types of management strategies which can be used. These are preventive and remedial strategies. Preventive strategies are those which are used before the start of the project to manage risk during the execution. While remedial strategies are those which are used during the execution phase once risk has already occurred (Harinaran, 2023). The use of risk management strategies has led to success in the Australian construction industry. They

have helped the industry rise by 4% making the country stand among the top 5 countries in the world with the best Construction industry (Hampson & Brandon, 2020). However, it has been recorded that financial issues for projects, accidents on site and defective designs are the most significant risks affecting construction projects in Australia (Ana Nieto-morote, 2011). Construction in India indicated that though organizations are aware of the risks which can be present in construction, the practices are not being effectively used as needed (Muthukrishrian, 2021). Consequently, the risk remains present when not managed as required. The construction sector in India has however tried to understand the types of risk present in their projects and sort ways to manage them for success (Chetty, 2016).

In Africa, (Tesfaye, et al., 2016) indicate that in construction projects, different risks have different impacts on project objectives. Therefore, a need for a risk management strategy is inevitable. Based on Annual Growth Rate, the top four countries leading Africa in the construction Market are; Ethiopia (12.7%), Tanzania (9.3%) Zambia (7.7%) and Nigeria (4.6%). However, based on the number of infrasturture in the country, Egypt, South Africa, Uganda, Nigeria and Kenya are leading in Africa (Renault, et al., 2016). In South Africa, the construction Industry has been a driver of Socio-economic growth (Klerk, 2022). The industry was hit severely by the Coronavirus (COVID-19 Pandemic). Despite this, the sector integrated risk management strategies into projects, which led to the revamping of the sector (Wood, 2021).

2.2.3. Construction Industry in the Zambian Context

The Sector plays an important role in Economic Development and long-term National Development (Schieg, 2018). The Zambian Economy is heavily driven by Manufacturing, Trading, Mining, Transportation, Communication and Construction (Ofari, 2015). In 2010, the construction industry contributed approximately 10.9% to the country's Gross Domestic Product. In addition to this, the construction industry has been the third largest employer, employing a total of 5,966,199 people (Namkumbe, 2019). There are over 10,000 companies registered with the National Council for Construction (Musonda, 2020). The industry has seen an increase in registered industry from a total of 4,953 in 2015. Furthermore, there has been an increase in the number of foreign construction companies bringing about positive competition (Zulu, et al., 2023)

Silungwe, et al, (2015) conducted studies on consultants and contractors in the Zambian construction industry (ZCI). The finding of the study concluded that Construction projects are prone to risks and thus fall short in quality, time and cost. According to (Kabwe, et al., 2021) the Zambian Government spends huge amounts of money on projects. Despite this,

there is still a rise in the need to change the traditional risk practices and encourage more modernized risk strategies. Malsam (2022) states that construction risk management solutions involve a lot of monitoring and tracking risk to properly control it. The Author states that organizations need frameworks and software that provide real time insights into progress. The best risk management practices for construction projects include the identification of risk, identification of risk owner, creation of a risk management plan and audit of risk (Demski, 2022).

The construction industry in Zambia suffers from many setbacks and problems (Chilongo & Mbetwa, 2017). Of these, a lack of risk management strategies presents the biggest challenge (Sunitha, et al., 2016). It is not uncommon for projects to not use risk management strategies (Amadi, et al., 2015) Elucidate that failed and abandoned construction projects are common in Zambia.

2.3 Risk management strategies used by Local Authorities on Construction projects

The traditional project is viewed as successful only when it achieves its intended outcomes in terms of specification, time and budget (The triple constraint) (Jardine, 2017). Construction project risk management strategies have been found to exhibit dynamism and continuity across a project's life cycle (Gharagozlou & Gharagozlou, 2021). The Author further states that this reason has seen a rise in the need for risk management strategy. A risk management Strategy is defined by (Alaloul & Saem, 2021) as pro-actively identifying, assessing and responding to risks before they impact a projects ability to be completed on time. Furthermore, the authors state that a risk management strategy encompasses regularly updating and revisiting the risk assessment based on new information. Between 2021 and 2022, contractors have reported cost increases in materials and labour. This increase has resulted in the requirement of risk management strategies to curb any change in prices (Rudge & Kip Fitsimon, 2022). Implementing a strategic risk management plan ensures a project stays on track and consequently succeeds. Industrial companies need to have the ability to manage risk (Gao, et al., 2019). Generally, there are four risk management strategies considered in global construction projects (Adams, 1997) these are Risk Avoidance, Risk Reduction, Risk Transfer and Risk Acceptance.

Risk avoidance as highlighted by (Gupta, 2022) helps to reduce the possibility of potential risk by avoiding risky tasks altogether. Global construction industry uses the strategy to prevent any possible risk from occurring (Akhtar, 2023). Furthermore, it includes typically changing the timeline or scope consequently reducing the likelihood of any significant risk from occurring. It is important in that it sets to prevent rather than to find a cure for risk thus

addressing them before they occur (Deborah Gonzalez, 2014). Lastly, (Aheisibwe, et al., 2020) state that the risk avoidance strategy is used by Global construction projects when there is a likelihood of risk occurring. If the risk occurs, it would have a high severity of consequence. They do this by anticipating risk and formulating plans as a result construction can minimize the odds of these risks disrupting the project schedule, time and cost (Goh & Abdul-Rahman, 2016).

A risk reduction strategy is used by construction projects to reduce the severity of risk by taking steps to mitigate the effects (Gharagozlou & Gharagozlou, 2021). In addition, the Author's state that the strategy is used to aid in minimizing the negative effects of risk on projects. It establishes clear protocols and procedures while developing a backup for unseen risks and thereafter identifies and mitigates potential risks (Muthukrishrian, 2021). The strategy ensures that potential risk is identified and dealt with before it causes issues. Construction industries apply this strategy in an attempt to minimize the chances of something going wrong (Chileshe & Kikwasi, 2015). The strategy is used by construction contractors who seek to understand risk during the analysis process. It is also used to understand the consequences of the risk (Adeniran & Adu, 2019).

The risk-transferring strategy is used as it helps to reduce the exposure of potential risks by transferring those risks to others (Alhammadi & Tayeh, 2018). The strategy is employed by Global industries that seek to manage risk for successful project outputs and additionally, it involves transferring risk to other parties who can handle the risk better eventually enabling the protection of financial liability to projects (Cheelo & Liebenthal, 2020). In addition, the strategy is used in early project stages.

Lastly, risk acceptance is a strategy used by construction industry to help them accept the potential risk associated with the project. The strategy takes steps to plan for the risk (Amer & Mohmoud, 2020). It requires a decision by project managers on whether to accept, reject and acknowledge the risk. It is followed by another decision on how they can potentially deal with risk (Danish & Harison, 2016). Further, the Author's state that the common time to use risk acceptance in project management is when planning. This is so because industry decide which risk are worth taking on and which can be eliminated. The strategy is further used in the monitoring and control phase of projects (Ferede, et al., 2021). Every project is different, despite this, every construction company should have the ability to tailor a risk management strategic.

Strategies for risk management help to reduce uncertainty (Kuashik, 2010). Uncertainty of any form is bad for projects (Jumbo, 2021). Risk management strategies help construction

industry to understand the internal and external aspects of the project (Klemetti, 2016). Secondly, strategies help organizations to successfully plan. A successful project is one that is planned for carefully (Bahamid, et al., 2019). Failure to plan for your project increases the chances of failure, thus strategies enable project managers to crucially plan for success (Kansal & Sharma, 2014). Thirdly, risk management strategies enable projects to reduce cost of operation and minimize loses. Risk tend to reduce productivity and limit ability to deliver services (Awari, et al., 2016). The author states that strategies enable that risk is managed leading to reduction in expenses and income risk. lastly risk improves the reputation of the organization. A proper strategy helps instill confidence in the organization (Chia, 2016). The implementation of a risk management strategies has been perceived globally as something that should be done only by huge construction. However, (Kuashik, 2010) states that all organizations regardless of size undertaking construction projects should ensure that they have a risk management strategic plan.

In the context of Chinese construction industry, there has been a shift from risk transfer to risk reduction as a risk management strategy (Zou, et al., 2018). In addition, risk management in the Chinese construction industry is essential to construction activities and minimizing losses to enhance profitability (Qiang, et al., 2017). Furthermore, the Chinese construction industry has concluded that early hiring of contractors with knowledge and skill should be one of the risk management strategies for success of projects. In the United-States construction industry risk management strategies are being employed by contractors as they have perceived that managing risks helps solve Legal and other project problems (Kansal & Sharma, 2014). The Author's state that the United States construction industry has shifted to a risk acceptance strategy which takes the form of risk sharing with project owners.in India, construction firms facing risk have shifted towards a risk response technique to managing risk (Artto, 2019). In addition, the risk response technique's being used by the industry to manage risk include adequate insurance, careful planning and management. These strategies have helped to minimize challenges with time, cost and improvement of quality (Chapman, 2019).

2.4 Risk associated with Construction projects.

A risk is the potential for complications and problems with respect to completion of a project and goal achievement (Rezakhani, 2019). A risk is an uncertain future event or condition with the occurrence rate of greater than zero but less than hundred percent and has effect on project objectives (scope, schedule, cost or quality etc.) (Chia, 2016). When risk is accepted and effectively managed, it lessens the impact on project objectives (Mark, et al.,

2020). Additionally, the source of risk in projects are inherent uncertainties, thus construction companies need to face uncertainties head on (Bannerman, 2018). In addition, the Author states that project managers need to decide which project is riskier and plan towards steps to take on potential risk. Knowing the source of risk is essential. This can be done by assessing their effects on project objectives (Hubbard, 2019). Likewise, it is noteworthy to understand that risk is distinguished from uncertainty in that one is measurable(uncertainty) while one is not (risk) (Mohammed & Mohammed, 2019).

In construction, managing risk involves identifying, assessing and prioritizing of the risk (Klemetti, 2016). This can be done by monitoring, controlling and applying managerial resources (Zayed, et al., 2018). The Author states that effective risk management may lead to several benefits including discovering alternative course of action and precise estimates. In addition, Identification of risk is the first step to managing a construction projects thereafter followed by responding to the identified risks (Shen, et al., 2021). Construction risk can be categorized in three groups; finance, design and time (Adams, 1997). Kishan (2014) grouped risk that could occur in construction projects into ten categories which are as follows:

I. Design: These risks can be defective design, inaccurate supplied quantities, poorly coordinated design, rush designs, unqualified designer and lack of consistency between bill of quantities/ drawing and specifications

II. Physical: These include the occurrence of accidents, poor or no safety procedures, supply of defective materials, security of material and equipment, public security, varied labor and equipment productivity.

III. Logistics: These include improper site investigation, inaccurate project program, unavailability of materials and equipment, undefined scope of work, high competition on bids, poor communication between office and field officers.

IV. Legal: These include ambiguity of work legislation, difficulty to obtain permits, resolution of disputes, legal disputes, no specialized and specific arbitrators, poor contract management.

V. Environmental: These include floods, earthquakes, drought, adverse weather conditions and difficulty to access the construction site.

VI. Construction: These include misunderstanding of drawings and specifications, Poor implementation of specifications, difference between actual and contract quantities,

changes in designs, lower work quality in the presence of time constraints, rush in bids and failure to document change orders.

VII. Management: These include poor decision making, poor communication skills, poor planning, changes in management, poor resource management, poor supervisory skills and poor Human Resource skills.

VIII. Cultural; Religion and customs

IX. Financial: These include inflation, delayed payments, unmanaged cash flows, exchange rate fluctuations and political conditions causing monopolization of materials.

X. Political: These include new Government acts and Legislations, inflation, unstable economy, unstable political conditions and unstable security circumstances.

Similarity, (Hubbard, 2019) group risk into categories by nature of the risk. The author stated that risk result from; resource factors, management factors and financial factors. While (Khatleli, 2016) deduced that risk in construction emanates from financial, legal, management, market policy and the client. Generally, risk in construction projects are categorized based their source. Furthermore (Rezakhani, 2019) provides a convenient grouping of risk in construction projects grouped according to source;

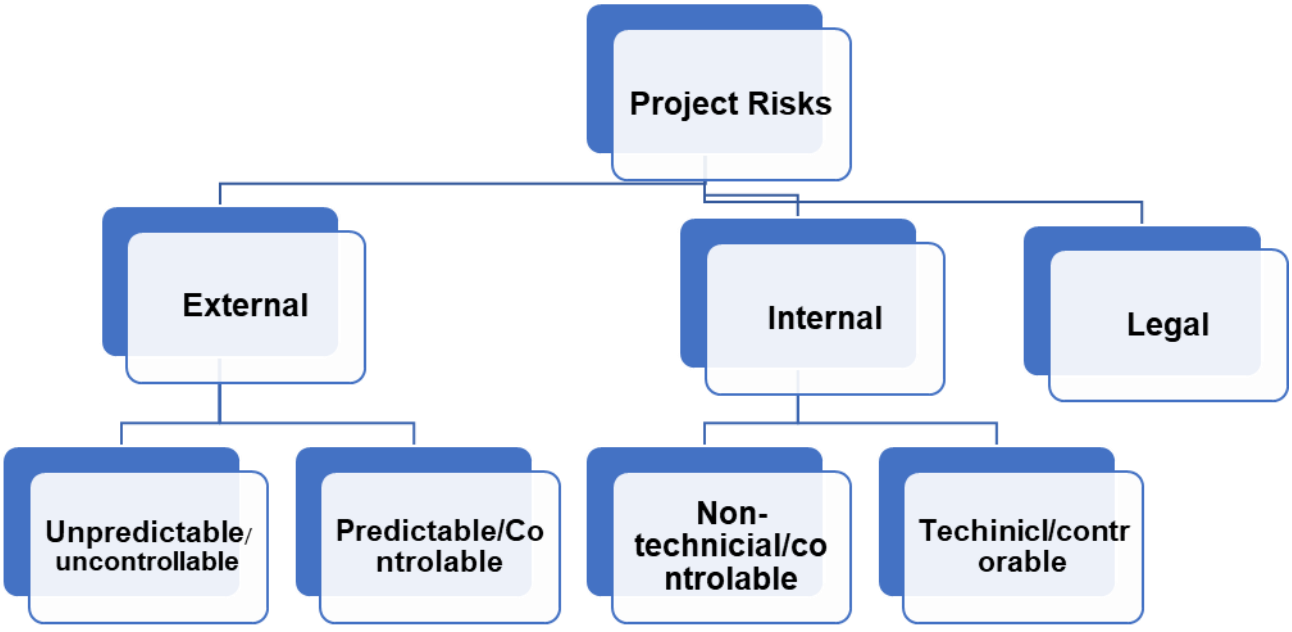


Figure 1- 2.1: Risk in Cconstruction Pprojects

source (Rezakhani, 2019)

Generally, it is impossible to identify all risk inherent in a project (Zhang, et al., 2019). Attempting to identify all risk in construction is time consuming. It is essential to only identify the critical risk and prioritize them (Zou, et al., 2017). Goh and Abdual-Rahman (2016) concurs with (Zou, et al., 2017) adding that consideration needs to be done to risk associated with probability of high occurrence and those with high catastrophic impact on objectives.

(Smith, et al., 2016) deduces that risk could significantly influence the delivery of construction project. The Author's further sate that in Chinese construction industry, more than 30 risk were present, however 12 risk in Chinese construction projects had the direct effect on project goals with respect to quality, cost and time these are;

I. Tight Project Schedule
II. Project Funding Problems
III. Variations by Clients
IV. Design Variations
V. Inadequate Program Scheduling
VI. Inadequate Site Information
VII. Incomplete or Inaccurate Cost Estimations
VIII. Poor Contractor and Contract Management
IX. Poor Competency of Labor
X. Unavailability of Professional Managers
XI. Unavailability of Skilled Labourers

In the context of the Malaysian construction, (Raz & Micheal, 2014) identified that the major risk associated with construction industry include Recession, Political interference. In addition, financial and time risk were found to be the most persistent. In addition, it was concluded that financial risk mainly emanates from material cost being high and delayed payment. While as time risk are associated with uncertain whether patterns. United Arab Emirates risk in construction industry emanate from economic risk such as Inflation, changes in market prices, shortage of materials and low labor supply (Sayegh, 2020). Furthermore, the Author states that some risks include unrealistic schedules, improper intervention and changes in design. Similarly, Australian construction key risk that influence delivery of project objectives include tight project schedule, design variation, unsuitable construction program, Poor planning and inaccurate cost estimates (Tinnirello & Thomas, 2019).

In Nigeria, construction risk factors in engineering projects include those to do with incompetent design team, corruption and fraud as the main prevailing risk (Jumbo, 2021). Furthermore, (Adeniran & Adu, 2019) state that other risk which perpetually hinder the attainment of objectives include inadequate reliable consultants and embezzlement. Consequently, all these risks led to high budgets and funds being diverted elsewhere. Secondly these risks led to weak institutional frameworks and delayed payments to contractors (Adeleke, 2018). Thirdly, this risk goes on to cause delays and cost increases. Where as in the South African construction industry, studies by (Hodgson, 2022) have revealed that the industry is affected by cost escalations in the markets. Furthermore, other risk includes time delays, contractor shortages and insufficient skilled labor shortages. The industry is being affected by poor planning and labor problem (Hubbard, 2019). However, the Author further highlights that the industry is frequently disturbed by power shortages as one of the biggest risks to south African projects. In Tanzania, (Chileshe & Kikwasi, 2015) highlights that the Tanzanian construction industry is disrupted by cost overruns and delays, low capacity of local contractors and inadequate consultants with no proper experience.

Normally, risk in the construction industry could have physical, Monetary, Cultural and Social implication (Chodhry, et al., 2014). The Zambian construction industry is not shy from these risks (Khatleli & Tembo, 2016). The Industry faces risk categories that range from Financial, Economic, Physical, Technology, Legal political, Environmental (Mbuya & Sichombo, 2013). Risk source is where risk originates (Smith, et al., 2016). Some known risk sources in Zambian construction include Economic shifts, management shortcomings and failure to adapt to new innovations. Additionally, risk is anything that increases a risk and is measurable (Brown, 2022). Many risk factors emanate from labor shortages; thus, risk is activated by risk factors and need to be managed.it is worth noting that risk factors can be known or unknown risk. This research will be focused on the two risk (known and unknown).

In conclusion Global perspective of construction risk highlighted that all construction has risk, but has been interesting to note that most industries face at least one of the common risks.

I. Design Changes
II. Safety Concerns
III. Poor Schedules
IV. Poor Planning
V. Incomplete or Inaccurate Cost Estimates

VI. Unskilled Labor
VII. Price Fluctuations/Cost Overruns

Some unique risk in some countries included

I. Recession
II. Power Shortages
III. Uncertain Whether Patterns
IV. Political Risk

2.5 Probability of the risk and its impact on the project.

The use of a combination of experience, insight and quantifiable data to access potential risk is essential for risk management (Goh & Abdul-Rahman, 2016). Managers of projects are responsible for identifying and managing risk in order to minimize, prevent and mitigate them (Malongo & Muhegi, 2023). Furthermore, the Author states Project Managers maximize risk as some risks are deemed to be favorable/opportunities. Effective risk management requires the assessment of uncertain events and addressing two dimensions (Zayed, et al., 2018):

I. How likely the risk is to occur - Probability
II. What is the effect/consequence if the uncertainty were to happen- Impact

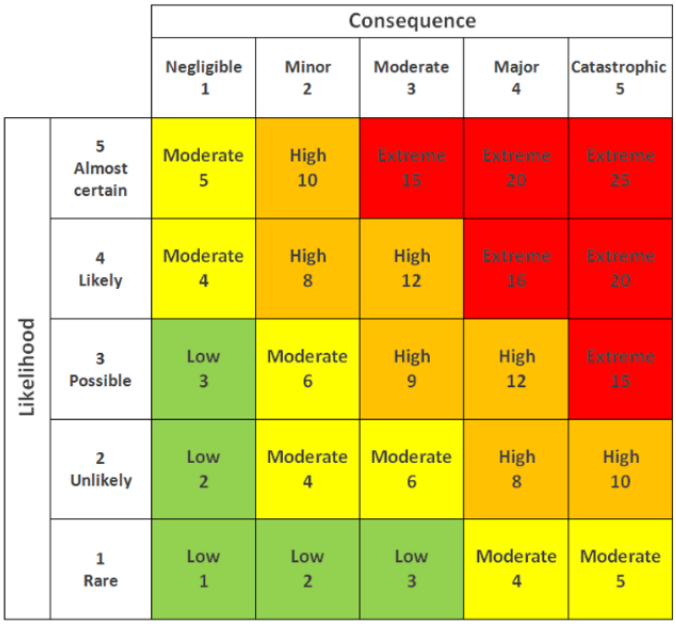
Probability and Impact are the two main components of risk analysis and determining the level of risk in a project (Charkakan & G Heravi, 2018). This is used to categorize and prioritize risk as some risk have severe impact on project objectives but happen rarely, while others have moderate impact but occur more frequently (Kilson & Hullet, 2014). Probability is the likelihood of an event occurring and its consequences. While as impact refers to the level of disturbance likely to be caused by the risk to a project. A combination of probability and impact can help give understanding to the risk Level (George, 2020). In addition, risk is referred to as a two dimensional this is because risk is something which has not yet happened which may or may not occur (Charkha & Heravi, 2023). Risks are defined in terms of their effects on objectives, thus the two-dimensional definition of risk in project management is ‘an uncertain event or condition that if it occurs, has a positive or negative impact on project objectives’ (PMI, 2013). It is common to use the terms probability and impact as they are used to describe occurrence and effects when addressing the

significance of risk (Steyn, 2019). These two are important to consider risk management processes often include frameworks for determining the significant of risk based on both probability and impact as the two-dimensional Probability-impact Metrix (Evrin, 2021).

Assessing risk is part of the Probability of occurrence, this is done by examining each risk and determining if it's an opportunity or threat (Renault, et al., 2016). All projects are unique, this however means that risk on a particular project will be unique to that project and there will be no relevant data on their probability of occurrence (Chia, 2016). Furthermore, it is worth-noting that not all projects are completely unique, as such risk from previous work can still arise. Many Global construction industry rarely have data documenting previous risk due to weak project closure processes (Watema, 2021). Consequently, this causes the process of assessing risk probability more difficult eventually rendering it difficult to determine level of occurrence (Hariharam, et al., 2012). According to (Chapman, 2019) many construction projects have unknown risk. These are risk which are identified but whose details are unknown. Furthermore, the Author states that unknown risk can also have probability of occurrence to be unknown rendering it difficult for team to understand and asses the risk. This is dangerous as risk are possible future events that have not yet occurred which means their probability of occurrence cannot be measured by most construction organizations. The risk dimension of impact assesses the likelihood that the consequences will be different from the expected (Geng & Bridge, 2016). Risk can negatively impact all projects when not handled well. The last 7 years have seen a rise in the number of risks found in projects. According (Amoatey, et al., 2017) projects with improper risk assessment strategies are 68% likely to have a negative impact by risk. Risk can pose severe impact to projects which can translate into resource management issues, delays, scope creep, low performance, high cost and time crunch and eventually project failure. For this reason, management of risk requires the assignment of the risk impact (Bridges, 2023).

Risk exposure combines the risk probability and the risk impact which consequently help construction industries to determine whether they are ready to assume a potential risk (Vose, 2008). Risk exposure is used to measure the potential losses associated with the risk and is calculated in projects by multiplying the risk impact to the risk probability (Mark, et al., 2020). Table 3 below shows how the risk is calculated to help construction projects understand the level of risk they are dealing with and possible mitigation strategies they are to employ.

Table 3-2.2 : Probability-Impact Metrix (risk exposure= risk impact x risk probability)



Likelihood	Consequence: Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
4 Likely	Moderate 4	High 8	High 12	Extreme 16	Extreme 20
3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

Source: (Guthrie, 2022)

Wang, Dulaimi & Aguria (2014) carried out a risk management study on Chinese construction where it was deduced that quality management and hazard environment were the risk presenting the highest probability of occurrence and severity of impact. Similarly, in the United states context, construction industry it has been concluded that risk with the highest probability of occurrence includes; delays, high cost of materials, shortages of labor and unclear scope work. It has also been concluded that hazardous environments and poor project management are the risks with the highest impact on projects. In the Construction industry in India, it has been concluded that several risks arise during projects execution, however, hazard environment coupled with poor work environment, lack of protective clothing have caused a rise in risk in the construction industry. The aforementioned risk has presented itself as risk with the highest probability of occurrence and impact followed by delays and cost over runs (Jayasudha & Vidiveli, 2016). While using Delphi approaches, (Perera, et al., 2014) identified 25 risk associated with impacting construction in Sri-Lanka, However the risk with significant impact included inclement weather patterns, design errors and inadequate planning time.

There are various types of risk that originate in the Egyptian Construction projects. Results have presented that financial risk has the first likelihood of occurrence followed by design risk and time (Priya, et al., 2020). A case done by (Lachepelle & Hundozi, 2018) to study and rank the risk likelihood of occurrence and severity of risk in Libya concludes that cost

and schedule risk are the risks that present the highest probability of occurrence and severe impact to projects undertaken in Libya. Furthermore, the success of sustainable construction depends highly on the judgement of perceived risks and the development of the appropriate risk manage plan. In the Ghanaian construction industry, a study conducted by (Amoatey, et al., 2017) concludes that from the 22 identified risk contributing to projects failure, five were most critical based on probability of occurrence and impact. These included; commodity prices, inflation/exchange rate, land degradation, government bureaucracy and high cost of living.

The consequences of not assessing construction risk on projects leads to project running cost over, poor quality structures and run beyond time. This the importance of risk identification sprung from (Manelele & Muya, 2013). in the Zambian Construction context studies undertaken by (Tembo & Khatleli, 2019) resolved that they are at least 5 risks which cause great impact and have a high probability of occurrence in projects. In Zambia, construction can be ranked as follows;

a) Client Instability (delay to pay, frequent change of orders, slow decision making and unrealistic contract duration)- high prevalence and impact.
b) Luck of interest on delayed payments-Moderate Prevalence
c) Unclear scope of works-high prevalence and high impact
d) Delay in handover- moderate impact high prevalence
e) Suspension of work- high impact, moderate prevalence

Risk Assessment and Evaluation

A construction risk assessment is a calculated process that requires the identification of risk specific to projects. The assessment of risk involves analysis and evaluating to determine the likelihood, impact and consequence (Neeraj & Murugesan, 2015). According to (Murugesan, 2015) one of the major steps in project risk management is the careful identification and assessment of risk. In addition, the Author states that when carefully done, the assessment or risk can provide insight into major issues within a project and help project stakeholders to implement protocols and measures to manage and prevent risk. The risk assessment helps to create awareness of the risk and identify the risk which may be a hazard to workers and the project (Baraka, et al., 2019). Furthermore, The Author determines that risk assessment and evaluation help prevent future risk and help prioritize and control risk. According to (Renault & Agumba, 2016) the risk assessment process constitutes the following process; Identify the potential risk, assessment of risk, development and implementation plans, monitoring and evaluation of the implemented

plans. Ideally risk assessment should be conducted before a project begins until the project is completed (Evrin, 2021).

2.6 Fundamentals of a Risk Management Strategic Models

Successful implementation of risk management strategic plan places requires the organizations support (Mohammed & Mohammed, 2019). Because of the complexity of construction projects and the risk they present. Researchers have been challenged to formulate strategic plans and outlines to help manage risk in construction (Altoryman & Anood, 2014). These plans /models link the management of risk with other activities in the organization (Ranong, et al., 2019). Furthermore, these strategic plans are embedded in the overall strategy, policies and practices of the organizations. This is crucial for successful risk management. According to (Enshass, 2013), the risk management strategic plan should include;

a) Full amalgamation in the organization Governance structure
b) Full accountability and assessment for risk
c) Clear and unceasing communication channels
d) Continuous improvement
e) Application of risk management in decision making

Risk management should be the central focus in construction related projects (Abawi, 2013). In construction, risk management should be considered throughout all aspects of the organization's management including the possibility of delegating tasks to external activities. Globally the ultimate goal of risk management in construction is to provide the organization with an updated accurate and comprehensive knowledge regarding the risk. Secondly, it is to ensure that the level of risk of the organization is consistent (Adeniran & Adu, 2019).

Iqbal, et al (2015) developed a risk management strategic plan for reporting the significance of the different types of risk and their effectiveness in construction in United Arab Emirates. Risk event in United Kingdom had been identified, classified and assessed by (Altoryman & Anood, 2014), the Author proposed a strategic plan for recommendation of risk management projects. Choudhry, el at. (2013) in their study identified and prioritized the common risk management practices to address risk, the status of implementation of risk management system in the organization and their barriers to effective management if risk in Pakistan. Furthermore, a risk management strategic plan was done by (khan & Hassan, 2013), they made an emphasis that risk identification process, the risk strategies, the risk

evaluation process are an effective way to mitigate risk in India. The models by the Author enabled for better categorizing of risk and representation of the relationship between risk evaluation process and risk mitigation. In addition, the risk models named ‘Alien Eyes Model’ show the Hierarchy level of risk and the affected relationship between risk. Furthermore (Nawaz, et al., 2019) introduced a risk management model to help identify the critical risk and mitigation plan from a contractor viewpoint. Further (Khan, et al., 2021) proposed a comprehensive risk assessment model to identify the critical risk factors and provide a way to assess identified risk better.

Srinvasan & Rangaraj (2020) developed a framework for safety risk assessment and anticipation of costing. The framework encouraged consensus decision making among a group of stakeholders for the benefit of the project. Secondly, the framework minimizes biased decision making. Furthermore, (Raj & Wadamudrakar, 2018) shows that in Lithuanian, construction firms differ significantly in how they approach risk management. The Author states firms had combined probabilistic risk approaches which enhances the risk management framework for construction projects. In agreement, (Vinodh & Therese, 2017) concluded that risk management in a well-executed project guarantees a complete understanding of the services, goals and responsibilities as well as gives the projects better perspective. Scheig (2006) in his research, focused on risk treatment and risk mitigation. The Author identified strategies for project considering real world sceneries and conditions. This was done in an attempt to find measures to reduce risk and formulate frameworks. In Addition, the Author formulated a risk assessment approach and gathered resources for construction projects. He further included a risk assessment software to help recognize risk.

2.7 Summary of the Literature

The above Literature highlights that many researchers have done research on risk management in construction, however very little of this research highlights that from the Zambian perspective. Not much effort has been done, this is due to inadequate risk management strategies being employed in the construction industry in Zambia. Many projects are not completed on time and within the allocated budget. There is still an immerse need to educate employees and stakeholders about risk management in projects. There is a wide world concern of the performance of construction projects as reports have revealed that construction projects have challenges with delivery of projects on time, on schedule and budget (Alshibly, et al., 2013). The Author concludes that this defeats the core definition of a successful project. The performance of projects depends on factors such as the implementation of risk management strategies (Chodhry, et al., 2013). The Literature

reveals that risk management has potential to contribute to the success of construction projects. In the previous 10 years, construction projects have seen a rise of risk and uncertainty. Additionally, project end users expect more. As such when things go wrong have resorted to seek litigation (Wang, et al., 2014). Such are issues which have are being faced by construction companies globally. Those in Zambia need to shift to thinking more about the correlative relationship between new risk and the success of projects (Geng & Bridge, 2016). Risk management in Jordan has become an important part of the management process for projects (Alshibly, et al., 2013). In fact, it has become the foreground of business. Amadi, et al. (2015) believes that the circumstances found in construction industries had led to the adoption of these strategies.

Effective use of project risk management such as incorporation of risk strategic plans are considered key to the support of processes. They help in giving value to processes such as quality, cost, time and change. A study undertaken in south Africa by (Klerk, 2022) to access the extent to which project control and risk management contribute to ensuring project success and identify the factors that contribute to project success. In this study, the results indicated that project controlling and risk management have a significant influence on the performance of the project. Furthermore, studies done by (Hariharam, et al., 2012) on the 'impact of risk management on IS projects success in Syria' and 'to assess the impact of the risk management on information systems projects in Syria' indicated that most construction companies don't have a risk management plan and thus do not have a formal risk management method for managing risk. Secondly the studies also indicated that using risk management also increases the success rate of projects. Furthermore, a paper presented by (Baker, et al., 2021) 'Does the risk management contribute to project success'. The paper used a meta-analysis of empirical evidence which supports or opposes the claim that risk management does in-fact contribute to project success. The finding of this study indicated that over the 10years period much has become known as to what causes project success or failure. There is still very little knowledge known to help construction projects. However, despite this, the study indicated that there is a positive correlation between risk management and project success with key elements being stakeholders of projects.

2.8 Research Knowledge Gap

The table gives a presentation on the evidence of the research gaps that form a basis for further investigation

Table 4- 2.3: Gaps Identified in the Literature

No.	Author and year of publication	Research Title	Methodology	Findings	Research Gap
1)	Nawaz, Waqar; Shah, Muhammad and Muhammad (2019	An innovation framework for risk management in construction projects in developing countries; Evidence from Pakistan	Survey-based study. Data collected from 22 contractor firms working on 100 diverse projects in Pakistan. Further a questionnaire was developed for gathering respondent's basic information	There is a higher degree of correlation between effective risk management and project success. The study reveals the importance of risk management techniques, their usage, implication and the effect of these on the success of construction projects	Within the existing research regarding risk models, there is very little research done on developed countries and developing African construction to investigate the relationship between effective risk management and project success. Furthermore, data of the study was derived from contractor in Pakistan there by expressing their perspective. A methodology Gap was found
2)	AL Hammadi, Tyeh , Alaloul and Salem (2021)	Risk management strategies in construction organization	Questionnaires distributed to Engineers and Consultant firms from the construction organization, Ministry of Works and Housing and international agencies and had a 65.77% response	Indicated that the most popular method for risk factor determination in Gaza is the checklist (RII+84%). For risk analysis relying on experience in the direct assessment is the	The study aimed at small samples of construction in the Gaza Strip and evaluated scientific methods and techniques for the detection of risk. Does not represent the conclusion of other engineering projects involving a larger scale sample size. Sample size

				most prominent (78%) for methods of risk avoiding before the project implementation and dependence on experience in the work and planning phase was the most prominent, finally the study indicated that following up on the implementation was ranked highest factor for avoiding risk thereby concluding	and methodology gap.
3)	Hamid, Shulng, Kassem, Khoiry (2022)	The current risk management practices and knowledge in the construction industry	Data was collected using survey questionnaires and distributed to Yemeni construction projects	Risk identification approaches such as judgment and historical data are to be employed for risk assessment	Data was collected only from 4 cities in Yemen. Thus, did not concentrate on the creation of a decision support system to facilitate risk management adoption
4)	Alferjany and Alshammakh (2023)	The effect of risk management practices on project performance: a case study of the Libyan construction industry	The questionnaire was designed based on cluster sampling and distributed to the selective company managers. Structured equation analysis modeling is used for analysis of information	The study found that risk management practices had substantial and favorable effects on the success of the project execution and awareness of quality management in terms of risk was encouraged	Limitation in sample size as the study focused on Libya in Tripoli only. Secondly, the study was cross-sectional in design

5)	Choudhry, Iqbal, Ali, Holschemacher (2015)	Risk management in construction projects	Based on the findings of a questionnaire-based survey	The study highlighted 37 risks that need attention in projects, the finding also indicates that sharing of risk responsibility is essential to construction projects	Describe types of risks particular to construction projects in Pakistan
6)	Tembo and Khatleli (2019)	Perceptions of the risk affecting building Projects in Zambia	A triangulated mixed approach using quantitative data was used to validate qualitative data. Semi-structured interviews and randomized questionnaires were used to collect data 15 heterogenous respondents to the interview came up with 55 risk and the 198 respondents from the questionnaire	Most risks are consultant related. Thus, consultants are to be accountable for the risk in projects, additionally risk factors where risk management should be concentrating on design, monitoring, supervision related	The research focuses on building sector participants that is clients, consultants and contractors. The study does not focus on all types of construction but only on building

(Author, 2023)

2.9 CHAPTER SUMMARY

This chapter presents a review of relevant literature on the topic ‘risk management strategies and their correlation to the completion of construction projects’. The chapter explores the most effective strategies for completion of construction projects. It also highlights how each of the strategies relates to project performance based on the parameters of cost, schedule, quality, customer/end-user satisfaction and time. Furthermore, the chapter looks at critical success factors for the models of risk management strategies.

The next chapter populates the Theoretical and Conceptual framework. And will give an elaboration of the relationship between the dependent and independent variables.

CHAPTER THREE

THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1 Introduction

This chapter presents the theoretical and conceptual framework used to direct the flow and understanding of the topic. It identifies three theories namely: Diversification theory, Theory of constraints and Stakeholder theory. Furthermore, it identifies two conceptual frameworks related to the topic. The chapter then proposes a conceptual framework for addressing the research problem by looking deep into the independent, moderating and dependent variables. Lastly, the chapter ends with a summary conclusion of the theories and concepts discussed.

3.2. Theoretical Framework

A theoretical framework is the guide for the research (Adam & Hussein, 2018). It is a framework based on existing theories in a particular field and reflects the hypothesis of the study (Akintoye, 2015). In addition, the Author states that It serves as a foundation upon which research is constituted. Sinclair (2007) as well as Fulton and Krainovich-Miller (2010) compare a theoretical framework to a map or plan. Likewise, the theoretical framework guides the researcher and ensures that the researcher does not deviate from the confines of the research. Brondizo, Leemand & Soleeki (2014) concur that the theoretical framework is the specific theories or theory about aspects of human endeavor that is deemed useful to a study. Thus, it consists of theoretical principles, constructs, concepts and theories (Imenda, 2014). The purpose of the theoretical framework is to provide the structure of how the researcher defines the study Philosophy, Epistemology, Methodology and Analysis. In addition, it guides what kind of data is to be accrued for a particular study (Ravitch & Carl, 2016). various Theoretical works have been adopted to study risk management strategies in the construction industry.

3.2.1 Diversification Theory

Diversification Theory is a portfolio diversification technique that combines a variety of assets to reduce the overall risk of an investment (Arslan, et al., 2023). It aims to maximize returns by investing in different areas that would each react differently to the same event (Oyewobi, et al., 2013). In addition, it is a useful tool for reaching long-range financial goals and minimizing the risk in projects (Raudszuz, et al., 2014). The theory was developed by Nobel prize-winning economist Harry Markowitz (Shaw, 2021). The theory aimed at diversifying an organization’s portfolio in such a way that it earned particular returns with

the smallest risk. Diversification refers to the process of increasing the variety or diversity of something (Ruddock, et al., 2014). According to Harry Markowitz, there are two types of risk namely systematic and unsystematic risks (Adam & Hussein, 2018). Unsystematic risk is avoidable however systematic risk is highly unavoidable and thus needs to be treated (Jewell, et al., 2014). Diversification has the potential to reduce risk and can provide a cushion against unsystematic risk factors (Kazaz, et al., 2015).

The theory of diversification can be used in construction to manage risk (Horta & Kapelko, 2016). In addition, the theory states that it is a poor strategy to invest everything in one project because if one project fails, it could affect the whole organization (Mahinkanda & Sandanayake, 2019). In agreement, (schmidt, 2021) diversification theory aids in the reduction of risk and attempts to avoid negative scenarios and outcomes. Consequently, this leads to the management of risks and the reduction of uncertainties in projects (Mahroum & Al-Saleh, 2015). Risk is interpreted as the possibility of suffering a loss leading to lower return and higher volatility eventually resulting in additional cost (Sung, 2017). Thus, diversification is the strategic direction that many construction firms are pursuing to improve the performance level of their projects (Ravanshadnia, et al., 2010). Diversification is one of the four basic growth alternatives for the construction industry (Raz & Micheal, 2014). In addition, studies have revealed that construction industries choose to diversify for several reasons however, some of the main reasons are risk spreading, profitable growth and regular cash flow (Zhao, et al., 2017).

The diversification theory entails the process of allocating resources and capital in a way that the project's exposure to risk reduces (Yee & Cheah, 2016). The theory relates to the study in that construction industries can reduce risk or volatility by investing in assets and resources (Mahmoud, 2007). Furthermore, it relates to the study as it compares to a form of risk management strategy (Imenda, 2014). Essentially, it combines a variety of assets to reduce the overall risk of an investment portfolio while lowering the volatility by holding non-correlated assets to eliminate unsystematic risk (Raj & Wadamudrakar, 2018). The theory of diversification focuses on ensuring that resources and other project materials are expanded to a wide range of products or fields of operations all this to manage or reduce the risk in construction projects leading to meeting project objectives (Ghosh, 2017). In Addition, the Author states that construction projects are a great source of development as they provide the much-needed service required for service delivery to the.

The Government spends huge sums of money to ensure the development and provision of services in the country. However, these developments have been slow (Qiang, et al., 2017).

Projects seem to go beyond their required delivery time and many are not of the required quality (Alshibly, et al., 2013). In some instances, projects are not fully completed and are abandoned resulting in delays in service provision, wastage of funds and depreciation of assets (Goh & Abdul-Rahman, 2016). Thus, in construction projects, the diversification theory aids with the reduction of risk that could consequently harm projects (Goldlwhite, 2009). Management of risk in construction projects can be managed by diversification (Amer & Mohmoud, 2020). This is evident in that the more construction industries diversify in the types of projects being done (Geng & Bridge, 2016). This diversification in different projects enables construction projects to understand the risks that can be present in different projects enabling them to handle them better (Horta & Kapelko, 2016). In construction projects diversification is used to reduce risk in such a way that when one project faces uncertainty the company that had used a diversity strategy can still depend on other projects in which it has diversified (Chodhry, et al., 2014). Or essentially can have a prior understanding of the risk since they have known of it (Kazaz, et al., 2015). The theory relates to the study in that it aids with risk reduction in the same way risk management strategies aim to reduce and manage risk in projects.

3.2.2 Theory of Constraints (TOC)

The Theory of constraints (TOC) is a methodology for identifying the most important limiting factor that stands in the way of goal achievement (Trojanowska & Dostatni, 2017). It focuses on improving the constraint until it no longer poses as a limiting factor (Santos & Varela, 2014). In Addition, the Author states that it takes a scientific approach to improvement. The theory was invented by Eliyahu M. Goldratt in 1984. Since then, it has continued to evolve, and develop and has become a significant factor within the world of management of projects (Silva, et al., 2015). It is a tool that helps in optimizing industrial processes. In addition, the theory's main purpose is to focus on what prevents processes from being carried out optimally (Yu & Petter, 2014). The ultimate goal of the construction industry is to provide services and to make profits (Santos & Varela, 2014). The theory provides tools to help in the achievement of this goal (Ma, et al., 2015). The core concept of the theory of constraints is that every process has a single constraint. However, these processes can be improved when the Constraint is identified and eliminated (Ghaffari & Emsley, 2015). A constraint is defined as anything that prevents the organization team from actualizing its intended goals (Imenda, 2014). Every process has a constraint. thus, focusing on the improvement of this process is the most effective path to improved profitability (Fadzali, 2021).

Every system was built for a purpose (Vieira, et al., 2016). Every action undertaken by an organization should be judged by the impact it could have (Abdulah, 2017). This implies that before an organization can deal with improvements, the organization must first define its goals (Aigbavboa, 2014). This enables it to better judge the impact any constraint may have on these goals (Brondizo, et al., 2014). Removing the constraints present in systems enables the improvement of the processes and the system as a whole (Jayasudha & Vidiveli, 2016). In addition, a systems constraint is anything that seeks to limit it from achieving its highest performance and goals (Phillips, et al., 2003). According to (Sabahudin, et al., 2012), the theory of constraints states that every system in reality has a few constraints. It is essential to identify the constraints in every system and prioritize them accordingly. Furthermore, (Hamrol, 2015) states that success in the implementation of the theory has many benefits namely;

1) Increased profits
2) Fast improvement resulting in focusing all resources and attention on one area of critical need
3) Improved capacity leading to optimizing the constraint enables more products to be manufactured
4) Reduced lead times leading to smoother and faster product flow
5) Reduced inventory resulting in eliminating the bottleneck

In the management of projects, the theory can be used to identify constraints that are preventing projects from being completed on time and within budget (Arrais-Castro & Varela, 2015). By focusing on areas and working to mitigate the constraints, it's possible to significantly improve project outcomes (Mainardes, et al., 2011). The theory provides a framework for identifying and addressing key project execution and implementation issues which could consequently lead to better project performance (Diering, et al., 2015). In addition, the Author states that the goal of the theory is to identify and remove constraints for a business to realize its full potential. According to (Leao & Soare, 2011) before the implementation of the theory, organizations should first consider their current level of productivity and assess the need for improvement. Secondly, organizations should consider the constraints that cause the greatest bottleneck and determine a feasible way of dealing with them. The theory of constraints states that change should be introduced at the start of the process and must start from the weak link (Imenda, 2014). This is to ensure that the improvement of other elements in the system and improving efficiency will not affect the performance of the system.

The Theory applies to the study in that a construction project is like a system. This is because it involves several activities in one project. Construction projects are highly complex systems that emanate several risks (Ravanshadnia, et al., 2010). In construction projects, risks are the constraints (Raudszuz, et al., 2014). The constraints in construction projects present themselves in the form of resource, project scope, cost, time, time, quality constraints (Schieg, 2018). However, different projects have different constraints and managing these needs different requirements (Rivera, et al., 2016). Furthermore, the theory focuses on improving the constraint until it no longer poses as a limiting factor (Santos & Varela, 2014). In the same way, construction projects need to reduce risk until they no longer pose a threat (Iqbal, et al., 2015). By identifying these constraints and dealing with them, the overall performance of the project could be improved and lead to a reduction of risk and uncertainty (Trojanowska & Dostatni, 2017). One of the appealing characteristics of TOC is that it inherently prioritizes improvement activities (Raj & Wadamudrakar, 2018). Furthermore, the Author's state that the top priority is always on the current constraint being faced. In conclusion, the theory of constraints offers a high methodology for creating improvement. The theory relates to that study in that projects are complex systems/processes and thus experience constraints which limit the performance of the project. Thus, the theory helps in the understanding that before improving the project systems all goals and objectives must be understood and all constraints must be eliminated or reduced.

3.2.3 Stakeholder Theory

The Stakeholder theory is a theory of organization management and business ethics that addresses morals and values in managing an organization (Gutterman, 2023). According to (Oke & Aigbaboa, 2017). it was originally defined by Ian Mitroff in 1983 and later detailed by R. Edward Freeman in 1984. The theory argues that firms should create value for all stakeholders (Fredrick & Akintona, 2022). A stakeholder is typically anyone who has an interest in a project (Dwivedi & Herry, 2012). According to (Lesser, 2016), a stakeholder can also be defined as any person or group outside or inside the organization who can affect or be affected by the achievement of the firm's objectives. Secondly, the Author also defines a stakeholder as someone with a stake or claim in the organization. Dwivedi & Herry (2012) in addition, state that stakeholders can be impacted by the decisions and actions made by an organization either positively or negatively.

Stakeholders contribute to the wealth of an organization in various ways (Munsaka, 2013). The stakeholder theory is based on an organization's management and business ethics that

are applied to multiple entities (Employees, Management, suppliers, government, society/community and others) formally called stakeholders (Roeder, 2013). Furthermore, it has been proven empirically that there is an association between stakeholders and project success (Mabuyuyahulu & Krugar, 2023). Risk management practices lead to a decrease in costs (Jewell, et al., 2014). Furthermore, companies value risk as they also bring about opportunities (Murugesan, 2015). The theory provides new insights into possible rationale for risk management (Gao, et al., 2019). It holds relevance to the topic of study as it states that organizations that want to create value must create value for all integral parties involved in the projects, especially with stakeholders (Stieb, 2009). The implementation of an organization's risk management requires Stakeholder support. Therefore, the stakeholder theory is a managerial instrument that contributes to risk management (Cochrane, 2019). Construction risk is a reality but does not have to limit the organization (Mainardes, et al., 2011). Stakeholder theory states that proper management of stakeholders in construction could lead to minimizing (Kishan, et al., 2014). Risks have a significant impact on construction projects, thus minimizing the risks in projects will improve the outputs of projects (Phillips, et al., 2003).

In relation to the study topic, the theory states that all organizations should seek to manage stakeholders involved in their projects. It seeks to optimize relationships with stakeholders thereby improving efficiency throughout project execution (Asma & Sunny, 2018). The success or failure of an organization is strongly influenced by how well it meets its stakeholder needs (Yitmen, 2015). The role of stakeholder management in an organization is important for increasing flexibility and productivity which can lead to customer trustworthiness and obtain a strong reputation (Rajabou, et al., 2015). In addition, that would essentially increase the competitiveness of the organization (Kamau & Mohamed, 2015). Hence, stakeholder theory can be applied to the management of projects because it guides the project on how to increase stakeholder involvement and participation in projects to lead to risk reduction (Pacagnella, 2015). When stakeholders are highly active in projects it reduces the level of risk caused by miscommunication which can arise in projects (Ndlela, 2018). However, organizations must recognize the right stakeholders at the commencement of the project and share critical ideas and plans (Gutterman, 2023). In relation to the study, the stakeholder theory seeks to manage relevant stakeholders for the improvement of the project

3.3 Conceptual Framework

A conceptual framework is a structure which is used to best explain the natural progression of the phenomenon (Hassan, 2023). It presents an integrated way of looking at the research problem (Adom, et al., 2018). According to (Akintoye, 2017), it is a representation of the relationship the researcher expects to see among variables of the study. From a statistical perspective, the conceptual framework describes the relationship between the main concepts of the study (Imenda, 2014). Furthermore, it is arranged in a logical structure to aid with the provision of a picture or visual display of how the ideas of the study relate to each other (Latham, 2017). The framework holds importance as it is what aids in the identification and construction of the worldwide view of the phenomenon to be investigated (Hamrol, 2015).

3.3.1 Conceptual frameworks on risk management strategies in construction projects

Risk management occupies an important position in project delivery and the decision-making process (Adam & Hussein, 2018). Earlier studies which have examined projects undertaken by Local authorities in a rural environment have identified critical challenges confronting the projects (Evrin, 2021). Despite efforts of decentralization, development projects undertaken by local authorities still face major challenges which cause delays in service provision (Kamau & Mohamed, 2015). According to (Ferede, et al., 2021) the conceptual framework below has deduced that factors which lead to project challenges in rural development can be clustered into five (5) groups namely; social amenities challenges, institutional challenges, economic challenges, engineering challenges and natural challenges. The framework indicates the impact of developmental challenges on construction projects and the impact of factors impacting upon rural infrastructure development which are clustered into five thematic groups namely; infrastructure availability and development, construction method approach, local resource and stakeholder participation, contact formation and contracting procedures, environmental sustainability and climate change (Badu, et al., 2013). The factors impact projects and lead to project good performance.

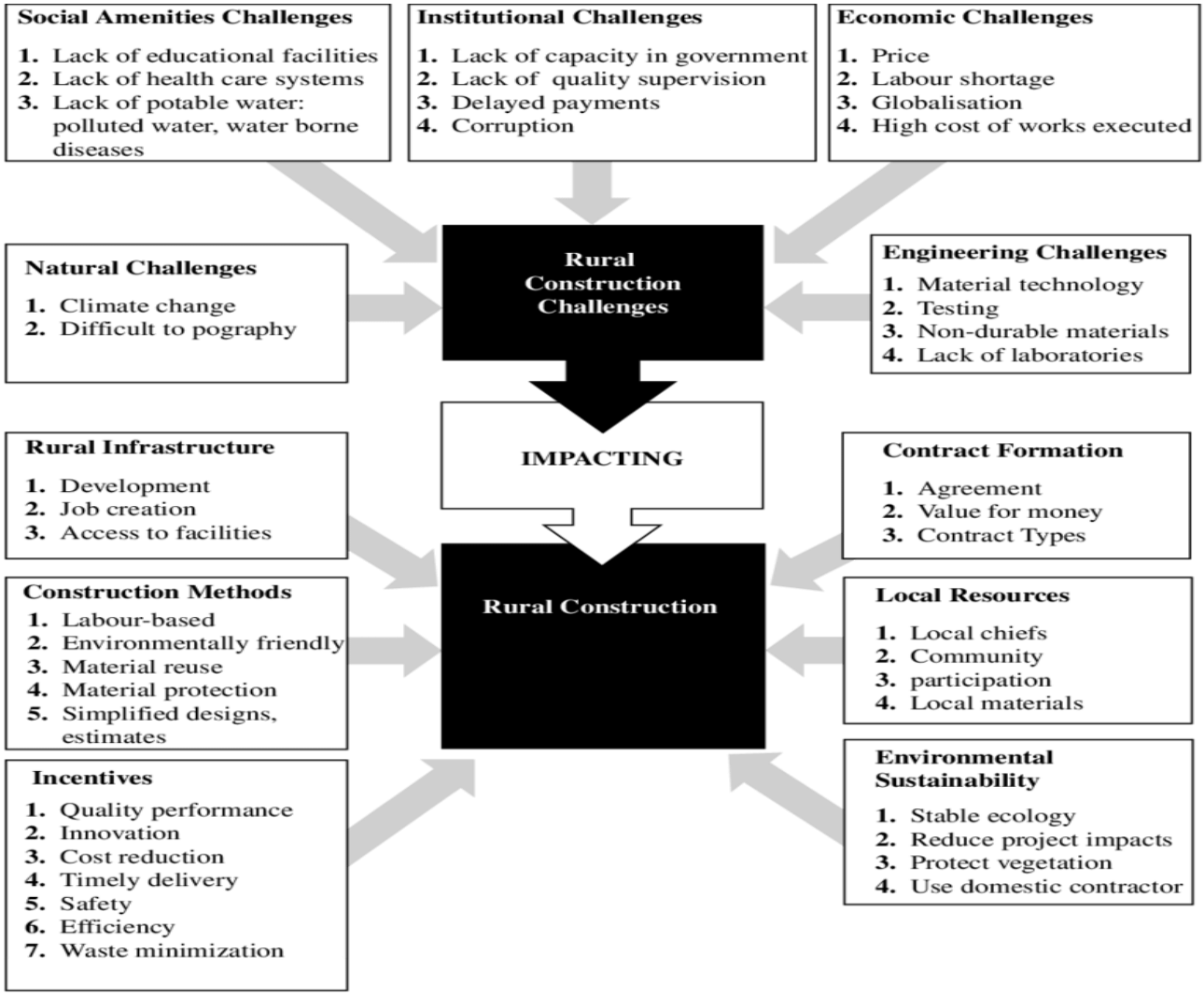


Figure 2- 3.1 Conceptual Framework for Rural Construction Projects

Source: (Badu, et al., 2013)

Furthermore, (Tembo-Silungwe & Khatleli, 2017) proposed a risk model for the management and allocation of risk in construction projects. The Authors stated that the starting point of risk allocation is the selection of an appropriate contract type based on the characteristics of the project. In addition, (Sibanyana, et al., 2012) state that once this is done, risk can be allocated appropriately. The nature of the risk is directly related to how it will be allocated, assessed and treated. Consequently, this will influence the method of risk management strategies. Depending on how these processes are done they will eventually

influence and impact the overall project performance. Fig 3.2 below shows the framework for the effects of risk allocation on projects using rational decision making.

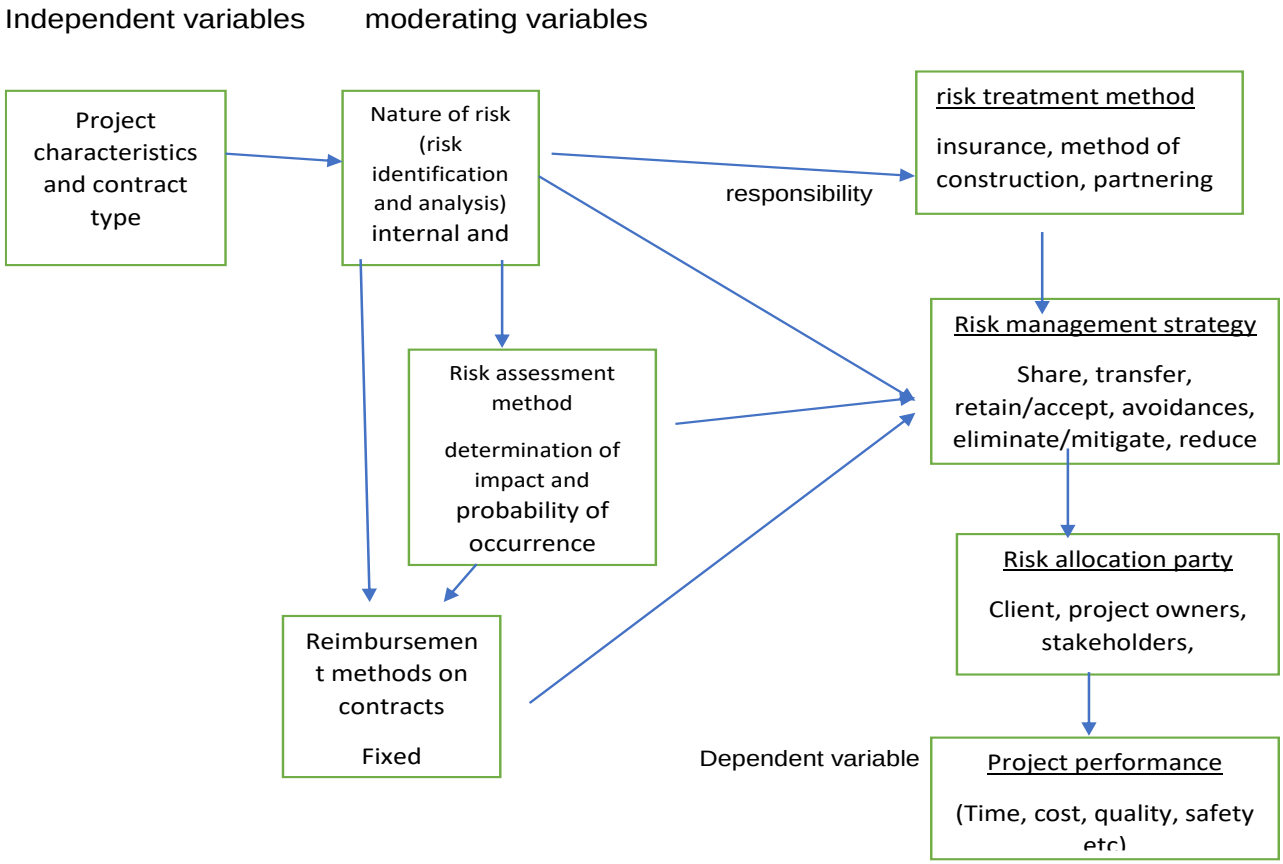


Figure 3- 3.2 Conceptual Framework for Risk Management and Allocation in Construction Projects

Source: (Tembo-Silungwe & Khatleli, 2017).

3.3.2 Conceptual Framework for the Study

Poorly managed risks result in disputes, tensions, quality shortfalls, cost overruns and time over-runs (Khatleli, 2016). In extreme cases poorly, managed risks lead to abandoned projects (Landage, 2016). The management of risk is influenced by how risk have been allocated (Ghaffari & Emsley, 2015). The conceptual framework for the study will be presented on the various considerations to be made before the actual allocation of risk and treatment to influence project outcome (Diering, et al., 2015). Very often in the existing body of knowledge risk allocation studies have emphasized who owns the risk and how a particular risk should be treated and between.

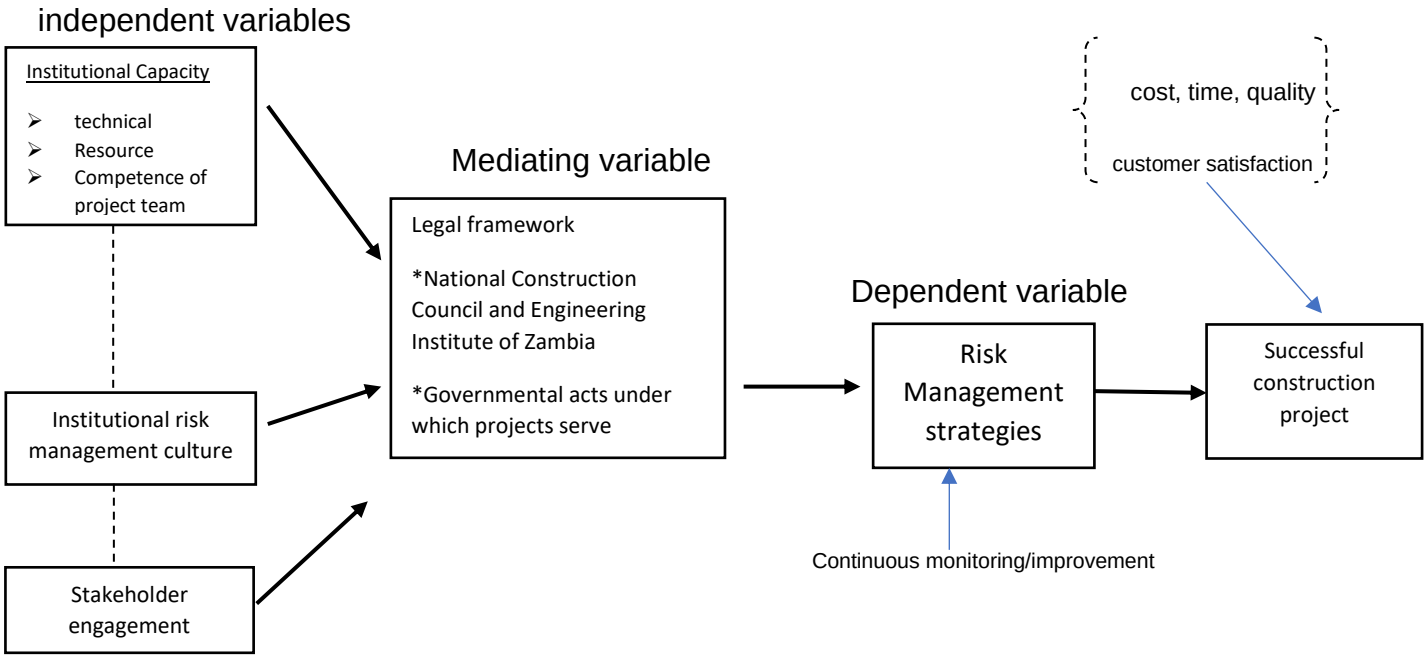


Figure 4- 3.2 Conceptual Framework for the Study

Source: (Author, 2023)

3.3.3 Explanation of the Variables

The proposed framework shows how risk management strategies were conceptualized as the dependent variable. This led to successful project completion whose indicators of performance were timely delivery, quality work, budgeted cost and client satisfaction. This was influenced by the institutional technical capacity, the competence of the project team, the capacity of the institution in terms of resources and availability of other things, the engagement of stakeholders and the institutional risk culture. Furthermore, the process was influenced by the environment under which projects are operating which is the legal framework. The framework variables are as follows:

3.3.4 Dependent variables

The Dependent variable for the study was risk management strategies which led to a successful construction project. Risk management strategies are plans on how organizations intend to manage risk (Evans, 2019). According to (Watt, 2021), a completed project is successful when it has achieved its project goals and meets stakeholders' requirements. In Project management, the successful completion of a project means what was agreed to be delivered has been achieved (Alshibly, et al., 2013).

3.3.5 Independent variables

The independent variables for the study are institutional technical capacity, institutional capacity, technical competency of the project team, stakeholder engagement and institutional risk management culture.

Institutional technical capacity is particular capabilities such as knowledge and skills that are required by individuals in an organization to elaborate on their tasks (Domorenok, et al., 2021). In addition, (Ashcraft, 2022) states that it refers to tacit knowledge, training and experience of staff along with the systems in place required to operationalize policy.

Institutional capacity is the capability of an organization to achieve set goals and objectives (Corte, 2019). It is influenced by many things such as resources, financing, knowledge, skills and many more (Frost, 2020). In addition, it refers to the quality of leadership, incentives, systems, resources and personnel, goals and objectives of the institution (Lucs, 2016).

Technical competency of the project team is defined as the application of knowledge and skills needed to perform effectively in a specific job (Liu & Cross, 2016). According to (Craig, 2015) it is the knowledge that is required or deemed useful in a specific role

Organizational risk management culture refers to a system of values and behaviors present in an organization and shapes the risk decision of management and employees (Chapman, 2019). According to (Tattam, 2023) culture is embedded within people's thoughts which then influences their behaviors and actions.

Stakeholder engagement is the process of communicating, interacting and influencing the project stakeholders for the overall good of the project (Kujala, et al., 2022). It is important to project a project as its completion often depends on how stakeholders see the project (Adom, et al., 2018).

3.3.6 Moderating variables

The moderating variables for the framework were legal framework and regulations. These variables are what influence the environment in which projects operate. The legal framework is a system of rules, rights and obligations that govern how projects would be carried out (Donkin, 2014)**.**

3.4 Chapter Summary

The Chapter presented the theoretical and conceptual framework for the study. The chapter utilized three theories that were applied to the study i.e. Stakeholder theory, Diversification

Theory and Theory of constraints to lay out the theoretical foundation of how the risk management strategies relate to the completion of projects. The chapter presented a conceptual framework for the study incorporating the independent, mediating and dependent variables and their relationship to the research.

The next chapter will focus on the methodology used in the chapter.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

The chapter outlines the research methodology utilized in the study. It commences with delivering the research approach, research design, philosophy of the study, epistemology and ontology. Furthermore, the chapter describes the population, sampling techniques and sample size. Thereafter, discuss the validity, reliability and ethical considerations of the study. Finally, it concludes on the.

4.2 Research Approach

A research approach is the collection of procedures and plans that decide the process of research (Solanki, 2022). The research approach decides the data collection, analysis and interpretation of data in a study (Tahedoost, 2022). There are three types of research approaches namely; Qualitative, Quantitative and Mixed Method research approach (Hewage, 2021). A qualitative research approach is an approach for exploring and understanding the meaning of individuals and groups to a social or human problem (Fadzali, 2021). Furthermore, the approach aims to collect primary data and analyze it using specific methods of interpretation. It is useful for studying a phenomenon with limited accessible information as its nature is usually to explore (Creswell, 2013). A quantitative research approach tests objectives and theories by examining the relative among variables (Creswell, 2013). Quantitative research employs numerical values derived from observations to explain and describe a phenomenon (Corte, 2019). This method employs empirical statements and descriptive statements. Mixed method simply combines quantitative and qualitative approaches in the study (Goertzen, 2017). The approach involves the collection of qualitative and quantitative data. Integrating the two forms of data and using distinct designs may involve philosophical assumptions and theoretical frameworks (Apoke, 2017). This approach provides researchers with opportunities to compensate for inherent method weaknesses and offset bias (Taherdoost, 2016). The combination of both quantitative and qualitative methods provides for a better understanding of the research problem.

This study used a Mixed method research approach (explanatory sequential). This was done because it combines both elements of quantitative and qualitative data collection and analysis providing more depth to the findings (Chetty, 2016). A mixed research approach

was appropriate as it helped describe the variables leading to the development of the required risk management plan and answers research questions to gain a more complete picture than a standalone study.

4.3 Research Design

A research design is a step-by-step approach used by a researcher to conduct a scientific study (Boru, 2018). It includes various methods and techniques to conduct research. Research designs are what hold the activities involved in the research (Shona, 2021). They are the bridge between the research questions and the execution or implantation of the research (Wright, et al., 2016).

According to (George, 2021), there are three major categories of mixed method approaches namely; Sequential, Concurrent and Transformative. In the sequential. The Sequential designs either collected quantitative or qualitative data in the first stage and processed to collect the other data in the second stage (Thakur, 2021). Whilst as the Concurrent designs simultaneously collect both qualitative and quantitative data at the same time (Akhtar, 2021). Transformative designs are those that are guided by a theoretical perspective (Nemanja, 2020).

For the study, an Explanatory sequential research design was used. The design ensures that quantitative data is explained according to the results and is sometimes used to explain outliers that are not consistent with collected data (Toyon, 2021). The explanatory design provides a deep insight into a specific subject (Vaus, 2021). Furthermore, it is used to explore, study and analyze the correlation between risk management strategies and completion of projects. This approach offers a better method for evaluating the numerous research phenomena (McManus, 2022). In the Sequential explanatory design, Quantitative data is collected from respondents and then qualitative data is collected in the second phase (Opedia, 2021).

4.3.1 Research Philosophy

A theoretical perspective refers to the philosophical stance of informing and determining the methodology of the research. Research Philosophy is an important element used to determine which research design is to be used (O'Gorman & MacIntosh, 2016). In agreement, (Cheety, 2016) concurs that a research philosophy is about the development of knowledge. It is about how data about a phenomenon is to be collected, analyzed and used (Saunders, et al., 2009). Generally, there are four types of research philosophy based on the researcher’s views about the research process namely: positivism, interpretivism,

realism and pragmatism (Muhaise, et al., 2020). The research philosophy deals with epistemology which is the assumptions about human knowledge that aim to explain what is acceptable, valid and legitimate (Gray & Goregokar, 2013). Furthermore, it deals with ontology which is an assumption about the nature of realities and shapes the way the study objectives are seen.

The study adopted a positivist research philosophy. This was done as this type of philosophy ensures the use of highly structured methods of collecting both qualitative and quantitative data and uses large samples for data collection (Alexander & Demitry, 2013). Positivism was used as it entails working with an observable social reality to produce generalization.

4.3.2 Epistemology

Epistemology Is the theory of knowledge that is concerned with the mind's relation to reality (Moser, 2016). Generally, Epistemology is concerned with how we gain knowledge or how we get to know something thus it can be defined as a field of philosophy concerned with the distinction between justified belief and opinion (Ai-Ababneh, 2020). In addition, the major types of epistemology are objectivism, construction and subjectivism (Crotty, 1998). Because Epistemology is concerned with how knowledge is obtained, it can be categorized into four categories of obtaining knowledge which are: intuitive which is based on intuition faith and beliefs. Authoritarian which relies on information that has been obtained from books, research papers, experts and supreme powers. Logical is based on the creation of new knowledge through logical application and finally Empirical which is based on objective facts that have been established can be demonstrated (Moser, 2010). Furthermore, Epistemology philosophies can be represented as Positivism, interpretivism, realism and pragmatism.

The study adopted a Positivist epistemology this is because it focuses on causality and low like generalization, reducing phenomena to the simplest elements. Furthermore, because the research is mixed this will allow the use of research methods that collect both qualitative and quantitative data.

4.3.3 Ontology

Ontology in research is the study of being and the nature of reality which is concerned with what exists in the world about which humans can acquire (Saunders, 2009). In addition, the author states that it relates to whether social entities need to be perceived as objective or subjective. Within the scope of the research, the researcher must decide if the world is

external to the social world or the perceptions and actions of social actors (Ai-Ababneh, 2020). Objectivism (positivism) and subjectivism are the two important aspects of ontology (Guarino, et al., 2009). The ontology of research philosophies is categorized into different categories namely; pragmatism, positivism, realism and interpretivism (Al-Saadi, 2014). The ontology shapes how the study is seen from the intended objectives.

The study embraced a realist ontology owing to the understanding that fixed laws of nature do exist independent of a researcher view point. in addition, it considers social entities to be like physical entities of the natural world and thus helps the researcher on how to think, label and be made aware of them (Al-Saadi, 2014). Using realist ontology gives a clear distinction between beliefs and reality and thus reality can be observed directly and accurately.

4.5 Study population

Based on the definition by (Shu-Hu, 2010) study population is the subset of the target population from which the actual sample is to be selected. The population of interest is the study's target population that it intends to treat (Majid, 2018). The study population refers to the sample of participants that were recruited for the study. Based on the definition, the study population was drawn from employee's Luanshya Municipal Council and project stakeholders from the Community and various Government departments.

The Study area was Luanshya district, However, the study was narrowed down to the aforementioned. Luanshya Municipal Council has a total of 587 employees. Of these 75 are directly employed by the service commission and are placed in positions to decide for the welfare of the District in terms of construction projects. Furthermore, there are 30 Civic leaders who oversee the welfare of the Community and a total of 7 Government departments directly benefitting from construction projects done in the district. Hence the study population was segregated as 75 employees, 30 civic leader, 7 Government departments and 10 construction projects specialists.

Table 5- 4.1: Study Population for the Study

s/n	Study population	Actual
1	LMC employee's	75
2	Civic Leaders	30
3	Government departments	7

4	Construction projects specialist	10
	Total	122

(Author, 2023)

4.6 Sample size

Sample size is defined as the subset of a population required to ensure that there is a sufficient amount of information to conclusions to the study (Memon & Hwa, 2020). Tayib & Ramayah (2013) described the sample size as the total number of subsets in the sample. The sample size of the research measures the number of individuals measured or observations used (Zamboni, 2018). This study quantitative sample size was obtained using the Slovin formula which is as follows;

Equation 1- 5.1: Sample Size Calculator

$n = N/(1 + Ne2)$ *n= 122/ (1 + 122 (0.05) 2) = 93*

Where; n= sample size needed

N= population size

e=Acceptable margin of error (0.05)

Table 6- 5.2 Study Sample Size

s/n	Study population	Actual	Sample size
1	LMC employee's	75	55
2	Civic Leaders	30	25
3	Government departments	7	5
4	Construction project specialist	10	8
	Total	122	93

(Author, 2023)

On this basis, a study of 181 respondents had been targeted to participate in the study with an allocation as above. Furthermore, a 5% precision level and a confidence level of 95% had been used to define the sample size.

In addition, the sample size for qualitative data was obtained using saturation which involved picking patterns and themes to understand the relationship of the data

4.7 Sampling Techniques

Sampling is simply the selection of a certain percentage of a group of items according to a predetermined plan (Ghodeswar, 2020). In addition, the process of selecting a statistically representative sample of individuals from the population of interest (McCombes, 2019). Sampling is done as a way of saving time and providing a more intensive study (Alutaybi, 2019).

The study adopted Simple random sampling for quantitative data and Purposive sampling for qualitative data. Purpose sampling is used when the researcher chooses persons/items which provide specific knowledge about a particular topic (Taherdoost, 2016). Purposive sampling is a non-probability method and was used as it allowed the researcher to use their expertise to choose study goals (Frost, 2020).

4.8 Data Collection Instruments

Abawi (2013) states that data collection instruments are tools used for collecting research data. Two types of data were collocated for this research namely Secondary and Primary data.

I. Primary data for was collected using questionnaires, Semi-structured oral interviews, and observation. The above instruments are ideal for collecting both Quantitative and qualitative data. Using these instruments ensured that data was directly from the source. This data from the main source helped to gain a full understanding of the topic which is the evaluation of the Risk management strategies and practices employed by the Local authority in Construction projects. Additionally, more data was collected from observations
II. Secondary data come from datasets collected by other researchers collected from Journal articles, books, reports done by Government departments, internet searches and Libraries and projects done by Local authorities via monitoring and evaluation. Furthermore, secondary data was important as it expanded the scope of the research and enabled access to larger and more varied samples.

4.9 Pilot Testing

The pilot study was carried out using a sample size of 5% of the main sample size. 9 respondents were chosen to participate in the pilot study. They were chosen in the same manner as subjects in the main study. the pilot participant had been debriefed to check for

problems with the questionnaire. An online Google form questionnaire was presented and after the responses, the final questionnaire was amended accordingly.

4.10 Methods of Data Analysis

The data collected from the sample group was analysed by coding and grouping the emerging themes. This study used descriptive statistics to analyze data, Cronbach's Alpha to check the reliability of the study and Pearson correlation coefficient to analyze the validity of the study and check the relationship between variables and mean score ranking in Excel to analyze the mean of variables. The software used for descriptive statistics was the Statistical Package for The Social Science (SPSS) which is a tool for statistical software for analyzing descriptive statistics. The analysed data gave an in depth understanding of the relationship between variables. The hypothesis was tested under the research problem.

The Qualitative data was analyzed using content analysis which is the study of documents and communication artifacts (Parveen & Showkat, 2017). This was done as this method helps to identify patterns and later categorize the data in coded words or themes

4.11 Reliability and validity

According to (Safie, 2013), reliability measures the confidence that when the instrument is administered under the same circumstances to a similar population it will consistently produce the same results. Thus, the reliability measure for the research was conducted using the internal consistency and/or internal reliability using (Cronbach's Alpha) to score between 0-1. The variance and covariance of items was tested.

According to (Sadlov, 2021), validity is how accurately a method measures what it is intended to measure. The validity of the study was measured using the Pearson correlation coefficient.

4.12 Research Ethics

Ethical consideration can be specified as one of the most important issues when carrying out research. According to Bryman and Bell (2007), The underlisted are the ethical considerations which had been accounted for in the study undertaken.

- Voluntary participation-participants are free to opt in or out of the study at any point in time.
- Informed consent participants know the purpose, risks, and funding behind the study before they agree or decline.

- Anonymity the identities of the participant's personally identifiable data are not collected.
- Results communicated work will be free from plagiarism and misconduct andwill accurately represent the results.
- Confidentiality-the protection of privacy of research participants will beensured at all levels of the research.
- All communication will be done with transparency and honesty.

Furthermore, considering the different stakeholders from whom the data was expected to be collected. The research upheld a high level of ethical standards. Before the instrument was administered, the outline and purpose of the study had been provided and required consent was sought from each respondent. The research was carried out according to the University of Lusaka ethical code and research guidelines, Additionally, the researcher ensured to obey relevant laws and institutional and governmental policies.

4.13 Chapter Summary

The chapter outlines how the study was structured. It highlighted the total population and sample sizes considered for the research study. the chapter also looked at the researchers' initial methods of data collection, data analysis which was performed by methods such as SPSS version 16.0 to obtain explanations, conclusions, and recommendations.

CHAPTER FIVE

DATA FINDINGS AND PRESENTATION OF RESULTS

5.1 Introduction

The chapter presents the findings of the study and explains the results. The results of the study aimed to evaluate the relationship between the risk management strategies employed and their impact on construction projects. In addition, the study targeted employees of Luanshya Municipal Council with the technical know-how on projects, various stakeholders, Government departments and companies that deal in Construction projects within the District.

5.2 Response Rate Analysis

The study issued a total of 100 questionnaires which were administered to the study sample population. From the 100 questionnaires that had been administered, 93 were returned representing a (93%) response rate. The data collection was conducted from 9th to 17th October 2023. Figure 5.1 below represents the summary of the questionnaire

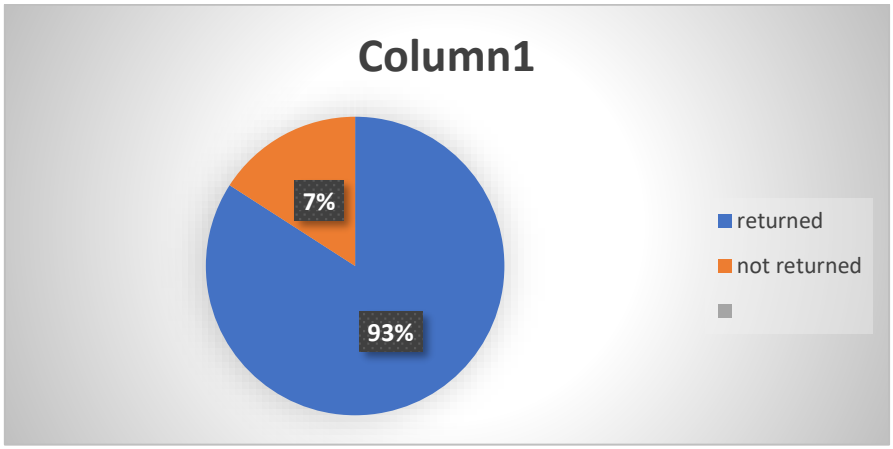


Figure 5- 5.1 Questionnaire Response Rate

Source: (Author, 2023)

Furthermore, qualitative data was collected using an interview guide, the researcher conducted interviews with 12 respondents. The interviews were done with Engineers and Project managers with experience in the construction industries. This gathered information was what strengthened the data collection through the questionnaires.

5.2.1 Reliability of the data

The data was checked for reliability this was to check the degree to which the variable data can be depended on to be accurate. In this regard, the reliability of the data as shown in Table 5.1 below was 0.910 which means that the variables and the data were very reliable

Table 7- 5.1 Reliability of the Data

Cronbach's Alpha	N of Items
.910	93

Source: (Author, 2023)

5.3 Respondents General Information

The study sought to determine the respondents' characteristics based on gender, age, level of education, respondents' managerial experience and the type of construction projects they participated in**.**

5.3.1 Gender of Participants

The study sought to determine the respondent's gender representation of the study respondents, the findings were as follows.

Table 8- 5.2 Gender of Study Participants

		Frequency	Percent	mode	
Valid	Male	55	59.1	1	
	Female	38	40.9		
	Total	93	100.0		

Source: (Author, 2023)

The findings of the study indicate that the greater number of respondents were male representing (59.1%) and females representing (40.9%).

5.3.2 Respondents of Age

The study showed the respondent's age as follows;

Table 9- 5.3: Age of the Study Participants

		Frequency	Percent	Valid Percent	Cumulative Percent	mode	median	range	Std D
Valid	18-25	3	3.2	3.2	3.2	2	2	3	0.652
	26-35	49	52.7	52.7	55.9				
	36-45	36	38.7	38.7	94.6				
	45-above	5	5.4	5.4	100.0				
	Total	93	100.0	100.0					

Source: (Author, 2023)

The table 5.3 shows the respondents were mostly between the ages of 26-35 representing (52.7%) is the respondents. These were followed by those between the ages of those ranging from 35-45 representing (38.7%). those in the range of 45- above ranked third representing a total of (5.4%) of the study and finally, 18-25 ranked last representing (3.2%).

In addition, the median shows that half of the respondents were between ages of 26-35.

5.3.3 Highest Education Level

The educational background of the Respondents was as follows**.**

Table 10- 5.4 Highest Academic Qualification of Study Participants

	Frequency	Percent	Valid Percent	Cumulative Percent	median	range	percentiles
Certificate	9	9.7	9.7	9.7	3	3	25-2.5 50-3.0 75-3.0
Diploma	14	15.1	15.1	24.7			
Undergraduate	50	53.8	53.8	78.5			
Postgraduate	20	21.5	21.5	100.0			
Total	93	100.0	100.0				

Source: (Author, 2023)

The study findings in table 5.4 indicate that most of the respondents were Undergraduates which represented (53.8%) of the respondents. Postgraduate seconded representing (20%) of the respondents thereafter followed by Diploma with (15.1%) and lastly, certificate holders with (9%).

Furthermore, the median was 3, concluding that half of the respondents were undergraduates. In addition, the difference between the highest and lowest variable was 3.

5.3.4 Managerial Position

The Management ranking of the respondents was as follows.

Table 11- 5.5 Managerial Level of Study Participants

		Frequency	Percent	Valid Percent	Cumulative Percent	median	range	percentiles
Valid	Top Management	15	16.1	16.1	16.1	2	3	25-2.5 50-3.0 75-3.0
	Middle Management	48	51.6	51.6	67.7			
	Lower level	23	24.7	24.7	92.5			
	Other	7	7.5	7.5	100.0			
	Total	93	100.0	100.0				

Source: (Author, 2023)

The study indicates that most of the respondents were middle management representing (51.6%) of the total respondents followed by lower management representing (24.7%). Lastly, Top management represented (16.1%) of the respondents.

In addition, the median was 2 indicating that half of the respondents were from middle management.

5.3.5 Types of Contraction Projects Respondents Participate In

The types of construction projects that the study respondents participated in were represented as below; The findings indicated that most of the respondents had participated in building types of construction projects. This represented (50.5%). this was followed by Civil construction projects representing (33.3%) and roads (12.9%). lastly (3.2%) of the respondents had participated in all types of construction projects.

Table 12- 5.6 Type of Construction Project

		Frequency	Percent	mean	Median	mode	Std deviation
Valid	Roads	12	12.9	2.27	2	2	7.24
	Buildings	47	50.5				
	Civil	31	33.3				
	All	3	3.2				
	Total	93	100.0				

Source: (Author, 2023)

5.4 Descriptive statistics of data (relationship between risk management strategies and construction projects

5.4.1 To evaluate the Risk management strategies and practices used and their effectiveness in the completion of Construction projects

5.4.1.1 The role of risk management on construction projects.

The researcher wanted to find out the role of risk management practices in construction projects and achieve the desirable outcomes in construction projects. below is the finding of the question

Table 13- 5.7 Do RMS Play a Critical Role in Achieving Desired Construction Projects Outcomes

		Frequency	Percent	Valid Percent	Cumulative Percent	median	Range	percentiles
Valid	strongly disagree	6	6.5	6.5	6.5	4	4	25-4 50-4 70-5
	Disagree	0	0	0	0			
	Neutral	10	10.8	10.8	17.2			
	Agree	37	39.8	39.8	57.0			
	strongly agree	40	43.0	43.0	100.0			
	Total	93	100.0	100.0				

Source: (Author, 2023)

The finding indicated that (43%) of the respondents strongly agreed, (39.8%) agreed, (10.8%) were neutral and only (6%) strongly disagreed.

5.4.1.2 Application of risk management strategies to construction projects

The researcher wanted to establish whether the appropriate application of risk management strategies improves construction projects. (6.5%) strongly disagreed, (1.1%) disagree, (6.5%) neutral, (40%) agree and (45.2%) strongly agreed that the appropriate application of risk management improves construction projects.

Table 14- 5.8 Approprate Application of RMS Improves Construction Projects

		Frequency	Percent	Valid Percent	Cumulative Percent	median	range
Valid	strongly disagree	6	6.5	6.5	6.5	4	4
	Disagree	1	1.1	1.1	7.5		
	Neutral	6	6.5	6.5	14.0		
	Agree	38	40.9	40.9	54.8		
	strongly agree	42	45.2	45.2	100.0		
	Total	93	100.0	100.0			

Source: (Author, 2023)

Some risk management strategies are more effective than others. The researcher wanted to establish on whether some risk management strategies are more effective than others depending on the type of construction project. Strongly agree (11.8%), neutral (19.4%), strongly agree (22%) and agree (42%) that some risk management strategies are more effective than others in construction projects.

Table 15- 5.9 Some RMS are More Effective than Others for Project Performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	11	11.8	11.8	11.8
	Disagree	0	0	0	0
	Neutral	18	19.4	19.4	31.2
	Agree	42	45.2	45.2	76.3
	strongly agree	22	23.7	23.7	100.0
	Total	93	100.0	100.0	

Source: (Author, 2023)

5.4.1.3 Types of Risk Management Strategies Employed

The respondents were asked what type of risk management strategies their organization had been applying to construction projects. Upon enquiry, acceptance (10.6%), Transference (13.8%), avoidance (31.9%), reduction (30%) and not sure (13.8%) as shown

Table 16- 5.10 Types of Risk Management Strategies

		Responses		
		N	Percent	Percent of Cases
	Acceptance	17	10.6%	18.5%
	Transference	22	13.8%	23.9%
	Avoidance	51	31.9%	55.4%
	Reduction	48	30.0%	52.2%
	not sure	22	13.8%	23.9%
Total		160	100.0%	173.9%

Source: (Author, 2023)

The respondents were asked to choose from the list of options the type of risk management practices that were normally used in the construction projects they participated in to which they responded assignment of risk manager (10.2%), continuous monitoring and evaluation of project performance (26.3%), maintenance of clear and transparent communication (11.4%), implementation of risk accountability for every team member (10.2%), stakeholder engagement (16.5%), quantification and prioritization of risk (7.5%), conduct a regular risk assessment (12.2%) and I am not sure (5.9%)

Table 17- 5.11 Risk Management Practices Frequencies

		Responses		
		N	Percent	Percent of Cases
	Assignment of risk Manager	26	10.2%	28.3%
	Continuous monitoring and evaluation of project performance	67	26.3%	72.8%
	Maintenance of clear and transparent communication	29	11.4%	31.5%
	Implementation of risk accountability for every team member	26	10.2%	28.3%
	stakeholder engagement	42	16.5%	45.7%
	quantification and prioritization of risk	19	7.5%	20.7%
	conduct a regular risk assessment	31	12.2%	33.7%
	I am not sure	15	5.9%	16.3%
Total			100.0%	277.2%

Source: (Author, 2023)

5.4.1.5 relationship between risk management strategies and project completion

In line with achieving desirable project outcomes, the researcher sough to establish the relationship between risk management strategies and completion of construction projects with the desirable outputs.

As such, the respondents were asked if there was a relationship between risk management strategies had a relation to project completion**.**

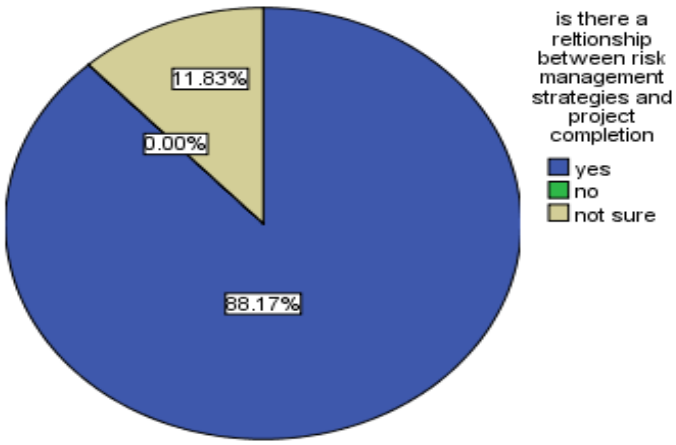


Figure 6- 5.2: Relationship Between Risk Management Strategies and Project Completion

Source: (Author, 2023)

As shown in Figure 5.2 the majority of the respondents (88.17%) agreed to the with relationship between risk management strategies and the completion of construction projects while (11.83%) were not sure.

5.4.1.6 Does Your Organization Use Risk Management Strategies

To ascertain if different organizations have a risk management strategy, the respondents were asked if their organizations use risk management strategies to which they responded yes (78.49%), No (6.45%) and Not sure (15.05%).

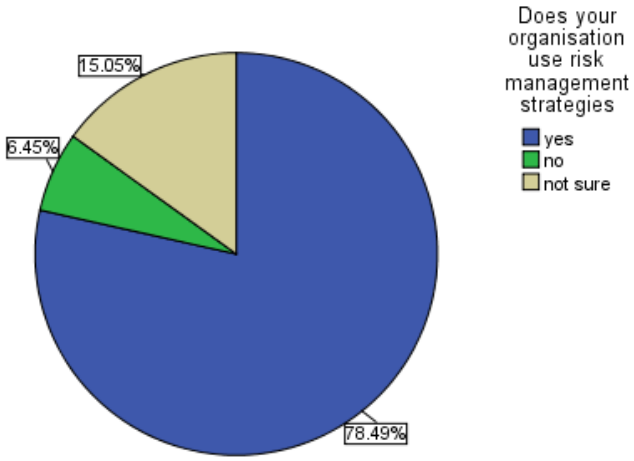


Figure 7- 5.3 Use of Risk Management Strategies in the Organization

Source: (Author, 2023)

5.4.2 To explore the risk associated with Construction projects

5.4.2.1 Types of Risk Found in Construction Projects

The researcher sought to establish the types of risk that are usually found in construction projects to which the responses were that cost overrun (9.2%), scheduling errors (11%), poor quality (8.8%), Safety hazard (6.2%), poor contract management (7.8%), poor resource management (5.2%), incompetent contractors (9%), inexperienced workforce (6.2%), political interference (13.4%), poor stakeholder management (4.6%), logistical and procurement issues (8.4%), poor management from top leadership (4.8%) and financial and economic crisis (5.4%) respectively.

Table 18- 5.11 Types of Risks in Construction Projects

	Responses		
	N	Percent	Percent of Cases
Cost overrun	46	9.2%	50.5%
Scheduling error (delay in completion)	55	11.0%	60.4%
poor quality (technical or design)	44	8.8%	48.4%
safety Hazard	31	6.2%	34.1%
poor contract management	39	7.8%	42.9%
poor resource management	26	5.2%	28.6%
incompetent contractors	45	9.0%	49.5%
inexperienced workforce	31	6.2%	34.1%
political interference	67	13.4%	73.6%
poor stakeholder management	23	4.6%	25.3%
logistical and procurement issues	42	8.4%	46.2%
poor management from top leadership	24	4.8%	26.4%
financial and economic crises	27	5.4%	29.7%
Total		100.0%	

Source: (Author, 2023)

In this regard, Political interference (13.4%), scheduling errors (11.0%), cost overrun (9.2), incompetent contractors (9.0%), poor quality (8.8%), logistical and procurement issues (8.4%), poor contract management (7.8%), safety hazard and inexperienced workforce (6.2%), financial and economic crisis (5.4%), poor resource management (5.2%) and poor stakeholder management (4.6%)

5.4.2.2 Measures undertaken to manage risk

To ascertain what measures are undertaken to ensure effective management of risk. The respondents were asked to provide which measures were used to manage the risk that appears in construction projects.

Table 19- 5.12: Measures to Manage Risks

	Strongly disagree		Disagree		neutral		agree		Strongly agree	
	Count	%	Count	%	Count	%	Count	%	Count	%
Internal audit report is taken for monitoring of risk and evaluated on if the organization	3	3.2	6	6.5	25	26.9	49	52.7	10	10.8

is taking the agreed upon action										
Risks are identified and assessed, thereafter monitored and reported by the implementation of a risk control measure	2	2.2	9	9.7	44	47.3	32	34.4	6	6.5
The organization has proper documentation for risk reporting and management such as a risk register	10	10.8	12	12.9	42	45.2	27	29.0	2	2.2
The organization has a proper risk management strategy document or plan	7	7.5	12	12.9	49	52.7	25	26.9	0	0
There is adequate risk planning	6	6.5	28	30.1	39	41.9	17	18.3	3	3.2
There is frequent risk analysis and assessment	2	2.2	25	26.9	48	51.6	14	15.1	4	4.3
There is proper communication between project parties	2	2.2	22	23.7	42	45.2	25	26.9	2	2.2
The organization has a risk appetite	6	6.5	14	15.1	44	47.3	25	26.9	4	4.3

Source: (Author, 2023)

Internal audit report is taken for monitoring of risk and evaluated on if the organization is taking the agreed upon action strongly dis-agree (3.2%), dis-agree (6.5%), neutral (26.9%), agree (52.7%), and strongly agree (10.8%). In addition, risks are identified and assessed, thereafter monitored and reported by the implementation of a risk control measure strongly disagree (2.2%0, disagree (9.7%), neutral (47.3%), agree (34.0%) and strongly agree (6.5%). Furthermore, the organization has a proper documentation for risk reporting and management such as risk register strongly disagree (10.8%), disagree (12.9%), neutral (45.2%), agree (29.0. %) and strongly agree (2.2%). For The organization has a proper risk management strategy document or plan strongly disagree (7.5%), disagree (12.9%), neutral (52.7%), agree (26.9%) and strongly agree (0.0%). There is adequate risk planning strongly disagree (6.5%), disagree (30.1%), neutral (41.9%), agree (18.3.0. %) and strongly agree (3.2%). There is frequent risk analysis and assessments strongly disagree (2.2%), disagree (26.9%), neutral (51.6%), agree (15.1 %) and strongly agree (4.3%). There is proper communication between project parties strongly disagree (2.2%), disagree (23.7%), neutral

(45.2%), agree (26.9%) and strongly agree (2.2%). The organization has a risk appetite strongly disagree (6.5%), disagree (15.1%), neutral (47.3%), agree (26.9%) and strongly agree (4.3%)

5.4.3 To examine the probability of occurrence and the impact of severity of risks on the construction project.

5.4.3.1 Probability of Occurrence of risk in construction projects

To determine the probability of occurrence of the risk found in various construction projects, the researcher asked the respondents to rank the risk they had mentioned were mostly found in construction projects on a scale of most likely, likely, rare, most unlikely and unlikely

Table 20- 5.13 Probability of Occurrence

	Most Likely		Likely		Rare		Unlikely		Most unlikely	
	Count	%	Count	%	Count	%	Count	%	Count	%
Cost overrun	30	32.3	46	49.5	6	6.5	8	8.6	3	3.2
Scheduling error (delay in completion)	37	39.8	42	45.2	11	11.8	3	3.2	0	0
poor quality (technical or design)	18	19.4	53	57.0	11	11.8	8	8.6	2	3.2
safety Hazard	15	16.1	35	37.6	36	38.7	4	4.3	3	3.2
Poor contract management	15	16.1	37	39.8	28	30.1	9	9.7	4	4.3
poor resource management	13	14	43	46.2	23	24.7	8	8.6	5	5.4
incompetent contractors	13	14	36	38.7	27	29	12	12.9	5	5.4
inexperienced workforce	12	12.9	39	41.9	29	31.2	12	12.9	1	1.1
political interference	41	44.1	29	31.2	19	20.4	2	2.2	2	2.2
poor stakeholder management	12	12.9	24	51.6	23	24.7	5	5.4	5	5.4
logistical and procurement issues	22	23.7	31	33.3	30	32.3	10	10.8	0	0

poor management from top leadership	16	17.2	35	37.6	31	33.3	11	11.8	0	0
financial and economical crises	19	20.4	38	40.9	28	30.1	0	0	2	2.2

Source: (Author, 2023)

In this regard, respondents ranked the risk with the highest probability of occurrence as political interference (44.1%), scheduling errors (39.8%), cost overrun (32.3%), Logistical and procurement issues (23.7), Financial and economic crisis (20.4%), poor quality (19.4%), poor management from top leadership (17.2%), safety Hazard and poor contract management (16.1%), poor resource management and incompetent contractors (14%) and finally, inexperienced work force and stakeholder management (12.9%).

5.4.3.2 the Severity of Impact of risk found in Construction Projects

To determine the severity of the impact of the risk found in various construction projects, the researcher asked the respondents to rank the risks they had mentioned that were mostly found in construction projects on a scale of catastrophic, major, moderate, minor and insignificant.

Table 21- 5.14 Severity of Impact of risks

Type of risk	Catastrophic		Major		moderate		Minor		insignificant	
	Count	%	Count	%	Count	%	Count	%	Count	%
Cost overrun	5	5.4	58	60.2	29	31.2	2	2.2	1	1.1
Scheduling error (delay in completion)	5	5.4	58	60.2	29	31.2	2	2.2	1	1.1
poor quality (technical or design)	25	26.9	28	30.1	33	35.5	7	7.5	0	0
safety Hazard	25	26.9	13	14	40	43	11	11.8	4	4.3
poor contract management	12	12.9	25	26.9	44	47.3	12	12.9	0	0
poor resource management	6	6.5	29	31.2	47	50.5	9	9.7	2	2.2
incompetent contractors	21	22.6	32	34.4	26	28	12	12.9	2	2.2

inexperienced workforce	21	22.6	32	34.4	26	28	12	12.9	2	2.221
Political interference	21	22.6	46	49.5	18	19.4	7	7.5	1	1.1
poor stakeholder management	10	10.8	37	39.8	33	35.5	13.1	14	0	0
logistical and procurement issues	10	10.8	41	44.1	29	31.2	13	14	0	00
management from top leadership	10	10.8	41	44.1	29	31.2	13	14	0	0
financial and economic crises	25	26.9	32	34.4	23	24.7	13	14	0	0

Source: (Author, 2023)

In this regard it was established that the risk with the highest severity of impact was poor quality (technical or design), safety Hazard and financial and economic crisis (26.9%), these were followed by incompetent contractors, inexperienced workforce, Political interference (22.6%), poor contract management (12%), poor stakeholder management, logistical and procurement issues 910.8%), poor resource management (6.5%) and Cost overrun Scheduling error (5.4%).

5.4.3.3 Ways to Manage Risk Occurrence and Impact in Construction Projects

The researcher sought to understand the extent to which risks are managed in construction projects in terms of their probability of occurrence and severity of impact.

In this regard, respondents were asked to which level they accepted the following statements to which they responded Risk are ranked according to priority (18.1%), The organization uses a risk matrix (12.3%), identified risks are ranked according to the probability of occurrence (10.5%), risks are ranked according to severity of impact (14.6%), identified risks are addressed (21.65%) and steps are taken for the identification of risk in construction projects (22.8%)

Table 22- 5.15 Ways to Manage Risk Occurrence and Impact Frequencies

Management measure	Responses		Percent of Cases
	N	Percent	
are risks ranked according to priority?	31/93	18.1%	56.4%
does your organisation use a risk assessment matrix??	21/93	12.3%	38.2%
are identified risks ranked according to the probability of occurrence?	18/93	10.5%	32.7%
are risks ranked according to the severity of impact?	25/93	14.6%	45.5%
are identified risk addressed	37/93	21.6%	67.3%
are steps taken in the identification of risk in construction projects	39/93	22.8%	70.9%
Total	171	100.0%	310.9%

Source: (Author, 2023)

5.4.4 To Develop A Risk Management Strategic Plan for The Local Authority

5.4.4.1 Project Performance

To ascertain how projects, perform in terms of scope, schedule, budget and cost. The respondents were asked to what level they agreed or disagreed with statements about construction project performance. In this regard, respondents responded as the table the below.

Table 23- 5.16: Project Performance

Performance measure	Strongly disagree		Disagree		Neutral		agree		Strongly agree	
	Count	%	Count	%	Count	%	Count	%	Count	%
Construction projects are completed within the stipulated time	20	21.3	38	40.9	32	34.4	3	3.2	0	0
Construction projects are completed within stipulated budget	11	11.8	32	34.4	37	39.8	13	14	0	0
Construction projects are completed within stipulated specifications	13	14	30	32.3	33	35.5	17	18.3	0	0

Construction projects are completed within the desirable	6	6.5	35	37.6	39	41.9	13	14	0	0
Construction projects are completed within the required scope	5	5.4	33	35.3	38	40.9	17	18.3	0	0
Construction projects are able to meet end user satisfaction	7	7.5	32	34.4	27	29	27	29	0	0
Stakeholder requirements and specifications are taken into considerations	40	43	16	17.2	12	12.9	25	26.9	0	0
There is a precise definition of project scope, schedule, specification and budget	1	1.1	20	21.5	6	6.5	29	31.2	37	39.8

Source: (Author, 2023)

Construction projects are completed within stipulated time strongly disagree (21.3%), disagree (40.9%), neutral (34.4%) and agree (32%). In addition, construction projects are completed within stipulated budget strongly disagree (11.8%), disagree (34.4%), neutral (39.8%) and agree (14%).

For the response of construction projects are completed within stipulated specifications strongly disagree (14%), disagree (32.3%), neutral (35.5%) and agree (18.3%). Construction projects are completed within desirable strongly disagree (6.5%), disagree (37.6%), neutral (41.9%) and agree (14%). Construction projects are completed within required scope strongly disagree (5.4%), disagree (35.5%), neutral (40.9%) and agree (18.3%). Construction projects are able to meet end user satisfaction strongly disagree (7.5%), disagree (34.4%), neutral (29%) and agree (29%). Stakeholder requirements and specifications are taken into considerations strongly disagree (43%), disagree (17.2%), neutral (12.9%) and agree (26.9%). And finally, there is a precise definition of project scope,

schedule, specification and budget strongly disagree (1.1%), disagree (21.5%), neutral (6.5%), agree (31.2%) and strongly agree (39.8%)

5.4.4.3 The Risk Management Strategic Plan

To aid in the development of a risk management strategic plan which would be of use for the management of risk in construction project. The respondents were asked to what extent they agreed with the statements below. To which they responded as tabulated below;

Table 24- 5.17: There should be frequent Inspection of Construction Projects

		Frequency	Percent	Mode	Std Devi	Median
Valid	strongly disagree	4	4.3	4	1.048	4`
	Disagree	4	4.3			
	Neutral	15	16.1			
	Agree	36	38.7			
	strongly agree	34	36.6			
	Total	93	100.0			

Source: (Author, 2023)

Majority of the respondents agreed that an organization should make frequent inspection in construction projects. in addition, the responses were strongly disagree (4.3%) disagree 4.3%), Neutral (16.1%), agree (36%) and strongly agree (34%)

Table 25- 5.8 There should be Proper Documentation of Risk

		Frequency	Percent	Median	mode	Std deviation
Valid	strongly disagree	8	8.6	4	4	1.127
	Disagree	1	1.1			
	Neutral	13	14.0			
	Agree	42	45.2			
	strongly agree	29	31.2			
	Total	93	100.0			

Source: (Author, 2023)

Furthermore, majority of the respondents agreed that organization need to have proper documentation of risk. Responses were strongly disagree (8.6%), disagree (1.1%), neutral (14%), agree (45.2%), and finally strongly agree (31.2%).

Table 26- 7.19 There should be a clear written Risk Matrix

Valid	strongly disagree	6	6.5	6.5	6.5
	Disagree	3	3.2	3.2	9.7
	Neutral	13	14.0	14.0	23.7
	Agree	41	44.1	44.1	67.7
	strongly agree	30	32.3	32.3	100.0
	Total	93	100.0	100.0	

Source: (Author, 2023)

In addition, clear and well written risk matrix to establish the impact and probability risk responses were strongly disagree (6.5%), disagree (3.2%), neutral (14%), agree (44.1%) and strongly agree (32.3%).

Table 27- 5.20: There should be Utilization of Budget Estimation Techniques

		Frequency	Percent	Mode	Std Deviation
Valid	strongly disagree	5	5.4	4	0.996
	Disagree	3	3.2		
	Neutral	14	15.1		
	Agree	49	52.7		
	Strongly agree	22	23.7		
	Total	93	100.0		

Source: (Author, 2023)

Furthermore, majority of the respondents agreed that utilization of cost and budget estimates techniques was essential for risk management strategic plan. In this regard, responses were strongly disagree (5.45), disagree (3.2%), neutral (15.1%), agree 52.7%) and strongly agree 23.7%).

As stipulated in the graph below, majority of the respondents agreed that an organization needs to cultivate a risk culture for management of risks. Responses were strongly agree (6%), neutral (12%), agree (46%) and strongly agree (29%).

Table 28- 5.21 The Organisation Shouls Cultivate a Risk Culture

		Frequency	Percent	mode	Std deviation
Valid	strongly disagree	6	6.5	4	1.016
	Neutral	12	12.9		
	Agree	46	49.5		
	strongly agree	29	31.2		
	Total	93	100.0		

Source: (Author, 2023)

Stakeholders should be actively involved in all project phases, as stipulated below majority of the respondents agreed that stakeholders should take an active role in projects. responses were strongly disagree (2.1%), disagree (6.4%), neutral (15%), agree (45.1%) and finally strongly agree (31.1%).

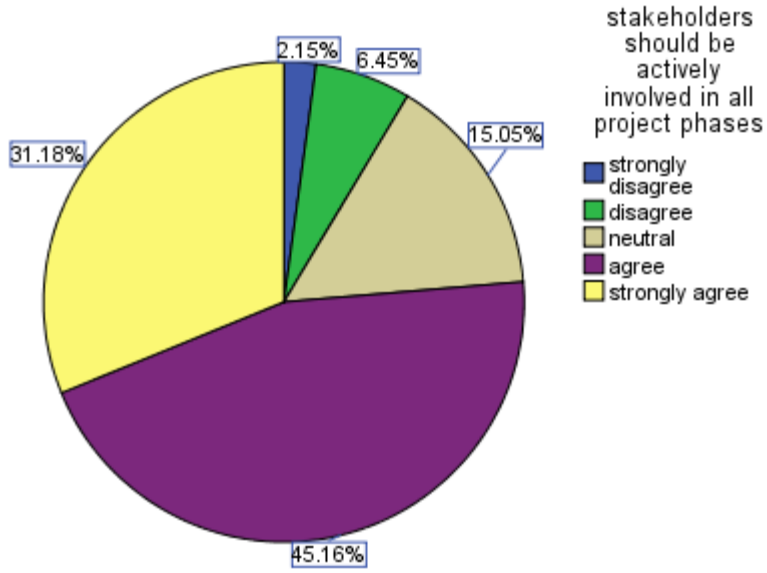


Figure 8- 5.4: Stakeholder Participation in Construction Projects

source: (Author, 2023)

5.4.4.4 Correlation between appropriate application of risk management strategies and some risk management measures.

The study sought to establish the correlation between appropriate application or risk management strategies and some risk management measures. In this regard, the table below shows the results which were as follows;

There was a moderate positive degree of correlation appropriate application of risk management and internal audit reports are taken which was at (r =0.478, p = 0.00), appropriate application of risk management and risk identified and assessed showed moderate positive degree of correlation at (r =0.224, p= 0.18), appropriate application of risk management and adequate risk planning had a significantly moderate positive degree of correlation at (r = 0.300, p = 0.003) and finally appropriate application of risk management and adequate risk analysis and assessment at (r = 0.314, p = 0.002). all the variables were significant at a 0.01 2-tailed correlation level.

Table 29-5.20 Correlations between appropriate application of risk management strategies and some risk management measures

Correlations

		Appropreate application of RMS improves construction projects	internal audit report are taken for monitoring of risk and are evaluated on if the institution is taking the agreed upoon action	risk are identified and assessed. thereafter monitored and reported by the implemetatio n of a risk control measure	there is adequate risk planning	there is adequate risk analysis and assesment
Appropreate application of RMS improves construction projects	Pearson Correlation	1	.478**	.244*	.300**	.314**
	Sig. (2-tailed)		.000	.018	.003	.002
	N	93	93	93	93	93
internal audit report are taken for monitoring of risk and are evaluated on if the institution is taking the agreed upoon action	Pearson Correlation	.478**	1	.461**	.299**	.302**
	Sig. (2-tailed)	.000		.000	.004	.003
	N	93	93	93	93	93
risk are identified and assessed.thereafter monitored and reported by the implemetation of a risk control measure	Pearson Correlation	.244*	.461**	1	.496**	.469**
	Sig. (2-tailed)	.018	.000		.000	.000
	N	93	93	93	93	93
there is adequate risk planning	Pearson Correlation	.300**	.299**	.496**	1	.784**
	Sig. (2-tailed)	.003	.004	.000		.000
	N	93	93	93	93	93
there is adequate risk analysis and assesment	Pearson Correlation	.314**	.302**	.469**	.784**	1
	Sig. (2-tailed)	.002	.003	.000	.000	
	N	93	93	93	93	93

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

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

Source: (Author, 2023)

5.4.4.5 Correlation between Risk management strategies and continuous monitoring and evaluation of project performance

The research sought to evaluate the correlation between the risk management strategies and the continuous monitoring and evaluation of project performance. In this regard the table below shows the results of the correlation which is as follows;

Acceptance and continuous monitoring and evaluation shows a significantly low positive degree of correlation which is (r = 0.109, p = 0.3). in addition, transference showed a positive correlation of (r= 0,178, p 0.89), avoidance was a fairly high correlation (r = 0.542, p= 0.00) and finally, reduction showed a significantly moderate correlation with (r= 0.212, p = 0.41)

Table 30-5.21 Correlation between Risk management strategies and continuous monitoring and evaluation of project performance

Correlations

		Acceptance	Transference	Avaoidance	Reduction	Continuous monitoring and evaluation of project performance
Acceptance	Pearson Correlation	1	.326''	.206'	.347''	.109
	Sig. (2-tailed)		.001	.048	.001	.300
	N	93	93	93	93	93
Transference	Pearson Correlation	.326''	1	.454''	.336''	.178
	Sig. (2-tailed)	.001		.000	.001	.089
	N	93	93	93	93	93
Avaoidance	Pearson Correlation	.206'	.454''	1	.073	.542''
	Sig. (2-tailed)	.048	.000		.490	.000
	N	93	93	93	93	93
Reduction	Pearson Correlation	.347''	.336''	.073	1	.212'
	Sig. (2-tailed)	.001	.001	.490		.041
	N	93	93	93	93	93
Continuous monitoring and evaluation of project performance	Pearson Correlation	.109	.178	.542''	.212'	1
	Sig. (2-tailed)	.300	.089	.000	.041	
	N	93	93	93	93	93

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

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

Source: (Author, 2023)

5.5 Qualitative Data Analysis

In a pursuit to get detailed information on the relation between application of risk management strategies and the completion of construction projects with required derivable, interviews were conducted with key informants who had vast experience in construction projects. A semi- structured interview guide was used and the results obtained are as detailed below;

5.5.1 Impression of performance of Construction Projects undertaken by the Local Authority.

With regards to the impression of the performance of construction projects undertaken in the district, the researcher enquired from the experts to provide their impression of the performance of construction projects in the district. The responses were as follows;

Informant AN05 viewed the performance of the construction projects in the district as slow and many projects were not with modern fittings stating that;

‘*‘the performance of construction projects in the district had been slow despite seeing some infrastructure development in the previous years. There was need for local contractors to participate more in the projects as they understood better the needs of the district which could enhance performance of the projects.’’*

In addition, informant AN09 added

‘‘Generally speaking the construction project performance in the district was slow causing delay service delivery. Because of this, the district still has a long way to go in terms of construction projects.’’

Overall, the informants were of the view that the performance of the construction projects was below standard and thus there was need to improve efficiency in construction projects in the district in an attempt to improve the performance.

5.5.2 Use of Risk Management Strategies in Construction Projects

With regards to ensuring that risk management strategies are used in the execution of construction projects, informants were asked to provide ways in which this can be done. To which they responded as follows;

Overall, the informants indicated that to ensure the use of a risk management strategy a proper risk management strategic plan was required. Furthermore, each risk should be handled differently and ensure proper monitoring of risk.

In addition, informant AN013 stated that

''an organization should ensure that they first and foremost choose a risk management strategy that would best fit into the core organization values and objectives, furthermore, they should ensure that before every project execution they look at the risk which could affect the project and determine if the chosen strategy works for that risk.''

Informant AN015 stated that

''organizations need to understand the inherent nature of risk, this is the only way they can ensure that risk management strategies are employed in construction projects''

5.5.3 Application of Risk Management Strategies to Help Construction Projects

To ascertain the extent to which application of risk management strategies help construction projects to be completed within required specification, respondents were asked to provide their view as what extent they viewed the application of risk management strategies help construction projects;

Informant AN09 elaborated that

''*risk management strategies play a pivotal role in ensuring the successful execution of construction projects, its importance cannot be overstated as effective risk management strategies contribute to project finishing with required deliverables''*

Another informant AN02 stated that

"*The application of risk management strategies helps construction projects better manage and handle project risk. Risk presents itself in different forms thus making it inherent. Because risk management entails planning for and anticipating risk. Their strategies in this sense help construction projects overcome and better manage risks''*

Furthermore, informant AN015 stated that

'the application of risk management helps construction projects to a greater extent and helps to control and manage risk''

Overall, the majority of the informants agreed that risk management strategies are essential and thus help construction projects to a greater extent stating that they help to identify, assess, control and recover from potential losses.

5.5.4 Risk as an Integrant part of Construction Projects

With regards to whether organizations understood that risk is an inherent part of construction projects and whether organizations operated in this reality. The following are the responses;

Overall, the informants indicated that the organization does not operate in the reality of understanding that risk is an integrant part of business operations. They alluded that risk is rarely considered in most projects and thus not adequately planned for or managed.

In addition, informant AN010 mentioned

''that the organization do not have a risk culture hence making it difficult to actively manage risk.''

Furthermore, AN01 stated that

''No, the organization do not operate in this reality and does not consider the fact that risk is part of general organizational operations thus''

5.5.5 The Organizational capacity to handle risk (Technical, Competency and Resource).

To ascertain if the organization has the capacity in terms of technical, competency of employees and resources to handle risk, the interviewer asked the respondents to give their view on the same to which they replied;

informant AN15 mentioned that

''some employees even with their qualifications do not have the capacity to execute the works in projects in a practical sense thus making the organization fail in terms of competency. The organization does not have the required technical capacity and there is a need for training''

In addition to this, informant AN07 stated that

''in as much as the organization has all the capacity to carry out projects successfully, there is too much political interference making it difficult for the organization to execute it duties to its full capacity''

Furthermore, overall responses from the majority of the informants' state that the organization has the capacity in some areas such as competency of employees, however, it fails to much up in that most times resources aren't readily available when needed to execute projects this is also caused by the long procurement process.

5.5.6 Involvement of Stakeholders in Construction Projects

The study sought to establish on if stakeholders were actively involved in the management of risks in construction projects to which informant's AN013 responses was;

''Stakeholders play an important role in projects; however, they are not involved in projects causing problems in the end product which increases the cost of reworks.''

Informant AN09 mentioned that *''involvement of stakeholders is not always done at the start or planning phase of the project, in most instances stakeholders are only asked to check the completed project which has brought problems as they find that the projects is missing some specifications''*

The majority of the informants mentioned that stakeholders are rarely involved in projects. this has been a problem as projects tend to be completed outside the desired requirement of the end-users

5.6 Chapter Summary

This chapter provides the presentation and analysis of the findings obtained from the questionnaire and interview conducted based on the research objectives. The first part of the chapter gave a quantitative analysis of the findings while as the second part gave a qualitative analysis of the findings in relation to the topic risk management strategies employed on construction projects in Luanshya district.

The results of the quantitative data were obtained using a five-six-point Likert scale to test the respondent's degree of agreement and disagreement. Furthermore, the study utilized the use of descriptive statistics and further the use of correlation to determine the relation

between variables. The study used qualitative analysis to present the findings from the interview guide by analyzing the content obtained from the interview guide.

CHAPTER SIX

DISCUSSION AND ANALYSIS OF RESULTS

6.1 Introduction

The chapter concentrates on deliberating the key finding of the study whose main focus was to assess and analyze the relationship between risk management strategies and completion of construction projects in Luanshya district. The discussion shall be in line with the specific study objectives.

6.2 Discussion of the Findings

This section provides a comprehensive discussion of the research findings by comparing the results obtained with the literature earlier reviewed in chapter two. The discussions of the findings are as indicated below;

6.2.1 The Risk Management Strategies and Practices Used on Construction Projects in Luanshya District

The study established that risk management strategies played a pivotal role in the effective completion of construction projects This was based on the 82.8% (a combination of 43% strongly agreed and 39.8% agree) to the statement that risk management strategies play a critical role in achieving desired construction projects. these findings were in line with (Alshibly & Louzi, 2013) who stated that risk management strategies are an integral part of managing construction projects. Risk management strategies have become an important part of the management process for any project. In addition, (Tayeh, et al., 2021) state that risk management strategies play an essential role in ensuring the successful execution of construction projects. Furthermore, the authors state that effective risk management contributes to project predictability, cost control and overall project success. in line with the same, (Alaloul & Saem, 2021) state that risk management strategies are an effective way to identify and manage risk from the on-set project execution to minimize likelihood and impacts or maximize profits.

The study also established that the application of risk management strategies to construction projects improves construction projects. Watford, (2018) states that the application of risk management in projects ensures that a detailed plan on how risk will be

handled is followed improving construction project quality. In addition, (Vicente, 2022) alluded that the application of risk management increases the focus of the organization that is executing the construction project. Application of risk management strategies to projects ensures that risks are identified, assessed, responded to and managed effectively. Furthermore, in agreement, (Landage, 2016) states that because of the highly complex nature of construction projects, the application of risk management strategies ensures that the organization undertaking the project achieves its goals and that the project concludes within specified requirements.

In addition, the study also revealed that depending on the type of construction project and the type of risk being handled, some risk management strategies are more effective than others. According to (Blackman, 2022), the application of a risk management strategy to a specific project is dependent on the type of risk that would arise in that project. In addition, (Ferede, et al., 2021) state that the most effective risk management strategy is one that ensures that the project meets its required goals, and the organization achieves its intended objectives. Furthermore, the study in this sense revealed that there are four main risk management to be used in construction projects this was evident in the results which showed the main risk management strategies being Acceptance, transference, avoidance and reduction. (Arslan, et al., 2023) describes avoidance risk management strategy in projects as eliminating the risk factor by stopping the project or outsourcing by allowing another party such as a vendor or contractor to take on the risk. In addition, the Author describes an acceptance risk management strategy agreeing to cover the cost of the risk which is done by self-insurance. In addition, (Schieg, 2018) states that the transference risk management strategy entails moving the risk to someone else by contracting or insurance to cover the cost of the risk. Furthermore, the author states that reduction risk management strategy entails taking steps to reduce the cost of a loss by loss control programs which act to reduce risk and technology training which uses technology to reduce and eliminate the risk factor. Gupta (2022) states that a project manager should be able to understand the risks that could potentially harm a project and manage them effectively. The Author states that the project manager should also be able to report the risk and eventually the organization is to asses which strategy to employ for specific risks or projects. risk management strategies should be applied at the initial stages of the project such as project planning as this ensures that there is still time to adjust and fine-tune things. This allows for

a more proactive and efficient response to risks that could emerge in the construction project (Tembo & Khatleli, 2019).

The study further revealed that there exists a positive relationship between risk management strategies and the completion of construction projects. These findings collaborate with (Mohammed & Mohammed, 2019) who state that risk management strategies reduce uncertainties, expenses, losses and improve reputation thereby ensuring the project is completed according to the required specifications. In addition, and to corroborate the findings, (Watema, 2021) states that risk management strategies have a positive effect on construction projects as they ensure operational effectiveness and business continuity. The Author state that the use of risk management strategies in projects increases the end products of the construction project thus increasing customer satisfaction. Risk management strategies in construction projects ensure that the project remains constantly improving. Because of their positive effect on construction projects strategies need to keep adapting and improving as construction projects these days keep getting modern and need improved new risk management to manage the risks which could present themselves (Killough, 2020). The Positive relation between risk management strategies and construction projects is in the fact that they are essential in construction projects as they help to avoid delays, cost overruns, accidents, legal disputes and many more problems that could be harmful to the construction project.

Furthermore, the study revealed that seven (7) risk management practices are used in construction projects undertaken in the district these are namely; assignment of risk manager, continuous monitoring and evaluation of project performance, maintenance of clear and transparent communication, implementation of risk accountability for every team member, stakeholder engagement, quantification and prioritization of risk and conduct of regular risk management. They have a positive impact on the performance of construction projects. These findings were in collaboration with (Gajewska & Ropel, 2013) state that the main objective of risk management practices is to ensure the timely delivery of the project within the specified budget. Alsaadi & Norhyatizakuan, (2020) in agreement state that risk management practices are directly associated with the performance of construction projects. this is evident in the relationship that exists between risk identification and assessment of project success, planned budget, schedule, time and compliance with

technical specifications. In addition, (Singh & Hong, 2020) indicated a strong connection between risk management practices and the performance of construction projects. The Author's found that risk management practices at the planning stages of the project affected project performance. Further, the studies indicated that most projects worked well when a qualified project manager was assigned. According to (Cross & Cross, 2019), risk has a significant impact on construction project performance in terms of cost, time, quality and schedule. A higher risk may lead to higher gain thus maximizing the risks in the project will improve the output of the project. To further collaborate the findings, (Adeleke, 2018) states that the success of most construction projects performance can be seen through the type of risk management practices employed.

6.2.2 Risks Associated with Construction Projects

The study revealed that there are many risks which can present themselves in construction projects, however, thirteen (13) risks were found to be dominantly associated with construction projects namely; cost overrun, scheduling errors, poor quality, safety hazards, poor contract management, poor resource management, incompetent contractors, inexperienced workforce, political interference, poor stakeholder engagement, Logistical and procurement issues, poor management from top leadership and financial and economic crisis. Risk classification is a significant step in the risk management process as it attempts to structure the diverse risks affecting a construction project (Zou, et al., 2014). The findings are in line with those categorized risks into six groups in accordance with the nature of the risk, i.e. Financial, legal, management, market, policy, political and technical. Many ways can be used to classify the risks associated with construction projects. In relation to the study findings (Raj & Wadamudrakar, 2018) states that risk can be classified in accordance with their origins concerned with stakeholder. In addition, all risks observed in the study are those which can happen to construction projects. Thus, the study findings were not to investigate all risks but rather to identify those that significantly influence the delivery of construction projects. Further exploration of these risks not only help with the understanding of how project objectives influence but also help to compare the magnitude of the significance of different risk on a particular project objective. The study also revealed that effective management would be possible If the risks were managed from the perspective of a project life cycle. These findings concur with (Altoryman & Anood, 2014) who state that

addressing project risk earlier rather than later in the project life cycle can minimize the negative consequences brought by the risks.

The study further revealed that several measures are undertaken to manage risks. Some of these measures include; Internal audit report is taken for monitoring of risk and evaluation if the organization is taking the agreed upon action. In addition to this measure, risks are identified and assessed, thereafter monitored and reported by the implementation of a risk control measure. Thirdly, the organization has proper documentation for risk reporting and management such as a risk register. Fourthly, the organization has a proper risk management strategy document or plan. Furthermore, other measures revealed in the study include that there is adequate risk planning, there is frequent risk analysis and assessment, there is proper communication between project parties and the organization has risk appetite. The findings cooperate with (Ishiwatari, et al., 2021) who state that identifying the risk is important must creating measures on how to handle them is much more important. Measures to manage risk are a strategic, proactive exercise that can deliver benefits to project success. Because not all potential risk is within the control of the organization. Setting up measures in advance helps to set goal achievement of construction projects. Hampson & Brandon (2020) in addition state that the measures for controlling risk are essential in construction projects as they help to curb disaster by properly analyzing, controlling and monitoring risk which in turn increases overall profitability. According to (Donkin, 2014) internal audit reports as a measure of risk management provide valuable insight into risk management and help identify suitable intentions identifying costly activities and assisting management decisions to avoid, reduce, share or accept risk. In addition, the author states that internal audit reports determine which activities can be used in the audit activity plan. Furthermore, an organization having proper documentation for reporting risk is an essential risk management measure as it helps an organization to effectively document its risk

6.2.3. The Probability of Occurrence and Severity of Impact

The study revealed that from the risk mentioned to be found in construction projects each risk has a different probability of occurrence. According to (Kansal & Sharma, 2014) the probability of occurrence is the value assigned to the likelihood that a particular failure will occur. To collaborate with the findings of the study, (Murugesan, 2015) states that each

risk is assigned a probability of occurrence. This is so because some risks have a higher probability of occurrence than others. In addition, (Renault, et al., 2016) states determining the probability of occurrence is one factor of the overall risk assessment and planning work. Furthermore, probability assessment matters for risk assessment and management because if there is a low probability of risk, resources may be needed to be directed towards those risks with a high probability of occurrence. The study therefore revealed that Political interference (which is when political l leaders interfere with the decision-making in public administrative matters) was the risk with the highest probability of occurrence (Kumar, 2022). This was then followed by Scheduling error (delay in completion) which presented itself as the risk with the second highest level of probability of occurrences. To collaborate with this finding (Kumar, 2022) who states that scheduling is one of the vital functions in construction projects the sequence of activities and tasks are necessary to accomplish a project. In addition, a construction project has different requirements and scheduling aims to fulfil those requirements effectively in terms of the duration of the project and cost. Scheduling errors appear more frequently due to the failure of project managers to get construction information consequently leading to inefficiency and inadequacy in scheduling. Furthermore, overruns presented themselves as the risk with the third probability of occurrence. Mostafa, et al., (2016) concurred with the finding by stating that cost overruns are one of the most occurring risks in construction projects. In addition, the Authors state that when construction cost is out of control, it adds pressure to the construction project investment decision-making. Furthermore, it is important to identify the factors that contribute to cost overruns. In addition, logistical and procurement issues, financial and economic crises, poor quality (technical or design), poor management from top leadership, poor contract management, safety hazards, incompetent contractors, inexperienced workforce and poor stakeholder management follow respectively.

Furthermore, the study revealed that some risk has a higher severity of impact than other. According to the impact rating risk is a measure of the potential harm that could result from risk events. In addition, it is calculated by assessing the likelihood of the risk occurring and the severity of its impact on. The severity of its impact is assessed by considering the potential consequences of the event. Thus, the study established that the risk with the highest severity of impact was poor quality (technical and design) the study revealed that if this risk were to occur it would have the highest impact of affecting a project. These findings

collaborated with (Gharagozlou & Gharagozlou, 2021) who state that poor quality has a huge impact on construction projects. The authors state that poor quality leads to customer dissatisfaction and eventually construction project reworks. In addition, poor quality leads to waste of time and materials which directly affects costs. The study further revealed that safety Hazards and financial and economic crises are the risks that follow with high levels of causing a catastrophe in construction projects. Accordingly, these were followed by incompetent contractors, inexperienced workforce, Political interference, poor contract management), poor stakeholder management, logistical and procurement issues, poor resource management. Cost overrun was revealed to be the cost with the third least state of being catastrophic. According to (Anderson, 2008). Scheduling errors were found to be the risk with the lowest severity of impact. Scheduling errors have a great potential to affect project deliverables (Kumar, 2022). According to (Milat, et al., 2021) scheduling errors impact construction projects and baseline schedules are produced to improve the probability of achieving the project.

The study further revealed that steps are taken for the identification of risk in construction projects, furthermore, risks are identified and addressed. Identification and assessment of risk are two necessities for maintaining a high level of safety and efficiency in construction projects. Risk identification and addressing of identified risk is a challenging process in the management of risk in construction projects, However, it is worth noting that identified and addressed risk forms a bedrock for the development of a strategic risk management plan. To cooperate with the finding (George, 2020) states that once the risk has been identified, a proper project planning process can commence. In addition, considering the extent to which risk can affect the objectives of a project, it becomes imperative for project personnel to carefully plan for it. Similarly, (Kabwe, et al., 2021) add that risk assessment and identification are pivotal to risk planning exercise, however, the study revealed that risks are not regularly ranked according to severity of impact and are not placed into the probability of occurrences. In addition, the study revealed that construction projects do not rank risk according to priority and further revealed that the organization does not practice the use of an assessment matrix. The study findings cooperate with (Kansal & Sharma, 2014) who state that the majority of Global construction industries have failed to use a risk matrix in the ranking and prioritizing of risk. In addition, the Authors state that all risk is similar in terms of associated risk exposure. This is the peril of assessing and prioritizing risk using a

matrix as it would inform you that risk within the low risk exposure zone would only need to be monitored.

6.2.4. The Risk Management Strategic Plan for Management of Risk in Construction Projects

The Objective aimed to develop a framework/plan for the aid in the management of risks in construction by employing and proper use of risk management strategies to enhance the performance of construction projects in Luanshya District.

6.2.4.1 Performance of Construction Projects

The study established that a large number of construction projects undertaken in the district were not achieving desired objectives and performance. This was in terms of projects completed within the triple constraint and customer satisfaction. The study established that most construction projects undertaken in the district are not completed within the stipulated time, construction projects are rarely completed within the stipulated budget, construction projects are not completed within stipulated specifications, construction projects are rarely completed within the desirable quality, construction projects are rarely completed within the required scope. construction projects are not able to meet end-user satisfaction and usually require reworks and stakeholder requirements and specifications are rarely taken into consideration at the planning stage of the project. Stakeholder engagement is rarely done in construction projects in the district. This causes poor performance of projects in the district. This implies that there is still a need to improve the performance of construction projects. these findings concur with (Chukwu & Zubairu, 2023) who state that although the construction industry is growing throughout the world, many problems cause delivery of projects. In addition, (Chodhry, et al., 2014) state that construction projects have become larger and more difficult to manage due to the increasing number of participants and legal contracts. In addition, (Baraka, et al., 2019) states that all the participants in the supply chain segmented are silos resulting in an increased level of complexity. Furthermore, the author states that the industry itself does not understand its source of problems and has not done anything effective enough to fix them. The importance of the construction industry cannot be understated as it helps to draw economic growth (Bahamid, et al., 2019). To further collaborate with the findings, (Junaid & Gardezi, 2023) state that the last few decades have seen the construction industry through many evolutionary changes. Despite

this, the construction projects still suffer from multiple issues that hinder performance, productivity and coordination. Project performance can only be improved with the development of a better understanding towards the issues that impact project success parameters. Adopting a proactive approach, addressing and preparing strategies for common impacts can help manage project performance

6.2.4.2 Critical success factors for implementing Risk Management Strategies

The study found that with regard to the critical success factors for successful implementation of risk management strategies in construction projects majority of the respondents indicated that there should be a frequent inspection of construction projects, there should be proper documentation of risk, there should be clear and well-written risk matrix to establish the impact the probability if they were to occur, there should be the utilization of cost and budget estimates techniques, the organization should cultivate a risk culture for management of risk, and stakeholders should activity participate and engage in project decisions. According to (Esmaeli, et al., 2016) project critical success factors in construction projects include the limited number of factors that should be satisfied to ensure successful completion of the construction project. Identification of these success factors helps with the allocation of resources to a manageable number of factors that contribute to project success. to collaborate with these findings' studies done by (Jaselskis & Ashley, 1991) investigated different key success factors that assist projects to allocate limited resources for the achievement of construction performance. After analyzing 75 construction projects it was alluded that internal audit reports, monitoring and evaluation of projects, communication, reducing team turnover and contractor organization affected the success and performance of construction projects. Similarly, another study undertaken by (Chua, et al., 1999) identified critical success for different objectives including budget, quality and schedule. Furthermore, they identified sixty-seven factors for project success and grouped them into four major categories which included project characteristics, contractual agreements, project participants and interactive processes. In conclusion, the authors alluded that regardless of the project objectives, adequacy plans, specifications and constructability were the most important factors for successful projects.

6.2.4.3 Correlation Between Appropriate Application of Risk Management and Aspects of Strategic Risk Management

The study established that there was a moderate positive degree of correlation between the appropriate application of risk management strategies and internal risk audit reports. Audit functions have used information about risk as one of the core inputs in audit planning (Esmaeli, et al., 2016). Internal audit reports are used in organizations without risk management strategies to undertake risk assessment (Deborah Gonzalez, 2014). According to (Mashal, 2014), the correlation between proper application of risk management strategies and undertaking of internal audit reports exists in that risk management strategies seek to implement the risk management framework while internal audit reports audit the implementation of the risk management framework which in turn provides positive performance for the construction project (Zwikael & Sadeh, 2017). Similarly, (Mert, 2013) alludes that internal auditing and monitoring of construction projects and the application of risk management strategies to construction projects are both tools for internal control. In addition, (Gharagozlou & Gharagozlou, 2021) state that the role of internal auditing and monitoring and application of risk management strategies for construction projects is to evaluate the effectiveness and efficiency of risk management in addition to promoting continuous development.

In addition, the study also revealed that there is a moderate positive degree of correlation between appropriate application of risk management strategies and risk planning, risk identification and assessment and risk analysis. To collaborate with these findings, (Alsaadi & Norhayatizakuan, 2020) state that in construction projects high levels of risk are considered to be a significant obstacle to project success. In addition, (Chukwu & Zubairu, 2023) state that the correlation that exists between the appropriate application of risk management strategies and risk planning is that once risk is planned for and the risk management strategies are applied the performance of the construction project boasts. One of the major characteristics of projects is their high level of risk (Abdulah, 2017). This means however that the desirable events may cause delays, excessive spending and unsatisfactory project results. According to (Chileshe & Kikwasi, 2015), to increase the chance of project success, better planning and control is required. Risks must be managed throughout the entire project life cycle. Risk planning and identification played a critical role in every phase of the project. Project planning and identification of risk species is a set of

decisions concerning the ways that things should be done (Kazaz, et al., 2015). The application of risk management strategies correlated to risk planning and identification of risk because risk deals with identifying and reducing the construction project risk level. This also included the risk management planning, monitoring and control processes.

6.2.4.3 Correlation between Risk Management Strategies and Project Performance

The findings of the study revealed that there was a significantly Moderate degree of positive correlation between risk management strategies and project performance. The value of correlation gives a hint of how a change in one variable is influenced by change in another variable or it measures the association between variables. Projects are perceived to be performing well when they successfully meet the time, budget and all set performance goals (Blacstone J H & Schleir, 2009). If the risk is classified as bringing a negative consequence to the construction project, then it's important to review the project's aim. Risk management strategies seek to eliminate risk and improve project performance (Adom, et al., 2018). The risk management strategies include Avoidance, reduction, transfer and acceptance. In collaboration with the findings, (Arrais-Castro & Varela, 2015) state that risk avoidance involves changing the project plan to eliminate risk to enhance project performance. It seeks to avoid risk and reconfigure the project such that risk completely disappears or reduces. Furthermore, risk reduction the other hand seeks to reduce risk by adding expenditure that can provide benefits in the long term (Chapman & Ward, 1998). In addition, risk mitigation is all about understanding those risks that can impact the objectives of the construction projects and taking the appropriate steps to reduce the risk to an acceptable level (Dwivedi & Herry, 2012). Thus, strategies can be achieved at the overall project level by preplanning the project and changing its scope and boundaries. Hilson (2012) states that this is an investment of funds to reduce the risk of a project. In some international construction projects, companies will hire a risk expert to review the technical plans or cost estimates on the project to increase confidence in that plan and reduce the project risk (Chileshe & Kikwasi, 2015). In cases where risk cannot be transferred or avoided, the best solution for construction project performance is risk acceptance. The correlation between risk acceptance and project performance can be seen in that when risk is accepted the risk must be controlled to minimize the impact of its occurrence (Cross & Cross, 2019). Acceptance indicates a decision not to make any changes to the project plan and to deal with the risk using a suitable strategy. This strategy can be used for both negative and positive risks. In

addition, (Mahinkanda & Sandanayake, 2019) state that to enhance the performance of the project, acceptance requires the creation of contingency plans which can be referred to as positive acceptance and or taking no action at all which is referred to as passive acceptance. Furthermore, risk transference is a strategy which can be used if a risk can be managed by another party who has greater capacity. Cardenas, et al., (2014) state that risk should be transferred to those who know how to manage it. These can be the client, contractor, subcontractor, designer etc. The strategy ensures that project performance is enhanced by ensuring that risk is transferred to other parties.

6.2.4.4 Rationale for Developing a Risk Management Strategic Plan for the Management of Risk in Construction Projects

The assumption for the development of the study's proposed framework/plan was done with efforts to provide answers to the third research question which seeks to answer how risk management strategies can help the performance of construction projects. Despite the implementation of risk management strategies and strategic plans, projects still face challenges with quality completion. The construction project is supposed to meet set goals while adhering to risk management strategic plans

The proposed strategic plan is created to enhance construction project performance in the district of Luanshya to be delivered within the specified specifications. The strategic plan for the employment of risk management strategies was developed using the research findings from the literature, theoretical and conceptual analysis as well as the from quantitative and qualitative data analysis.

The risk management plan developed by the research was anchored on the Theory of constraints (TOC) is a methodology for identifying the most important limiting factor that stands in the way of goal achievement (Trojanowska & Dostatni, 2017). The theory focuses on improving the constraint until it no longer poses as a limiting factor (Santos & Varela, 2014). Hence the framework/plan developed focuses on understanding the limiting factors to project performance and the relationship between risk management strategies and the completion of construction projects within the required specifications.

6.2.4.5 Framework Validation

According to (Sousa, 2014) the validation of a framework specifies the process used to prioritize, integrate and evaluate evidence collected using various methods. Validation seeks to confirm that the framework embodies the individualities of the general population and it increases the trustworthiness, results coherence/adequacy of descriptions and interpretations and transferability and application of results (Oliveira, et al., 2012).

The risk management plan for management of risk in construction projects was validated using expert validation. Expert validation refers to administering the data collection instrument among intended respondents. Therefore, the validation of the framework was done by administering semi-structured interviews with 5 (five) key informants at Luanshya Municipal Council, ZESCO Limited, Notchi Supplies and Contractors Limited, Seshitech Limited and Quick Merchant Zambia Limited who were purposively sampled. This sampling technique permitted the researcher to intentionally choose informants based on their expertise to offer vital and accurate information in relation to the research questions.

6.2.5.6 Expert Level of Eduction, years of experience asnd Position

Table 6.1 shows the thematic areas that the key informants commented on

Expert	Level of Education	Years of experience of informant (Expert)	Current Position
Expert 1	Masters	21 years	Civil Engineer
Expert 2	Degree	6 years	Snr Architect
Expert 3	Masters	11 years	Planner
Expert 4	Degree	3 years	Quantity Surveyor
Expert 5	Masters	8 years	Buildings inspector

Source: (Author,2023)

6.2.4.7 Responses of Experts

The experts had been asked to validate and evaluate the proposed framework for use of risk management strategies to enhance performance in construction projects in the district. Their responses are as below. Experts responses have been coded.

Experts FW02 started that was need for Stakeholder Engagement.

‘‘The framework effectively included the engagement of stakeholders in the management of risk in construction projects. Stakeholders are essential for projects as some stakeholder may double as end users their inputs ensure the projects completes within specific specifications’’

Furthermore, expert FW04 mentioned on the importance of monitoring project performance stating

‘‘Monitoring project performance, taking corrective and making recommendations for future projects are essential. Thus, the aspect be included.’’

Expert FW01 made mention on the need for Integration of risk management strategies. The expert stated that;

‘‘The framework effectively showed the integration of risk management strategies for the management of risk in construction projects. Another aspect of risk management process needs to be added in the framework.’’

Expert FW05 stated that Political Interference;

‘’Political will need to highlight in the framework the aspect of political interference in construction projects cannot be ignored. Politicians greatly influence construction projects in the district’’

The aspect of policy makers needed to be added in the framework according to expert FW03 who stated;

‘’There was a need to include policymakers in the framework as they make decisions pertaining to construction projects in the district.’’

6.2.4.8 Analysis of the Feedback

The researcher analyzed the comments from the validators per thematic area as follows:

1. Stakeholder Engagement- the commendation to include an aspect of stakeholder engagement was welcomed by the researcher. stakeholders make corrective and progressive decisions in construction projects

2. Monitoring Project Performance- the researcher welcomed the commendation of having included monitoring of project performance which is a continuous process that involves checking if project deliverables were being achieved

3. Integration of Risk Management Strategies- the researcher welcomed the commendation that the framework effectively showed the integration of risk management strategies for management of risks in construction projects. risk management strategies were the main basis for the creation of the framework as they help construction projects to be completed within specified specification

4. Political Interference- the researcher did not welcome the commendation for policy interference to be included in the framework. Political interference presents itself as a type of risk. Hence, it will be placed together with other risk rather than an independent aspect of the risk management strategic plan.

5. Policy Markers- the researcher welcomed the commendation to include policymakers in the strategic plan. Policy makers are key in construction projects as they set the guidelines and procedures on how construction projects can be carried out. As such the framework included the aspect of policy makers.

The researcher highlighted that the risk management strategic plan that was developed is open for modifications in future research. The developed framework is presented in the next chapter.

6.3 Chapter Summary

The chapter provided the discussions and analysis of the findings based on the specific objectives of the study and aligned to the findings of the study presented in chapter 5. The next chapter will present the conclusions and recommendations for the research findings. In addition, the chapter also proposes a risk management strategic plan for management of risk in construction projects.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATION

7.1 Introduction

This chapter presents the conclusion drawn from the findings of the research. In addition to this, the chapter gives recommendations aimed at resolving the research problem. Furthermore, the chapter endeavors to meet the objectives that had been earlier stipulated and lastly, it outlines the research contribution to the body of knowledge and the limitations of the study.

7.2 Conclusions of The Research Findings

The study was aimed to evaluate the risk management strategies employed to the completion of construction projects in Luanshya District. In addition, it sought to establish the correlation that exists between strategies and project performance (The degree to which a project is considered complete**)**

7.2.1 What are the Risks Associated with Construction Projects

The study concluded that typically all construction projects face risk as they are an inherent part of construction. The study in addition, concluded that construction projects face hundreds of risks, however, thirteen (13) risks are most common. These 13 risks are Cost overrun, Scheduling error (delay in completion), poor quality (technical or design), safety Hazard, poor contract management, poor resource management, incompetent contractors, inexperienced workforce, political interference, poor stakeholder management, logistical and procurement issues, poor management from top leadership, financial and economic crises. The study concluded that understanding risks not only help with the understanding of how project objectives influence but also help to compare the magnitude of the significance of different risk on a particular project objective. The study concluded that addressing risks in construction projects should be done to minimize the negative consequences. The study also concluded that measures should be taken to mitigate risks in construction projects. The study concluded that measures for controlling risk are essential as they help to curb disaster.

7.2.1.1 the Risk Management Strategies and practices used on Construction Projects in Luanshya District.

The Study concluded that risk management Strategies play a pivotal role in the effective completion of construction projects and in ensuring the successful execution of construction projects. In addition, the study concluded that the application of risk management strategies to construction projects improves the performance of construction projects. Furthermore, it concluded that there is a positive relationship between risk management and completion of projects. the study concluded that among the seven risk management practices being employed, the assignment of a risk manager is being practiced frequently. In addition to this, the study concluded that there was a strong connection between the implementation of risk management strategies and the completion of construction projects. Lastly, the study concluded that among the four risk management strategies, risk avoidance is the most used strategy in construction projects.

7.2.2 What is the Probability of Occurrence and Severity of the Impact of the Risks.

The study concluded each risk had a different level of impact on construction projects and probability of occurrence respectively. the study concluded that political interference is the risk with the highest probability of occurrence in construction projects undertaken by construction projects in Luanshya. Secondly, the study concluded that resources needed to be directed towards those risks with a high probability of occurrence. Furthermore, the study concluded that risk assessment was important to conduct in construction projects. The study concluded that some risks have a higher severity of impact than others. In addition, it concluded that the risk with the highest severity of impact was poor quality, this was because it required reworks that led to high-cost runs. Furthermore, the study concluded that identification of risk in construction projects was essential as it helped with the risk assessment process. However, the study revealed that risks in construction projects in Luanshya are not ranked according to severity of impact and probability of occurrence. The study concluded that construction projects do not use a risk matrix for proper visualization of monitoring risk exposure.

7.2.3 Correlations Between Project Performance and Risk Management Strategies.

The Study established that there was a moderate positive degree of correlation between the appropriate application of risk management strategies and internal audit reports to the improvement of performance on construction projects. internal audit report is used to undertake risk assessments. In addition, the study concluded that there was a degree of positive correlation between the application of risk management strategies and risk planning, risk identification and assessment and risk analysis. Furthermore, the study concluded that there was a degree of positive correlation between risk management strategies and project performance. The study concluded that correlation was observed because of how a change in one variable influences a change in the other variable.

7.2.4 Critical Success Factors for Implementing Risk Management Strategies.

The study concluded that a large number of construction projects in the district had not been achieving the desired objectives and performance. The study concluded that construction projects were usually not completed within the stipulated time, budget, schedule and scope. Furthermore, the study concluded that construction projects needed reworks frequently as customer satisfaction was usually not being met. The study concluded that stakeholders were rarely engaged in the construction projects causing problems with overall delivery. This implied that there was a need to improve the performance of construction projects. the study further concluded that internal audit reports, monitoring and evaluation of projects, communication, reducing team turnover and contractor organization affected the success and performance of Construction projects.

7.2.5 Develop a framework to develop a framework for the enhancement of construction project performance.

the Author developed a framework with the data collected from the literature, research findings and validation by experts. The framework was to help policymakers with decision-making in construction projects and help construction project performance. Figure 7.1 illustrates a sustainable framework for construction project perfromance. the instruction manual is attached in the appendix.

Figure 4: Proposed Risk Management Strategic Plan for Enhancement of Project Performance

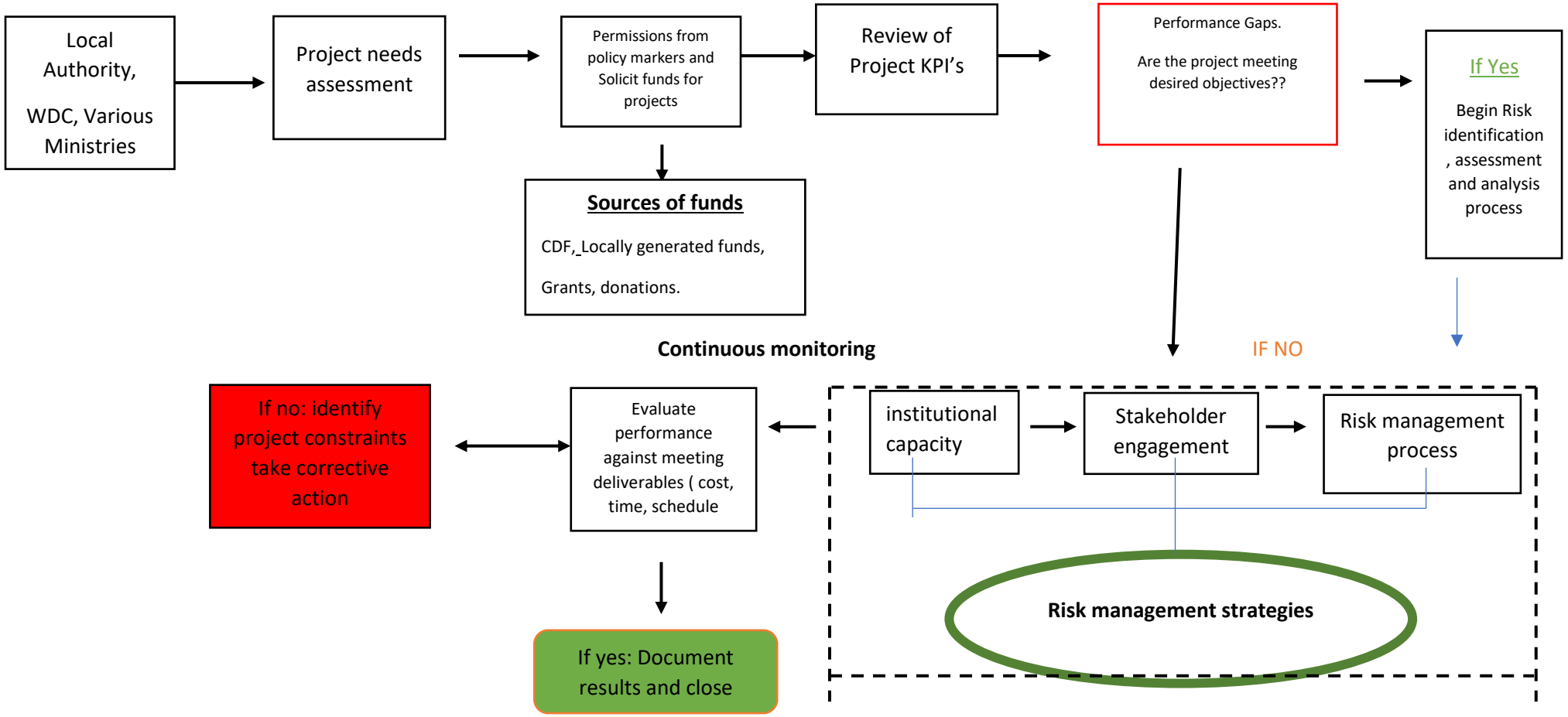


Figure 7.1 above shows the performance Enhancement framework and plan for the improvement of construction project performance.

7.3 Recommendations

To bring to light the findings of the study, the following recommendations have been outlined.

I. The study recommends that there should be an improvement in the risk management process and proper documentation of risks. The study revealed that risk is inherent in every construction project and because of its evolutionary nature, levels of risk can change. A proper risk management process improvement can begin with a risk identification and assessment process. This should be established and in addition, creating a risk string is good practice to distinguish between cause and effect. This also entails the documentation of all risks that have occurred across the organization helps improve the entire risk system and improves information sharing and accountability these documents can be used for future purposes.

II. The recommends that with the improvement of the risk management process, there should be a risk matrix. The Local Authority should learn to prioritize and rank risk into the establishment of a risk matrix to enable risks to be prioritized into probability of occurrence and severity of impact if they were to occur.

III. The study recommends that there should be proper stakeholder management. The management of stakeholders ensures that stakeholder needs are taken into consideration. In addition, this ensures that stakeholders are made aware of risks and participate in the risk management process.

IV. The study recommends the conduct of regular assessments and internal risk audits. Creating a wide accountability will help to incorporate risk and promote a beneficial risk awareness culture. training needs to be done employees need to be made aware of risk and how to handle them and become aware of the reporting structure.

V. The study recommends the creation of a risk management strategic plan to lessen the effect of risks and assign who will be accountable for them. The study confers that the Local authorities tend to shift blame therefore, a risk management strategic plan needs to be created to ensure the assignment of a project manager. The purpose of risk management is to identify potential risks/opportunities before they

occur to leverage them. The risk management strategic plan will also aid the institution in to cost of risk and potential impact on budget, scope and quality and help with communicating among all stakeholders. Below is a proposed risk management plan containing all relevant documents.

VI. Local authorities need to participate in the following to manage risks effectively.
    - Develop project management skills effectively by managing project requirements to establish a strong foundation.
    - Build a tight link between organization objectives and risk management plan
    - Investment in Business Intelligence. The use of outdated tools may have worked in the past with the transformation of digital companies must go to the forefront of technology.

7.4 Recommendations for Future Research Areas

The study proposes the following as recommendations for further study/research.

I. This study only focused on risk management strategies and their relation to the completion of construction projects with desirable outputs. In this regard, further study on risk management practices can be done to ascertain the relation between the practices to manage risk and the completion of construction projects.
II. The study sought to establish the relation or influence that risk management strategies have on construction projects undertaken by the Local authority. In this regard, the study recommends that further studies can be done on construction projects undertaken by the private sector.
III. Due to time and financial constraints this study was only conducted in Luanshya district. A district still in its developmental stages. In this regard, recommendations can be made for further studies to be done in other districts to further understand the relationship between risk management strategies and completion of construction project

7.5 Limitations of the Study

The Study limitations of the study are outlined below;

I. Little information exists as to why the said implemented risk strategies employed by the local authority were not being used as much as they were set.

II. The study was only done in one Local Authority so the results could not be generalized to other Local Authorities in one district as the study sample was restricted. Furthermore, there was no study to compare the finding to as no study of this nature had been done in the district.

III. Access to people, data, and documents proved to be difficult This was attributed to the fact that the respondents were slow in response and were not ready to participate within the required time frame. In addition, some respondents expressed grievances stating that the questionnaire was too long.

7.6 Contribution to the Board of Knowledge

The contribution of this study to the body of knowledge is mainly the development of the risk management strategic plan for the measurement of the effectiveness of risk management strategies on the completion of construction projects. In addition, the study will contribute towards improving the utilization of risk management strategies on construction projects to enhance project performance. The study provides empirical evidence of the relationship that exists between risk management strategies and the completion of construction projects. Furthermore, being the first study of this nature to be undertaken in Zambia as other studies have been done on other types of projects undertaken by other organizations, the study will contribute to the knowledge gaps in the literature on the use of risk management strategies in Local authority's construction projects. Lastly, the study has contributed towards enhancing the understanding of performance measurement in relation to construction projects.

7.7 Chapter Summary

Construction projects carried out by the Local authority are fundamental for the development of the district. They contribute a great deal to the Nation's Gross Domestic Product. Despite this, many construction projects have faced challenges with the completion of projects with undesirable outputs. To improve this aspect of construction projects, the study undertaken was aimed to evaluate the risk management strategies that are employed by Local authorities, improve them to ensure their use benefits construction project performance.

Following the aforementioned the study proposed a risk management strategic plan for the management and control of risk and the employment of risk management strategies that work for the benefit of the organization’s goal and objective of delivering quality construction projects.

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2 APPENDICIES

Appendix1: Framework Instruction Manual

The Framework proposes an approach towards planning, financing and execution of Construction projects with an integration of strategic risk management. In addition, the framework shows how risk management strategies can be a success criterion for construction projects.

Step 1: Construction Project Needs Assessment

Based on current regulations and procedures on construction projects. Government and other bodies such as the Local Authority, ZESCO and end user Ministries (Education, health, community development etc.) with the input of Ward District Communities initiate a project by giving a detailed report on the needs required by the Community. After a need has been found, the framework recommends that all necessary construction permission are sought from bodies such as National Construction Authority. This report would help the government and other bodies decide on what project to construct to cushion that need.

Step 2: Solicit for Funds for Project

At this stage, it has already been ascertained what project would be required to meet the need. The framework proposes that funds are to be solicited to begin construction works. These funds will be in forms of Locally Generated Revenues, National Budget Grants, Community Development Fund, Donation and Grants.

Step 3: Review of Project Key Performance Indicators

Once funds have been solicited and the Project takes off, Project key performance indicators have to be reviewed at this stage. Key Performance indicators are specific performance metrics used by projects to determine how well the project is doing against intended goals and objectives. Once the project is performing towards intended performance indicators the project can be measured against performance gaps.

Step 4: Performance Gaps

At this stage, the framework recommends that project performance gaps have to be measured. This measurement will highlight on the difference between current and desired performance levels. The framework recommends the need for robust and effective performance evaluation systems to be implemented by the project team. A performance evaluation is essential for ensuring compliance with the set objectives.

Furthermore, the Framework recommends that if the performance gaps are being meet, then there is need to begin the process of risk identification, assessment and analysis directly before applying risk management strategies. However, should it occur that the performance gaps are not being meet, the framework recommends that then the process of evaluating institutional capacity, stakeholder engagement and the risk management process be done. This will aid in deciding the appropriate risk management strategy that is to be employed.

Step 5: Continuous Performance Monitoring

The Framework recommends for continuous performance monitoring mechanisms to be implemented by the project team. This is to allow for continuous and regular monitoring of activities in the projects. This entails monitoring of each major milestone in the project. The system benchmarks the construction project performance for compliance against key deliverables which include time, cost and quality.

The framework further proposes for the identification of constraints that hinder good performance and taking corrective action. This ensures that performance is measured against set performance indicators thus measuring improved performance. This continuous cycle of monitoring performance plays a role in ensuring that attainment of project performance is enhanced and furthermore promotes transparency and accountability during project execution.

Step 6: Evaluate Construction Project overall Performance

This step involves the periodic review of the final phases and the overall performance of the project. The framework recommends for effective performance evaluation systems which are essential for ensuring compliance to set requirements and accomplishment of construction project activities. The evaluation of construction project performance is done by comparing performance between different time periods and phases of the project. This

enables the assessment of project outcomes and further asses on whether project requirements are being adhered to.

Step 7: Document Results and Close

This step involves the completion of the physical and administrative actions in a project. the framework recommends that all necessary procedures be documented for use in future projects. This documentation allows for easier decision making in future projects. Furthermore, the close out phase is essential for verifying if all obligations are being meet to expectations. This phase allows for the review of customer satisfaction, performance of project contractor, vendors, stakeholders and all project participants. In addition, the close out phase is to be used for comparison between planned budgeted cost, set schedule and required quality against actual.

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SCHOOL OF POSTGRADUATE STUDIES

Plot No. 37413, Off Alick Nkhata Mass Media. P. O Box 36711, Lusaka.
Phone: +260211258505, 258409 Fax +260211233409; Cell +260976075850,961917862,
E-mail:unilus@zamnet.zm,ictar@zamnet.zm

UNILUS-RESEARCH ETHICS COMMITTEE

Ref no: FWA00033228-7112/23

Date: 10th December 2023

STUDENT NAME: ANNIE NGOMA

RISK MANAGEMENT STRATEGIES APPLIED ON CONSTRUCTION PROJECTS: A CASE OF LUANSHYA DISTRICT

The above research was submitted to the research ethics committee for review. The study has no major ethical problems and is approved subject to the following:

1. The study cannot be changed without express permission of the UNILUS research ethics committee.

2. Approval from the necessary authority should be sought.

Congratulations and the committee wishes you success in your work.

Professor Kasonde Bowa
MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)
Chairman- UNILUS REC
Professor of Urology and Consultant Urologist
Deputy Vice-Chancellor – Research and Innovation
Executive Dean - School of Medicine and Health Sciences

Luanshya Projects Status Reports - 2022 ***Allocated Amount:13,234,694.44***

S/NO	PROJECT NAME	WARD	COMMENT	STATUS	REMARKS	ALLOCATED AMOUNT	ACTUAL EXP./CONTRACT	SAVING (DIFFERENCES)
1	Rehabilitation of Thompson drives way and parking lot.	James Phiri	project complete and under defect liability. Project was completed a few days outside the required time	100%	COMPLETE	750,000.00	750,000.00	-
2	Rehabilitation of the Ablution Block at Mipundu	Zambezi	project complete and under defect liability. Project took a little longer to complete than required time	100%	COMPLETE	759,000.00	759,000.00	-
3	Construction and rehabilitation of roads.	Buteko	project complete and under defect liability. Resource for the project where not readily available and thus project took longer than required time	100%	COMPLETE	109,003.07	109,003.07	-
6	Off Kafubu Block – Kapenda Clinic	Chitwi	Grading done.	100%	COMPLETE	157,858.25	157,858.25	-
7	Completion of the Construction of an Ablution Block at Mikomfwa	Mikomfwa	project complete and under defect liability	100%	COMPLETE	430,067.30	425,795.89	4,271.41
8	Rehabilitation of Buseko Market - Phase 2		project complete and under defect liability. Works started in 2021 but got complete in 2022	100%	COMPLETE	267,906.10	250,050.00	17,856.10
9	Kasongo Electrification School (zesco connection fee & Cabling)	Fisenge	Installation of all fittings complete but pending installation to ZESCO grid once funds secured. Project commenced in 2021 but still under works	95%	ON GOING	320,000.00	318,000.00	2,000.00
10	Reconstruction of bridge	Buntungwa	first phase complete, awaiting securing of funds for	100%	COMPLETE	46,347.00	46,347.00	-

11	Construction of 1x3 Classroom Block at Elohim	Baluba	building is complete with snugs but awaiting POWER connection. Delay in	95%	ON GOING	861,000.00	663,547.83	197,452.17
12	Construction of 1x3 classroom block at Kakumba	Chawama	building is complete with snugs but awaiting POWER connection. Which has delayed the building to be commissioned for community use	95%	ON GOING	825,000.00	662,447.83	162,552.17
13	Grading of Roads in all Wards - 16 No	16 Wards	All grading in all wards is complete	100%	COMPLETE	480,000.00	480,000.00	-
14	Rehabilitation and Completion Walale Market Shelter -	Twashuka	Finishing works in progress	65%	ON GOING	362,676.80	314,795.89	47,880.91
15	Completion of Chitwi Market Shelter	Chitwi	Substructure complete, superstructure - installing of market tables in progress, market side wall complete.	40%	ON GOING	345,212.30	305,575.00	39,637.30
16	Rehabilitation of drainages.	Mipundu	stone pitching in progress. Report for the needed variation to be presented.	50%	ON GOING	484,677.89	436,271.52	48,406.37
17	Construction of an ablution block at Elohim school	Baluba	Works are in progress with the following done: - Substructure works complete and superstructure is ongoing	50%	ON GOING	551,376.00	551,376.00	-
18	Construction and rehabilitation of water reticulation at the new town market.	Mpelembe	Works are pending variation approval	0%	HALTED REQUIRES VARIATION	97,000.00	97,000.00	-
19	Construction and Rehabilitation of Roads - Mwaiseni -	Kamuchanga	project requires variation after procurement evaluation	0%	HALTED REQUIRES	4,186,451.26	4,186,451.26	-
20	Misaka Foot Bridge	Baluba	concrete works done. Steel works in progress	75%	ON GOING	838,010.60	838,010.60	-
21	Rehabilitation of Kalala Market - Phase 2		awaiting contract approval	0%	ON GOING	275,168.50	275,168.50	-
22	Newtown – Chawama Clinic	Chawama	Grading works and dumping of gravel in	50%	ON GOING	171,882.14	171,882.14	-
23	Off T3 – Misaka Clinic (Zaffico)	Baluba	Scheduled	0%	PENDING	89,543.30	89,543.30	-
24	Off T3 – Kakumba Primary School	Chawama	grading done up to kakumpa primary	85%	ON GOING	87,369.49	87,369.49	-
						12,720,550.00	12,195,521.07	525,028.93

LUANSHYA DISASTER PROJECTS FINANCIAL and STATUS REPORTS - 2022: ALLOCATED 733,441.32

PROJECT NAME	WARD	COMMENT	STATUS	REMARKS	ALLOCATED	ACTUAL EXP./CONTRAC AMOUNT	SAVING
Sinking of borehole at D-Market	Kamuchanga	Works	100%	COMPLETE			
Replacement of blown off roofs at Mazzieri	Kafubu, baluba	works completed	100%	COMPLETE		33,649.03	
Replacement of blown off roofs Kankwiba		works completed Reworks due to poor	100%	COMPLETE		33,649.03	
Replacement of blown off roofs baluba primary school	Baluba	works completed	100%	COMPLETE		-	
Construction of a VIP toilet at Kankwiba (rescoped to waterborne toilet)	Kafubu, baluba	works in progress. scope of the works changed as the engineering were advised to build a water borne toilet instead of pit latrine causing delay in project completion	50%	On-going		61,216.15	
				EXP. ON DISASTER	-	281,964.20	

Source: Luanshya Municipal Council,2023

Research questionnaire

UNIVERSITY of LUSAKA

SCHOOL OF POST-GRADUATE STUDIES

INTRODUCTION

Dear Respondent,

REF: **RISK MANAGEMENT STRATEGIES APPLIED ON CONSTRUCTION PROJECTS: A CASE OF LUANSHYA DISTRICT**

I am a postgraduate student at the University of Lusaka pursuing my Master's degree in Project Management. As a requirement for the fulfilment of the award of a Master's degree, I am undertaking a research study.

This study aims to evaluate the risk management strategies applied to construction projects with respect to the Local Authority in Luanshya District. It seeks to investigate how use of risk management strategies relate to completion of construction projects. Furthermore, the research strives to answer this question by analyzing the relationship between risk management strategies and the completion of projects with a focus on Luanshya District project stakeholders and end users.

A Framework for Strategic risk management is to be developed for policymakers and stakeholders on the proper management of risks in construction projects as most projects are done with the aim to bringing about sustainable development and service provision.

Arising from the aforementioned, you have been selected to participate in this academic survey. Kindly fill in the questionnaire by answering the questions honestly and to the best of your knowledge. Kindly be assured that the study is purely for academic purposes and the information you are giving will be treated with the highest level of confidentiality.

For any queries kindly contact me on 0976623975 or romen.msellem@gmail.com

Your support is highly appreciated

Yours faithfully,

Annie Ngoma

PART A- RESPONDANTS PERSONAL INFORMATION

1. What is your gender (mark only one)?

   Male ( ) Female ( )
2. What is your age
   18-25 ( ) 26-35 ( ) 36-45 ( ) 45 and above ( )
3. Level of education (State your highest level)
   Certificate ( ) Diploma ( ) Undergraduate ( ) Postgraduate ( ) PhD ( )
4. Managerial level
   Top management ( ) middle management ( ) lower level management ( )
   Other (specify) ……..
5. What type of construction projects do you participate in? (specify all that apply)
   Roads ( ) Buildings ( ) civil ( ) other (specify)…….

PART B - RISK MANAGEMENT ON CONSTRUCTION PROJECTS

.✓To evaluate the risk management strategies used in for completion construction projects

1. Based on your experience and knowledge of risk in construction projects, kindly provide feedback to the statements by indicating (X) where applicable

No	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I.	Risk management strategies play a critical role in achieving desired construction project outputs					
II.	Appropriate application of risk management strategies improves the construction project performance					
III.	Some risk management strategies are more effective in achieving desired project performance than others					

2. What are some of the risk management strategies currently employed by your organization for the effective completion of construction projects?

   (**MARK ALL THAT APPLY**)

I. Risk acceptance ( )
II. Risk transference ( )
III. Risk avoidance ( )
IV. Risk reduction ( )
V. I am not sure ( )
VI. Other (specify)…….. ( )

3. What are some of the practices to manage risk are currently being employed by your organization?

(MARK ALL THAT APPLY)

I. Assignment of risk manager ( )
II. Continuous monitoring and evaluation of project performance ( )
III. Maintenance of clear and transparent communication ( )
IV. Implementation of risk accountability for every team member ( )
V. Stakeholder engagement ( )
VI. Quantification and prioritization of risk ( )
VII. Conduct regular risk assessment ( )
VIII. I am not sure ( )
IX. Specify other…… ( )

4. Is there a relation between risk management strategies and the completion of construction projects with the desired output?

Yes ( ) No( ) Not Sure ( )

5. Does your organization use risk management strategies?

Yes ( ) no ( ) Not Sure ( )

✓To Explore the risk associated with construction projects

1. What are some of the risks present in the construction projects undertaken by the Local Authority?

Check all that apply

I. Cost over runs ( )
II. Scheduling errors (delay in completion) ( )
III. Poor quality (construction technical or design risk) ( )
IV. Safety hazard ( )

V. Poor contract management ( )
VI. Poor resource management ( )
VII. Incompetent of contractors ( )
VIII. Inexperienced work force ( )
IX. Political interference ( )
X. Poor stakeholder management ( )
XI. Logistical and procurement risk ( )
XII. Poor management from top management and leadership ( )
XIII. Financial and economic crisis ( )

2. What are some measures that are done by the organization to manage risks?

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I. Internal audit reports are taken for monitoring of risk and are evaluated on whether the institution is taking the agreed upon actions regarding a particular risk					
II. Risks are identified and assessed. They are then monitored and reported by the implementation of a risk control measure					
III Risks are continuously monitored and reported in the organization					
IV The organization has a proper documentation for the reporting and management of risk such as a risk register or risk report					
V. The organization has a proper risk management strategy document or plan in place					
VI The organization frequently uses risk management practices for construction of projects					

3. Kindly rate the extent to which you agree or disagree with the underlisted statements on project risk management on Construction projects.

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
There is adequate project risk planning					
Proper risk identification strategies are put in place					
There is adequate risk analysis and assessment					
Adequate and effective risk monitoring of risks					
There is proper communication between project parties					
The organization has an appetite for risk management					

✓To examine the probability of occurrence and severity of impact of risk on construction projects

1. What is the probability of occurrence in construction projects are the underlisted risks?

	Most Likely	Likely	Rare	Unlikely	Most unlikely
I. Cost overruns					
II. Scheduling errors (delay in completion)					
III. Poor quality (construction technical or design risk)					
IV. Safety hazard					

V. Poor contract management

VI. Poor resource management

VII. Cost over runs

VIII Incompetent of contractors

IX. Inexperienced work force

X. Political interference

XI. Poor stakeholder management

XII. Logistical and procurement risk

XIII Poor management from top management and leadership

XIV Financial and economic crisis

XV. Incompetent of contractors

2. What is the severity of impact to projects of the underlisted risks?

	catastrophic	Major	moderate	Minor	Insignificant
I. Cost over runs					
II. Scheduling errors (delay in completion)					
III. Poor quality (construction technical or design risk)					

IV. Safety hazard

V. Poor contract management

VI. Poor resource management

VII. Cost over runs

VIII Incompetent of contractors

IX. Inexperienced work force

X. Political interference

XI. Poor stakeholder management

XII. Logistical and procurement risk

XIII Poor management from top management and leadership

XIV Financial and economic crisis

XV. Incompetent of contractors

3. Does your Organization have a risk assessment Matrix (visual toll for depicting potential risk affecting construction projects)?

   Yes ( ) No ( ) Not Sure ( )

4. Kindly mark where applicable for the following statement
5. Are project managers aware of risk that could be present in Construction projects?

Statement	Yes	Not sure	No

Are steps taken for the identification of risks in construction projects?

Are identified risks addressed?

Are identified risk ranked according to priority?

Are identified risks ranked according to probability of occurrence?

Are identifies risks ranked according to the Severity of impact on Projects?

✓**To develop a risk management strategic plan for the Local Authority**

1.To what extent do you agree with the following statement concerning the performance of projects undertaken by the Local Authority in Luanshya.

		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I.	Construction projects are completed with stipulated time					
II.	Construction projects are completed within stipulated budget					
III.	Construction projects are completed within stipulated specifications					
IV.	Construction projects are completed within desirable quality					
V.	Construction projects are completed within the required scope					

VI. Construction projects are able to meet end user satisfaction after completion

VII. Stakeholders requirements and specifications are taken into consideration

VIII. There is precise definition of project scope, schedule, specifications and budget

2. Kindly rate to the extent you agree or disagree with the under listed statements on Risk management strategies on construction projects done by the local authority in Luanshya.

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I. There should be frequent inspection of construction works					
II. There should be proper allocation of risk					
III. There should be proper documentation of risks					
IV. There should be proper responses to risk coupled with effective monitoring techniques					
V. Project team to identify inherent risk, report and documents them					
VI. Timely review of construction projects performance					
VII Utilization of cost and budget estimation techniques					

VII Clear and well-written risk matrix to establish the impact and probability if they were to occur

3. In order to enhance strategic risk management, to what extent to you agree or disagree with the following statement.

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
The organization should cultivate a risk culture for management of risk					
Risk should be identified, evaluated and managed according					
Stakeholders should be actively involved in all project phases					
A clear awareness of organizations core-strategic goals					
The organization should be equipped with the following- risk identification plan, Risk analysis plan, Risk prioritization plan					
Strategic Contractor bidding and procurement processes should be in place					

End of Questionnaire. Thanks for your Participation

Interview Guide

UNIVERSITY of LUSAKA

SCHOOL OF POST-GRADUATE STUDIES

RISK MANAGEMENT STRATEGIES APPLIED ON CONSTRUCTION PROJECTS: A CASE OF LUANSHYA DISTRICT

I am a postgraduate student at the University of Lusaka pursuing my Master's degree in Project Management. As a requirement for the fulfilment of the award of a Master's degree, I am undertaking a research study.

This study aims to evaluate the risk management strategies applied to construction projects with respect to the Local Authority in Luanshya District. It seeks to investigate how use of risk management strategies relate to completion of construction projects. Furthermore, the research strives to answer this question by analysing the relationship between risk management strategies and the completion of projects with a focus on Luanshya District project stakeholders and end users.

You have therefore been identified as a resourceful contact to help provide the required knowledge and expertise regarding the topic. The interview only requires a few minutes of your time and all information provided will be regarded as confidential. No recording shall be made unless permission is granted.

Thank your for your participation.

Personal Information

1. Name……..
2. Name of organization…….
3. Management level……..
4. Highest Academic qualification…….
5. Contact No……..

Interview Questions

1. What is your Impression on the performance of Construction Projects undertaken by the Local Authority ?……
2. What do you think can be done to ensure that risk management strategies are used in Construction Projects? ……
3. To what extent to do think the application of Risk Management Strategies help Construction Projects?.....
4. Is it understood in your organization that risk is an integrant part of business, is this fact accepted and does your organization operate in this reality?.....
5. Does the Organization have the capacity to handle risk in terms of technical, competency of employees and resources? Kindly explain your answer……
6. Are stakeholders involved in the management of risks in construction projects?.....

Thank you for your Participation

similarity report

ORIGINALITY REPORT

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UNIVERSITY OF LUSAKA

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SCHOOL OF POSTGRADUATE STUDIES

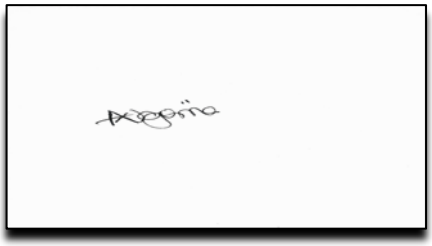
SUBMISSION OF DISSERTATION FOR EXAMINATION

Name of student: Annie Ngoma

Student number: MSCPM211462321

Programme of study: Masters of Science in Project Management.

Dissertation title: Evaluation of the risk management strategies employed on construction projects In Luanshya District.

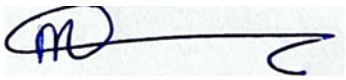
Signature of student: 

Date: 02/01/2024

Supervisor's Comments:

I recommend/ do not recommend this dissertation for submission for examination (If you do not recommend, kindly provide a written report and attach hereto).

Name of Supervisor: DR. Eng. Micheal Kalumbu Nsefu.

Signature of Supervisor: 

Date: 02/01/2024