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EFFECT OF RISK MANAGEMENT PRACTICE ON PROJECT SUCCESS: IN THE CASE OF SUNSHINE CONSTRUCTION PLC

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A THESIS SUBMITTED TO ST. MARY UNIVERSITY SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF ART IN PROJECT MANAGEMENT.

DECLARATION

I, the undersigned, declare that this thesis entitled: “Effect of Risk Management Practice on Project Success: In the Case of Sunshine Construction” is my original work. I have undertaken the research work independently with the guidance and support of the research supervisor. This study has not been submitted for any degree or diploma program in this or any other institution and that all sources of materials used for the thesis have been duly acknowledged.

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Name of Student	Signature	Date

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APPROVED BY BOARD OF EXAMINERS

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External Examiner	Signature
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Internal Examiner	Signature

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ACRONYMS/ABBREVIATIONS

CSA	Central Statistical Agency
KM	Kilo Meter
PMBOK	Project Management Body Knowledge
PLC	Project Life Cycle
PLC	Private Limited Company
PMI	Project Management Institute
RBS	Risk Breakdown Structure
RM	Risk Management
RMP	Risk Management Practice

Abstract

This study focused on exploring the effects of risk management practice on project success in Sunshine Construction PLC utilizing three specific sample projects as case studies. Therefore, project team members worked on those projects implemented in the Sunshine Construction was contacted to collect data. The researcher used well-structured questionnaires to collect data from the respondents to investigate the effects of risk management practices on project success at Sunshine Construction PLC, from 139 respondents. The study uses simple random sampling technique to select respondents that have adequate knowledge and significant role in the projects. The applications used to analyze and examine the hypotheses were the Statistical Package for Social Sciences V.25.The descriptive statistics was used to describe the general result of the variables. In addition, correlation analysis was done to check the correlation between the dependent variable and the independent variables, while regression analysis was used to test the hypotheses developed following the conceptual framework developed from the literature. Major findings of this study indicates, risk identification, risk analysis, risk response analysis, and risk monitoring and control have positive effects on project success in Sunshine Construction PLC. However, risk prioritization did not indicate statistical effect on project success in Sunshine Construction PLC in the study period. This result indicates proper risk management practice is very important for enhancing project success. Based on the result, the study findings concludes Sunshine Construction PLC implements systematic risk management approach to decrease risks and enhances to achieve the organizations project objectives. Recommendations for further strengthening the risk management framework include continuous improvement of practices, investment in employee training, and enhanced communication of the organization's vision and mission.

Key Words; Risk Management Practice, Risk Identification, Risk Analysis, Risk Monitoring and control, Project Success

CHAPTER ONE
INTRODUCTION

This chapter begins by introducing background of the study, statement of the problem, research question, the objective of the study both the general and specific objective, the significance of the study scope of the study, limitations of the study and organization of the study are presented.

1.1. Back ground of the Study

Construction projects are often faced by a varieties of factors that affects their success. These challenges are including, project management factors, financial factors, technical factors, labor and human resource quality, political environment factors. In addition to this human made factors construction project has been affected by different natural factors such as, whether, soil condition, and also plays a vital role. Any construction projects plan was affected by these different these factors. Hence, an effective risk management (RM) was imperative to ensure that the projects initiated are undertaken in a manner that caters to time and cost issues arising out of a lack of risk management (Tahir et al, 2019). Risk management is a concept which is used in all industries in the world. Each industry has develop their own RM standards, in order to avoid negative consequences (Tahir et al, 2019).

In recent years, risk management has become a priority for all sectors of the economy, so organizations can protect their interests while achieving their goals. Through risk management, organizations can ensure that it will achieve the desired results, reduce the impact of threats to acceptable levels, and increase opportunities to seize opportunities (Paul Hopkin, 2012).

Currently, managing risk only at the functional level is not appropriate; the current market environment requires a more integrated approach to risk management. All organizations around the world are taking a global approach to all the risks they face. Integrated risk management is an ongoing process in which potential risks are assessed at all levels of the organization and all results are collected at the business level to improve decision making (Berg, 2010). Integrated risk management must be part of the organization's strategy and have a significant impact on risk management within the organization. This approach helps organizations maximize their benefits at the next level. The integrated approach focuses only on identifying and assessing risks and

mitigating impacts to minimize acceptable risks. Take risks at an acceptable level and help organizations drive innovation within hermitages (McNamara & Rejda, 2014).

Risk management is a system that works proactively by examining the various risks that may arise and defining procedures and measures that increase the organization's ability to avoid or mitigate the impact of risk processes. At an acceptable level, risk management is the process by which an organization can define risks and evaluate and develop strategies for managing or maintaining those risks (Berg, 2010).

Risk management is a management activity that becomes more important as companies become more global and more competitive. The risk management process consists of a series of steps that define context, analyze, assess, process, control, communicate, and continuously improve decision making. By implementing different strategies, organizations can reduce unexpected and costly emergencies and allocate resources more efficiently. It helps improve communication and improve organizational performance by providing a brief summary of the threats it may face (Pojasek, 2017).

Construction companies are among those that are in need of risk management. The construction industry operates in a very uncertain environment where conditions can change due to the complexity of each project (Sanvido et al., 1992). The aim of each organization is to be successful and risk management (RM) can facilitate it. However, it should be underlined that risk management is not a tool which ensures success but rather a tool which helps to increase the probability of achieving success. Risk management is therefore a proactive rather than a reactive concept.

Many previous studies (Klemetti, 2006; Lyons and Skitmore, 2002; Zou et al. 2006) have been conducted within the field of RM but each presents a different approach to this concept. This study focuses on the construction industry and how the subject is practiced in the everyday operation. The concept of RM is presented in a systematized project life cycle (PLC) approach to show differences between elements of RMP in different project phases.

The study is conducted on sunshine construction PLC, which work with risks in all its construction projects.

The case study organization, Sunshine Construction PLC, was founded in 1984, as a sole proprietorship and later in 1993 transformed into a private limited company. In the early years of its establishment, the company had started to engage itself in minor construction and waterproofing works with less than ten employees. Currently, the company has over 3000 employees, and the 36 years milestone career of the company enabled it to build a reliable capacity and exhibit practical excellence in the construction sector. Sunshine construction has attained a prestigious role position at the helm of the sector and become a bloodline to the establishment of other businesses and philanthropic entities under the Sunshine Investment Group. Since its establishment sunshine construction has undertaken 1129.78 KM Road projects, 427 Villas and 3254 Apartments. (https://www.sunshineinvestmentgroup.net/front-page/construction/)

1.2. Statement of the Problem

Many industries have become more proactive and aware of using empirical analyses in projects. Likewise, RM has become a timely issue widely discussed across industries. However, with regard to the construction industry, risk management is not commonly used (Klemetti, 2006). More construction companies are starting to become aware of the RMP, but are still not using models and techniques aimed for managing risks. This contradicts the fact that the industry is trying to be more cost and time efficient as well as have more control over projects. Risk is associated with any project regardless the industry and thus RM should be of interest to any project manager. Risks differ between projects due to the fact that every project is unique, especially in the construction industry (Gould and Joyce, 2002). However, there are still many practitioners that have not realized the importance of including risk management in the process of delivering the project (Smith et al., 2006). Even though there is an awareness of risks and their consequences, some organizations do not approach them with established RM methods.

For many years, construction organizations in developing countries have approached risk management in construction projects and organizations by using a set of practices that are normally insufficient, producing poor results most of the time, and limiting the success of project management. This situation can be observed both in contractors and owners' organizations as well. In general, it can be said that risk management in these organizations is inadequate, lacks a systematic and formal approach, and its performance is not measured (Serpell et al. 2015).

Being a project-oriented organization, Sunshine Construction PLC experience more risks and need to manage them as effectively and efficiently as possible. As an organization entrusted by its customers to deliver the product upon an agreed time, cost and quality standards, the PLC is expected to control production delays, escalating construction costs and quality defects to build client confidence and satisfy its customers. An effective risk assessment and management system is imperative to ensure that the projects initiated are undertaken in a manner that caters to time and cost issues arising out of a lack of risk management. However, risk management within the construction industry in Ethiopia (including Sunshine Construction PLC) is increasingly reliant on intuition, judgment and experience rather than formal knowledge of risk management prevalent in the industry (Tahir et al., 2019).

One notable aspect from the forgoing is that implementing strategy through projects is becoming the key for competitiveness. One notable aspect that comes with this is the management of project risk which is considered crucial once project success criteria has been agreed upon by all stakeholders (Frefer et al., 2018). Hence the effective application of project risk management is a possible significant contributor towards project success (Javani et al. 2022).

Yet, nothing is known how the different construction companies involved in the construction area of the country the impacts of risk management on project success. So far, survey of the existing literature shows that there is no study that illuminated about the impacts of risk management on the construction projects carried out under the ownership of sunshine construction PLC. Therefore, though the researcher does not claim this is the only study, there seems a gap in literature that the impacts of risk management on Sunshine Construction PLC project success needs to be studied. Needless to say, the sunshine construction PLC, usually invests in different construction projects in a country. The outputs could be an asset to the company, and to other stakeholders. It is with this in mind that this study was initiated with the aim to investigate the influence of project risk management on construction project success at sunshine construction PLC.

1.3. Objective of the Study

General Objective

The general objective of this research was to determine the effects of risk management practices on the project success of construction projects at sunshine construction.

Specific Objective

1. To what extent risk management practices influence the success of construction projects at Sunshine Construction
2. To investigate the effects of project risk management planning, identification, analysis, response planning, and monitoring and control on the success of the project.
3. To examine the relationship between project risk management practices and project success in sunshine construction.
4. To examine the relationship between project risk prioritization and project success in sunshine construction.

1.4. Research Question

Based on its objectives, the study seeks answers to the following research questions.

1. Does risk identification have an effect on project success??
2. Does risk analysis have an effect on project success?
3. Does risk prioritization have an effect on project success?
4. Does risk response have an effect on project success?
5. Does risk monitoring and control have an effect on project success?

1.5. Significance of the Study

This study would be beneficial to academicians in the subject area, executives of construction companies in Ethiopia, and policymakers.

For the academicians, conducting of this study will contribute significantly to the existing knowledge regarding risk management practice and project success in the construction projects in Ethiopia. Currently, there is notable shortage of empirical literature on the impacts of risk management practice on project success in the area of construction sector. Therefore, this research endeavor will play a significant role in enhancing the depth of available empirical literature on this area.

Managers are mainly concerned with the effective risk management in the construction project in their company's. Especially project managers, they must come up with innovative and efficient management practices. To achieve this, studies focusing on Ethiopian construction industry are still scanty and limited. Therefore, this research paper have important contributions to understand the relative benefit of risk management and its effect on success, this in turn enable them to have

a yardstick for measuring their risk management and their project success performance.

This study is also important to the governing body, Ethiopian Construction Corporation as it would help in influencing construction sector regulations around risk management and its effectiveness.

1.6. Scope

This study analyzes the risk management practices of three Sunshine Construction projects that undertaken here in Addis Ababa. The main reason for selecting these projects is the availability of information and limited time for the research.

1.7. Limitation of the Study

This study was delimited to Sunshine construction projects that are finalized. Specifically, risk management methods and how the company include it in their plan, major risk factors and how risk factors related to project success explored within the scope of this study. In terms of geographical location, the scope is limited to Addis Ababa.

The limitations of the study include the following.

- All project management knowledge areas are interrelated to each other and could possibly affect project performance but this study covers the risk management aspect only, which raises the issue of the attribution gap.

- Due to financial and time constraints, the study made to cover three construction projects recently completed by the case study organization. Generalization can't be made as a result.

1.8. Organization of the Thesis

The research report is composed of five chapters listed as the follows: Chapter one is an introduction including a background of the study, statement of the problem, research question, the objective of the study both the general and specific ones, the significance of the study, scope and limitations of the study. Chapter two is the review of related literature including definition and concepts, theoretical literature review, empirical literature review, and conceptual framework. Chapter three is about research methodology including research design, research approach, data type, and data source, population and sample size, variable measurement and instrument, reliability and validity, method of data analysis, and ethical consideration. Chapter four presents data, analysis results and discussions. The last chapter encompasses conclusion and recommendation derived from study findings.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

This chapter introduces the review of theoretical and empirical literature relating to project risk management and success of projects. It provides a critical look at the work that has been done by other researchers which is related to this study.

2.1. Conceptual/ Theoretical Review

2.1.1. Project and its Risk Management

A project is a one-off process with a single definable end result or product. Much of project management is concerned with planning and controlling the three key variables associated with projects. These variables are time, cost, and quality (Kerzner, 2009). They are interrelated and a change in any single variable frequently has a significant impact on the other (Audrius B. et al., 2012), and, according to PMI (2013), a project is a temporary endeavor undertaken to create a unique product, service or result.

A construction project is no different and most of the cyclical patterns in construction are similar to the business-cycle characteristics of investment in the macro-economic literature (Audrius B. et al., 2012).

These similarities are not a coincidence since construction activity is a type of investment (Mohamed A., 2011). Construction, as recorded in national accounts, includes housing construction, construction of a business structure, and infrastructure-related construction (Ibrahim, 2011).

According to a report by CSA (2007 E.C.), in Ethiopia, construction is showing a sign of a highly accelerated expansion in recent years but at the same time is facing hurdles in terms of time, cost, and quality.

The PMBOK Guide 4th Ed. defines project risk as an uncertain event or condition that, if it occurs, has a positive or negative effect on at least one project objective. Risk can be managed, minimized, shared, transferred, or accepted but it cannot be ignored (Jardin, S., 2017).

Ana, D. (2012) also defined risk as an uncertain but potential element that always appears in the technical, human, social, and political events, reflecting changes in the distribution of possible

outcomes and subjective probability values and objectives, with possible damaging and irreversible effects.

An effective risk management process encourages the construction company to identify and quantify risks and to consider risk control and risk reduction policies. Construction companies that manage risk effectively and efficiently enjoy financial savings, and greater productivity, improved success rates of new projects, and better decision making (Sharon S., 2014).

Risk management in the construction project management context is a comprehensive and systematic way of identifying, analyzing, and responding to risks to achieve the project objectives. Research by Audrius, B. et al.,(2012) show that the construction companies surveyed significantly differ from the construction companies in different countries in the adoption of risk management practices, and to manage the risk effectively and efficiently, the contractor must understand risk responsibilities, risk event conditions, risk preference, and risk management capabilities.

The absence of an effective project risk management function has several negative consequences for participants in a project due to lack of preventive action against the risks and uncertainty that any project presents. For example, the lack of prevention against the risk of scope definition of a project, or environmental hazards or communication risks, between others, leads to delays, significant increases in costs and contractual disputes, among others (Serpellaa, et al., 2014).

And risk management is among the most important factors in project management practices to confirm a project is fruitfully finished. A systematic approach to risk management, suggested by Turnbaugh (2005) has three basic stages: Risk identification – to determine the types of risks, identify, and assess the potential risks in the project; Risk Quantification – to identify the probabilistic characteristics and the degree of the impacts for their impacts; Risk Response and Development Control – to define opportunities for managing changes in risk during the project life cycle.

As a concept, risk management is used in all industries such as in information technology, automobile, the construction sector etc. Though each industry has developed its own risk management standards, the general ideas of the concept generally remain the same irrespective of the specific sector. According to the Project Management Institute (2004), project risk management is among the nine most serious parts of project commissioning. This shows that there

is a strong relationship between managing project risks and a project success. In fact, risk management is described as the most challenging area within construction management (Winch, 2002; Potts 2008) yet, as it is so crucial, its application is encouraged in all projects in order to reduce or avoid negative results (Potts, 2008).

Thus, in one way or the other, inappropriate, or absence of risk management skill, experience and preparation in construction projects results in delay of completion, that also leads to further financial crises. According to Assaf and Al-Hejji (2006) construction delay could be stated as the time overrun either beyond finishing time specified in a contract, or beyond the date that the parties agreed upon for project delivery. In other words, it is a project slipping over its pre-planned schedule. And, a delay that arises from inappropriate risk management is a crisis to any part involved in the project. To the client, delay means inability to accomplish once objective as planned, as the construction should provide service. On the other hand, to the contractor, delay could mean higher "costs because of longer work period, higher material costs through inflation, and due to labor cost increases and maybe lost opportunities for new projects because of diminished financial capabilities" (Assbeihat, 2016).

Risk identification is a decision which a project manager makes to manage projects (Pimchangthong & Boonjing, 2017). Project managers engage in risk identification to identify vulnerabilities to the project that could affect the result of project success (Apostolopoulos et al., 2016). When the project manager do not manage risks accordingly, the result can lead to cost, schedule, and performance problems (Zhang & Fan, 2014). The risk response decision analysis outcome is a risk response plan for each project risks for implementation and risk reduction (Zhang, 2016).

Risk analysis is used in risk management processes to determine how closely the degree of risk management is related to a project's success. It might be claimed that applying high-level risk management will raise the likelihood of the project's success given the evident link between successful risk management and project success. A substantial risk that is not recognized and managed will eventually become a significant issue in the project. According to Tinnirello (2020), analyzing how accurately the pertinent project risk information is another step in determining the importance of a risk to a project's success, according to Project Management Institute (2020).

Because project workers were better trained to identify and mitigate risks, risk planning had a large

and positive impact on project success (Kinyua et al., 2015). Project risk planning has a substantial impact on control of IT projects. At lower levels of uncertainty than they do at higher levels of uncertainty, project risk management techniques have a more significant positive influence on project success (Jun & Qingguo, 2010). Improve project success by finishing it on schedule, under budget, and with a higher profit margin for the vendor firm (Juliane & Alexander, 2013).

Risk monitoring includes suggestions and recommendations for changes to make to lessen the risks. Corrective measures include, for instance, contingency planning and workaround strategies. To steer the project in line with the project management strategy, preventive activities are recommended. Roque and Carvalho (2013) present the recommended corrective and preventive methods for the configuration management process. As part of risk monitoring, the project's progress in addressing its risk items is reviewed, and corrective action is made as needed. Controls can be divided into three categories: preventive, detective, and corrective. Preventative measures reduce the impact of threats or prevent them from taking advantage of a project's vulnerabilities. Detective controls reveal when something happened and stop future instances of the same exploitation.

In general, the objective of project risk management is to understand project and program level risks, to diminish the probability of negative occasions and to maximize the prospect of positive events on projects and program outcomes. From this it is possible to infer that project risk management is an ongoing process that begins during the planning phase and ends once the project is fruitfully concluded and twisted over to tasks.

2.1.2. Project Success

The success of construction project has been an area of concern for many organizations around the world. Many researchers have suggested that projects should be rated as successful when they are completed within or near the estimated schedule and budget, and produce an acceptable level of performance PMI (2013), Martin, et al. (2007). Mahaney and Lederer (2011) carried out a study using a project completed on time and within budget that worked as the measures to evaluate project success. Some studies were aware of the benefits, which were used as criteria to justify project success Iacovou, et al. (1995). Gable G, et al., (2008), Jones M, et al., (2008) and Ward and Daniel (2012) used organizational impact and user satisfaction as the criteria to measure the ERP system success. According to Baccarini (1999), project success involves two components, such as project management success and product success. Process performance referred to time &

budget, and product performance referred to requirements.

PMI, in its 2017 pulse production project of the profession survey, describes that the traditional measures of scope, time, and cost are no longer sufficient in today's competitive environment to measure project success. The ability of projects to deliver what they set out to do the expected benefits is just as important. So when determining project success, it looked at levels of benefits realization maturity as well as the traditional measures.

For the purpose of this research the project success is viewed in two dimensions.

1. Process performance: this measures the project success how much it meets the defined scope, time, and budget

2. Product performance: this measures how much the project realizes the benefit it intended to deliver (meets beneficiaries intended, satisfied users, overall high quality and reliable)

2.1.3. Project Risk Management

Risk management is one from the 10 Project Management Knowledge areas that covers an adequate overview of what you need to do to manage risk on the project. By introducing risk management from the starting (even before planning) helps the project managers, workers, participants, all stakeholders. Managing risk means getting the key for the project success. Since the study area is on construction projects and as we all know and try to mention before construction is very risky in terms of the country economy and the resources that use to complete one's project; risk management is very important. Risk management is not started after the risk has happened rather it goes in parallel to the project. This means when there is a plan for the project, there should be a plan for risk management alongside. Schieg (2006) emphasized that risk management does not only mean taking a measure after the negative effect happened but it also involves the establishment of risk consciousness, integration of basic principles of risk policy and organizational integration to prepare the project for unsolved negative risks and increased transparency in between the responsible organs and other stakeholders and employees. Managing risk is the ongoing process in the entire life of the project.

According to Potts (2008) risk management is not a sudden activity that takes place once the risk happened. Rather it should be a process that begins from early stages of a project with an independent management crew to identify, analyze, assess and respond for the arisen risk. Mainly, the process of risk management helps to identify and understand the specific risks in the project, it

was supported decisions by detailed analysis and a buildup of historical data that can be used to assist future risk management procedures. But (Smith et al., 2006) believes most project managers do not get the importance of project risk implementation as an integral part of the delivery of a project. Construction risk management have also its own processes from planning to implementing and evaluating the process and helps to reduce the impact of risk in the projects. In construction risk management plan is as other activities developed at the early stage of the project. The plan included what risks or uncertainties might occur and how to mitigate and resolve it before it drops the negative effects on the project by assigning and forming the crew to be responsible for the process.

Szymański (2017), outlines the following process of risk management throughout the project cycle:

- Risk identification – identification of risks and determination of their sources
- Risk analysis – risk assessment in terms of hazards and their consequences
- Responding to risk - number of measures and mechanisms affecting the risk level
- Risk monitoring and control– on-going assessment and information about the risk.

2.2. Empirical Review

2.2.1. The Relationship between Risk Management and Project Success

There are several factors which influence whether a project is successful or not. Among them, risk identification, risk analysis, risk prioritization, risk response planning, and risk monitoring and control are the key factors that affect project success.

Internationally, researchers such as Alter and Ginzberg (1978), suggests the likelihood of successful project implementation can be increased by identifying and managing projects risks. Junior1 and Carvalho (2015) suggested that adopting risk management practices has a significant positive impact on project success. Alsaadi and Norhayatizakuan (2021) cited in Fikadu et al (2023) suggest practicing risk management improve the success of construction project significantly. Tahir and et.al (2019) concluded and the theory have been reinforced that an effective risk management system must comprise of a method of risk identification, a strategy for risk assessment and a mechanism for prioritizing risk response.

Nguyen & Watanabe, (2017) used a qualitative study using semi-structured interviews to identify the contributions of risk management among SMEs in the construction industry from three EU

nations (UK, Germany, and Italy) (Rostami, 2017). They discovered that the introduction and practice of RM improve an organization's competitiveness in three key areas: awareness, productivity, and profitability. Pirwani et al. (2020) conducted a similar study on the relationship between risk management practices and project management in Pakistan. He found that there was a positive and significant impact of risk management processes (i.e. risk identification, risk assessment and risk response) on overall control of risk and project success in construction. Similar findings were also obatined by other authors from several countries (Urbański et al. ,2019, Masengesho et al 2020, Marinich 2020, Sabiel 2020, Nguyen & Watanabe 2017, Ali et al 2018, Amoah and Pretrois 2019 , Chilumo et al. 2020).

2.3. Project Risk Management Practice in Ethiopia

A study by Getnet (2019) on assessment of Project Risk Management Practices: The case of the Commercial Bank of Ethiopia information technology infrastructure library (ITIL) Project discovered that risk management plan was not included in the project management plan. Therefore, there was no formal policy that guides the project team to overcome uncertainties in the project. There was also no defined risk roles and responsibility. Hence, the project team had no enough experience in project risk management so that they are not capable to come up with uncertainties. As a result, risks were mainly handled by the project manager and the consultant since there was no responsible department for risk handling. Moreover, all inherent project risks were not identified and a risk register was not developed. Besides, identified risks were not numerically analyzed on the overall objectives of the project, and project documents were not updated after risks were analyzed. Risk response planning to enhance opportunities and to reduce threats to project objectives was poor. In addition, risks were not audited and reviewed periodically, and risk management was not evaluated throughout the project Lifecycle. A study by Bisrat (2018) on the assessment of Risk Management Practices of the Ethiopian Public Health Institute found that risk planning is not included in the project plan. There was inadequate risk management training for project members, and there was a major knowledge gap towards what project risk management is and how it is implemented. And the author, also discovered that all risk management stakeholders were not involved in the actual practice. Hence he recommended the provision of risk management training for project team members and also risk management practice in these projects to be participatory and inclusive.

A study by Frezewd (2016) on project risk management practice in Batu and Dukem town water supply project revealed that there was no established risk management plan or policy that details and defines the risk management activities for the project. Hence there was no set risk methodology, risk roles and responsibilities, risk categories, probability and impact scales, risk tolerances, frequencies of risk management activities and reporting, and the budget and schedule for risk management activities. The study revealed that risk management was not performed as a continuous process and was usually applied at the implementation stage with no defined risk management role and responsibility and risk ownership.

A study by Andenet (2018), on project risk management of Bank of Abyssinia ISAP project, found that project stakeholders did not have adequate risk management knowledge and experience, and lesson learned from previous projects did not incorporate in the risk identification process as there was no documented risk register. Furthermore, the organization policy and procedure were inadequate to guide the project team to go through a disciplined risk management process, i.e., the institute didn't have well-established formal project risk management practice. As a result, the project teams were unable to link business analysis of threats and opportunities and analysis of project risk strongly.

2.3.1. Construction Project Risk Management in Ethiopia

Some studies were conducted on construction risks of building projects in Ethiopia; however prior literature in Ethiopia have left not enough documentation on project risk management practice of building construction projects.

A study conducted by Andualem (2019) on critical risks in construction projects in Ethiopia analyzed 72 variables or risk factors that were identified by project stakeholders using the relative importance index method. The finding showed that the inadequate schedule, equipment and labor productivity (construction risks), payment delay, submittals and approvals of construction documents (financial risks), price inflation (economic risk), bribe and corruption (political risk), differences in design practices and standards (design risk), and power of the engineer, project supervision, and subcontractors' performance (management risks), are the major risks in construction projects in the Ethiopian construction industry. The finding also indicated that most of the risks are from construction and management risks.

A study conducted on the impact of risk in Ethiopian construction project performance by Bahiru

and Lee (2017), identified and analyzed construction risks, and based on the analysis, the researchers prioritized very high risks in project performance as equipment/material failure, the labor poor productivity and equipment, and material non-availability. The assessment also revealed that the construction project has no routine practices employed to manage risks. It stated that although construction risk management literature is very rich in conceptual frameworks and models to overcome the formality of risk management efforts, the number of systems which fully support the risk management process is very low. The formal risk management processes which involve risk management planning, identifications, assessment, response planning, and monitoring have no model in the Ethiopian construction project.

2.3.2. Risk Management and Project Success in Ethiopia

Kassahun (2019) in his work noted that risk monitoring and control practice and project successfulness are significantly and positively related. Furthermore, risk monitoring and control is the highest predictor of factors affecting project success compared to other factors. So, risk monitoring and control is the main predictor that had highest effect of project success.

According to Kassahun (2019), risk analysis is the second highest predictor of project success. He also stressed that one of the factors that had effect on the success of projects is risk response planning. Based on his finding the practice of planning to respond to risk is not appropriately and consistently implemented in the organization.

2.3. Conceptual Framework

Conceptual framework is a hypothesized model identifying the concepts under the study and their relationships. Mugenda (2008) defines conceptual framework as a concise description of phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study. According to Young (2009), conceptual framework is a diagrammatical representation that shows the relationship between dependent variable and independent variables.

The conceptual framework below (Figure 1) illustrates that risk management affect the success of construction projects, the independent variable (risk management) was conceptualized! Broken into small constructs such as risk identification, risk assessment and risk prioritization. Success of construction projects (dependent variable) was conceptualized in terms of completing a project within the specified time and costs, quality products and project completion.

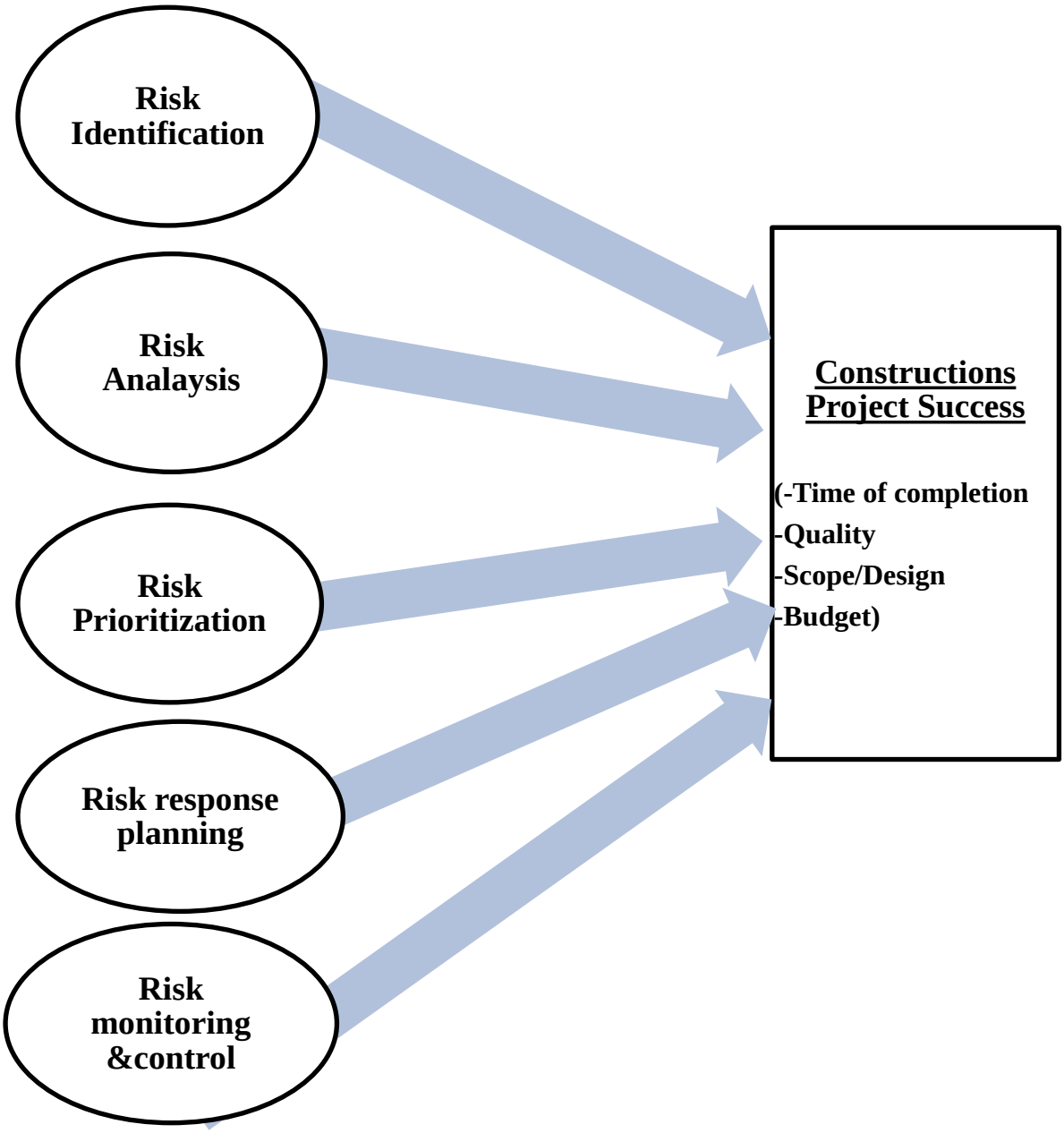


Figure 1 Conceptual Framework (Source; Own literature review)

CHAPTER THREE
RESEARCH METHODOLOGY

This chapter provides details about research methods employed to conduct the study. Accordingly, it presents the research approach and design, study population and sampling, data type and sources, method of data collection and its analysis, validity & reliability and ethical consideration.

3.1. Research Approach

Research approach, is a strategy or philosophy utilized in research work (Saunders et al. 2009). There are three types of research approach; namely, qualitative, qualitative and mixed. Quantitative research is related to objective measurement and statistical analysis of numeric data to understand and explain phenomena (Ary, et al., 2002). In this research method, data is quantified and statistical methods are used in the data analysis. The primary goal of this research method is to seek evidence about a characteristic or a relationship and to use statistical inference to generalize obtained results from the population (Patrick, 2008).

Qualitative research is an approach that study phenomena in their natural settings, without a predetermined hypothesis. In this research approach, data is verbal or visual and it aims to provide insight and understanding of the given phenomena which avoids numeric data and gathers information through interviews and observation (Ary, et al., 2002). In general, quantitative research is associated with a positivist research perspective, while qualitative research is associated with an interpretive research perspective. Positivist designs seek generalized patterns based on an objective view (measurable property) of reality independent of the observer (researcher) and his or her instrument, while interpretive designs seek subjective interpretations of social phenomena from the perspectives of the subjects involved (Anol, 2012). The mixed approach combines and utilizes features from the aforementioned two approaches. For this study the quantitative approach was adopted in order to achieve its stated research objective.

3.2. Research Design

Research design is a blueprint for empirical research aimed at answering specific research questions through specifying the methods and procedures for collecting and analyzing the needed information (Anol, 2012). Therefore, use of an appropriate research design is something that could not be subjected to compromise if a viable research finding is sought to be achieved. For the purposes of this research, both the explanatory and descriptive research designs were considered.

3.3. Data Sources, Types and Collection Methods

The data required to explore the effects of risk management practice on construction projects success obtained from primary sources. Primary data were gathered through a structured questionnaire. Neuman (2000) recommends use of questionnaires for its potential to reach out to a large number of respondents within a short time; ability to accord respondent's adequate time to respond; offers a sense of privacy and confidentiality to the respondent. Therefore, the instrument was selected as a quick and cost- effective way to collect data. The first tool used was closed-ended questionnaires filled by selected employees of the construction projects in Sunshine Construction PLC which was quantitative types. A five-point Likert scale was adapted from different literature in line with risk management.

3.4. Study Population, Sample Size and Sampling Technique

According to Hair F. et al., (2010), target population is said to be a specified group of people or objects for which questions can be asked or observations are made to develop the required data structures and information. The researcher targeted 213 potential respondents from Sunshine construction project staff including the project management and risk management teams who participated in carrying out various projects from Gerji apartments, Bole Beshale apartments, and CMC no-2 residential projects in Addis Ababa. Determining sample size, is the key step on the overall statistical process. An appropriate sample size is means of gaining high precision, accuracy and consistency with minimum cost. The sample size of the research was determined through Yamane, (1967) equation. Based on Yamane, (1967), a simplified formula to calculate a sample size is presented hereunder.

$$n = \frac{N}{1+N(e)^2}$$

Where n stands for the number of samples,

N stands population size (213), and

'e' stands for margin of error (0.05).

$$n = \frac{213}{1+213(0.05)^2} = \frac{213}{1.5325} = \mathbf{139}$$

Therefore, from 213 total employees involved in three construction site, 139 sample was selected by using simple random sampling which individuals has equal chance to being selected, that helps to reduce bias.

3.5. Method of Data Analysis

The collected data were analyzed with descriptive and inferential statistical functions using SPSS version 25 software. The data collected from the questionnaires were measured by ordinal scale and analyzed quantitatively and illustrated using tables. The data analysis was made by using both descriptive and inferential statistics. Descriptive statistics such as frequencies, percentages, means and standard deviations were used to summarize and present the data. In addition to this, Pearson correlation coefficient was used to show the association between the independent and dependent variables. Finally to examine the predicting ability of the independent factor on dependent variable, multiple regressions were conducted. Applying the above method was helpful to assess the risk management practice of construction projects, in the specific case of sunshine construction projects.

3.5.1. Multiple Linear Regression Model

The primary objective of regression is to develop a regression model, to explain the association between one or more variables in a given population. A particular form of regression model depends up on the nature of the problem under study and the type of data available. Multiple regression analysis is ―an analysis of association in which the effects of two or more independent variables on a single dependent variable are investigated simultaneously (Zikmund et al., 2010). It is a form of general linear modeling, is an appropriate statistical technique when examining the relationship between a single dependent (criterion) variable and several independent (predictor) variables.

Mathematically, is given by

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where Y is project success

β0. β1. B2. B3, β4 and β5- are parameters,

Xi is the risk identification

X2 is the risk analysis

X3 is risk prioritization

X4 is risk response planning

X5 is risk monitoring and control, and ε is the error term of the equation.

3.5.2. Assumption of Multiple Linear Regression Model (MLRM)

1. Regression model has linear relationship between dependent variable and independent variable.

2. Variance of the error terms is constant.

3. Error terms are normally distributed with mean 0 and variance 1.

4. There is no multicollinearity among explanatory Variables.

3.6. Variable Measurement and Instrument

The research considered independent variable such as risk identification, risk analysis, risk response planning, risk prioritization, and Risk monitoring and control and also dependent variable are project success such as specified time and costs, quality products and project completion. The variables measured the effect of risk management practice on organizational project success at the case study organization. The questionnaire was developed following the research questions conducted to get detailed and supporting information in addition to the questionnaire responses.

3.7. Reliability and Validity

To measure the quality of the study two measuring criteria‘s are applied. These are validity and reliability. Validity explains how well the collected data covers the particular area of investigation (Ghauri and Gronhaug, 2005). Validity means "measure what's intended to be measured" (Field, 2005). Instruments were initially piloted to small numbers of respondents to verify whether the questions are easy to understand, appropriate to the research topic, unambiguous (Fellows & Liu, 2008), and to gain some idea of the time required to administer the questionnaire. It is also important to get feedback and input on other important issues that may be worthy of consideration that the initial instrument may have missed. This also gives the researcher indication of whether the instrument is measuring the right concept, hence its validity and reliability. There are different types of validity in measurement procedures;

Face validity refers to whether an indicator seems to be a reasonable measure of its underlying construct ―on its face‖ (Anol, 2012). To ensure face validity of measurement procedure pilot study on 20 respondents was conducted to examine the face validity of questionnaire items and to make sure the instructions in the questionnaire were adequate and appropriate; and adjustment have been made.

Content validity is an assessment of how well a set of scale items matches with the relevant content

domain of the construct that it is trying to measure (Anol, 2012). Content validity is the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose.

Reliability is also concerned with repeatability. For example, a scale or test is claimed to be reliable if repeat measurements made by it under constant conditions will give an equivalent result (Moser and Kalton, 1989). Testing for reliability is important as it refers to the consistency across the parts of a measuring instrument (Huck, 2007). A scale is claimed to possess high internal consistency reliability if the things of a scale "hang together" and measure an equivalent construct (Huck, 2007; Robinson, 2009). The most commonly used internal consistency measure is the Cronbach Alpha coefficient. It is viewed as the most appropriate measure of reliability when making use of Likert scales (Whitley, 2002, Robinson, 2009). No absolute rules exist for internal consistencies. However, most agree on a minimum internal consistency coefficient of .70 (Whitley, 2002, Robinson, 2009). This is considered in ensuring the internal consistency of the structured questionnaire.

Based on the survey the general result of Cronbach's alpha value was greater than 0.7. From table 1 below indicates, the overall Cronbach's Alpha of variables in the model equals 0.773 for the entire questionnaire which indicates good acceptable reliability. So, the test results are reliable.

Table 1 Cronbach's Alpha to test for reliability of Data

Reliability Statistics		
	Sign	Cronbach's Alpha if Item Deleted
Risk Prioritization	+	.795
Risk Identification	+	.747
Risk Analysis	+	.702
Risk Response	+	.736
Risk Monitoring & Control	+	.741
Project Success	+	.702
Overall value	+	.773

Sources: author's own survey, 2024. Based on SPSS v 25. Result.

3.8. Ethical Considerations

Research ethics refers to the appropriateness of the researcher's behavior concerning the rights of those who become the subject of the research work or are affected by it. Research ethics, therefore, relates to questions about how we formulate and clarify our research topic, design our research and gain access, collect data, process and store our data, analyze data and write up our research findings morally and responsibly (Saunders et al. 2009). Ethical considerations are expected to be involved in any kind of research study. This research, therefore, takes into consideration of those ethical issues on access and use of data, analysis, and report of the findings morally and responsibly. . Participants were assured of the privacy of their information, and that their identities would not be revealed. It was made clear that their contribution was voluntary and they had full authority to refuse or to withdraw if they changed their mind about participating. The participants were also allowed to ask any questions and clarify any sort of ambiguity regarding the questionnaire before they answered it, mitigating the chance of faulty responses by giving the participants a;‘ comprehensive understanding of the study and its aims. Confidentiality and anonymity of the voluntary respondents were also guarantee.

CHAPTER FOUR

Data Presentation Analysis and Interpretation

4.1. Introduction

This chapter deals with data analysis, a process which describes as critically examining the data collected in the research field. It is undertaken in order to answer the research question. As shown in the research methodology in Chapter Three, a total of 139 questionnaires were personally administered to employees of projects undertaken in the Sunshine Construction in order to answer the research questions.

In this study the first part of the analysis used descriptive statistics using SPSS version 25 and the result of the analysis is presented using frequency tables, percentages, mean, standard deviation and charts. This section mainly used to discuss the general demographic of the respondents, the success status of the project they engaged with and the risk management practices of the projects and team members level of awareness with respect to the necessity of risk management for project success. The second part of the study was mainly focused on analysis of the impacts of project risk management on project success. Thus, in this part, multiple regression was used to test the hypothesis stated in the conceptual framework and the output from the analysis was also discussed in this section of study.

4.2. Descriptive Analysis

4.2.1. Demographic Information of the Respondents

This part presents the general information of the participants of the study which include: sex, age, educational level of the participants, experiences in the construction and total experiences in the project management office of the Sunshine Construction. Accordingly, the information is presented in the following table. The response rate of this survey was 100%, this response rate achieving is uncommon and it is important to address the factors which contributes to higher rates in the research. The key elements includes effective survey design, such as clarity, the willingness of the respondents, timing and follow-up of the reminders, personal communication, ensuring trust, and confidentiality. By implementing these strategies, I'm achieved these 100% response rate.

Table 2 Demographic information of the respondents

No	Character/Variables	Category	Frequency	Percentage (%)	Valid Percentage	Cumulative Percentage
1	Sex of Respondents	Male	87	62.6	62.6	
		Female	52	37.4	37.4	
		Total	139	100.0	100.0	
2	Age of the respondents	Below 25	18	12.9	12.9	12.9
		25-35	88	63.3	63.3	76.2
		35-50	19	13.7	13.7	89.9
		Above 50	14	10.1	10.1	100.0
		Total	139	100.0	100.0	
3	Level of Education	Certificate	12	8.6	8.6	8.6
		Diploma	37	26.6	26.6	35.2
		Degree	86	61.9	61.9	97.1
		Above Degree	4	2.9	2.9	100.0
		Total	139	100.0	100.0	

Sources: author's own survey, 2024. Based on SPSS v 25. Result.

As shown in the above table 2, about 62.6% of the respondents were male and the remaining 37.4% of the respondents that participated in this study were female, and the majority of respondent's age were between 25 and 35 years (63.3%). From the respondents, 12 respondents (8.6%) have certificates, 37 respondents (26.6%) have diploma, 86 respondents (61.9%) have a bachelor of degree, and the remaining 4 respondents (2.9%) have level of education above degree. These age and level of education respondents demographic indicates the samples included in this study was relatively well educated and young that may affect their perspectives and responses.

Table 3 Characteristics of the respondent's Project related experience and respondents outlook on project success

No	Character/Variables	Category	Frequency	Percentage (%)	Valid Percentage	Cumulative Percentage
1	Years of Experiences	Below 2 years	47	33.9	33.9	34.5
		2-5 Years	43	30.9	30.9	64.8
		6-10 Years	33	23.7	23.7	88.5
		11-15 Years	16	11.5	11.5	100.0
		Total	139	100.0	100.0	
2	Years of experiences in Projects	Below 1 Year	38	27.3	27.3	27.3
		1-2 Years	38	27.3	27.3	54.6
		2-3 Years	48	34.5	34.5	89.1
		Above 3 Years	15	10.9	10.9	100.0
		Total	139	100.0	100.0	
3	Project completion on time	Strongly Disagree	14	10.0	10.0	
		Disagree	95	68.1	68.1	
		uncertain	1	1	1	
		Agree	24	17.3	17.3	
		Strongly Agree	5	3.6	3.6	
		Total	139	100.0	100.0	
4	Project completed within the budgeted cost	Strongly Disagree	10	7.2	7.2	
		Disagree	91	65.5	65.5	
		Uncertain	10	7.2	7.2	
		Agree	24	17.3	17.3	
		Strongly Agree	4	2.8	2.8	
		Total	139	100.0	100.0	
5	Project quality	Strongly Disagree	2	1.4	1.4	
		Disagree	10	7.3	7.3	
		Uncertain	5	3.6	3.6	
		Agree	118	84.9	84.9	
		Strongly Agree	4	2.9	2.9	
		Total	139	100.0	100.0	

Sources: author's own survey, 2024. Based on SPSS v25, Result.

In any business sector, adequate and relevant work experience plays a significant role. The above table 3, indicates from 139 respondents, 47 respondents (33.9%) have less than two year of experiences, 43 respondents (30.9%) have experience between 2-5 years, 33 respondents (23.7%) have experience between 6-10 years, and 16 respondents (11.5%) have experience of 11-15 year from other sectors experience. However, 38 respondents (27.3%) have an experience less than one years and between 1-2 years, 48 respondents (34.5%) have 2-3 years of experiences, and 15 respondents (10.9%) have above 3 years of experiences in projects. From the respondents majority of 95 respondents (68.1%) disagreed the project's completion on time, while 29 respondents (20.9%) agreed or strongly agreed the project was completed on time. Similarly, 91 respondents (65.5%) were disagreed that the projects are completed within the budgeted cost, only 28 respondents (20.1%) agree or strongly agree that believed the projects are completed on budgeted cost. In contrast, 118 majority of respondents (84.9%) agreed about the projects fulfils the quality standards.

4.3. Project Risk Identification

Risk identification is the most used risk management activity according to different literature. This aligns with findings from the previous studies by Voetsch et al. (2004) and Bannerman (2008), who found that the use of risk identification in projects is widespread. Risk identification is used in various formats; brainstorm sessions, moderated sessions, and meetings either with project members or experts. In this study also, respondents were required to state if their projects had carried out a comprehensive and systematic identification of its risks relating to the project.

Table 4 Project Risk Identification

Project Risk Identification	Obs.	Minimum	Maximum	Mean	Std. Deviation
A common definition of risk is used throughout the organization and uses standard and useful tools and techniques to identify risks	139	2.00	5.00	4.1799	.52822
The organization identifies the main potential risks relating to each of its declared aims and objectives of the Project	139	2.00	5.00	4.2734	.58738
Changes in risks are recognized and identified when the Organization's roles and responsibilities change.	139	2.00	5.00	4.1151	.56567
The organization assess the likelihood of risks occurring and its potential impact, prioritize its main risks, and prepare risk register for each project	139	1.00	5.00	4.1151	.68185
All key project participants/stakeholders involved in risk identification	139	2.00	5.00	4.1007	.67346
Your organization use scope statement, milestones, WBS and deliverables to identify risks	139	1.00	5.00	4.0000	.75181

Sources: author's own survey, 2024. Based on SPSS v25, Result.

Table 4 above indicates, the survey results regarding project risk identification practices at Sunshine Construction reveal a strong emphasis on systematic risk management. The findings highlight a generally positive perception of the organization's approach to identifying and managing risks.

The mean score for the use of a common definition of risk throughout the organization, along with the application of standard tools and techniques for identifying risks, is 4.1799. This high score indicates that respondents agree on the consistency and effectiveness of the definitions and tools used. Furthermore, the organization's ability to identify the main potential risks related to its declared aims and objectives received an even higher mean score of 4.2734, suggesting a robust process for aligning risk identification with project goals.

Additionally, the recognition and identification of changes in risks when the organization's roles and responsibilities change scored 4.1151, indicating that respondents believe the organization is proactive in adapting to evolving risk landscapes. The assessment of the likelihood of risks occurring, along with their potential impact, and the prioritization of these risks to prepare a risk register for each project also received a mean score of 4.1151.

Furthermore, the mean scored value of all key project participants/stakeholders involvement in

risk identification is 4.1007, which shows the collaborations to risk management enhances risk identification process. The organizations use of scope statements, milestones, WBS, and deliverables to identify risks mean score is 4.0000 that indicating the organization experienced structured methodologies.

In general, the result indicates Sunshine Construction PLC has experienced effective project risk identification practices. The consistently high mean scores across all areas indicate that employee's view these practices positively, underscoring the importance of clear definitions, stakeholder involvement, and systematic evaluation in the risk management process. By prioritizing risk identification, the organization enhances its ability to anticipate challenges, allocate resources effectively, and improve overall project success.

4.4. Project Risk Prioritization

Project risk prioritization is a critical process in effective risk management, allowing organizations to identify, assess, and prioritize risks based on their potential impact on project objectives.

Table 5 Project Risk Prioritization

Project Risk Prioritization	Obs.	Minimum	Maximum	Mean	Std. Deviation
The organization's risk management objectives have been clearly set out and have project risk management planning process for all projects	139	1.00	5.00	4.0144	.85113
There is planning meetings to develop the risk management plan.	139	1.00	5.00	3.9640	.74610
In your organization RBS is developed to define risk categories for projects	139	2.00	5.00	3.9353	.75382
There is estimation of resources and costs needed for risk management activities and include them in the project budget	139	1.00	5.00	3.9065	.85882
Risk management activities define and include in the project schedule	139	1.00	5.00	4.0000	.72232
Your organization uses standard and useful tools and techniques to plan	139	1.00	5.00	4.0000	.73228

Sources: author's own survey, 2024. Based on SPSS v25, Result.

The above table (Table 5) shows, the mean score for the clarity of the organization's risk management objectives and the establishment of a project risk management planning process is 4.0144, this indicates that the respondents agreed by the organizations that has clearly defined their risk management objectives, and the value of standard deviation 0.85113 indicates there is some

variability's between the respondents.

The mean score of the organizations planning meeting to develop the risk management plan is 3.9640, which shows the respondents have a positive perception about the organizations risk management planning.

The development of organizations RBS to define risk category's mean is 3.9353, and standard deviation 0.75382, this shows the organization utilizes RBS effectively, somewhat they are varied on their implementations. In addition to this the mean of an estimation of resources and costs needed for risk management activities included in the project budget is 3.9065, this indicates that respondents believe budgeting for risk management is a common practice, while the standard deviation of 0.85882 reflects some differences in individual experiences regarding this practice.
The inclusion of risk management activities in the project schedule received a mean score of 4.0000, showing the agreement that this practice is standard within the organization.
In conclusion, the result shows Sunshine Construction has implemented a strong framework about the project risk prioritization. The overall high mean score indicates that the respondent's perception about these practices have positive, with some emphasis on the clarities of risk management objectives and the integrations of risk management activities into project planning.

4.5. Project Risk Analysis

Risk analysis covers a complete and continuous evaluation which should be realized quantitatively as well as qualitatively for all identified risks. Risk analysis includes analyzing the risk and measuring its vulnerability or its impact. Frequency and severity of the risk will be analyzed as well. The goal is to detect possible interrelationships and enable the project manager and project team member to identify a kind of importance order, also called prioritizing. Furthermore, the consequences of the risks for the project itself and the organization are also concerned in the analysis (PMI, 2008).

Table 6 Project Risk Analysis

Project Risk Analysis	Obs.	Minimum	Maximum	Mean	Std. Deviation
Your organization uses standard and useful tools and techniques to analyze risks	139	2.00	5.00	4.0216	.83811
There are established qualitative and quantitative risk analysis methods and tools	139	2.00	5.00	4.0288	.77965
Your organization uses risk matrix that defines probability and impact exist	139	2.00	5.00	4.0432	.77899
Overall risk ranking is practiced in your organization	139	2.00	5.00	4.0504	.73548
Quantification of the possible outcomes for the project and their probabilities is practiced in your organization	139	2.00	5.00	4.0360	.74610
Your organization do assess the probability of achieving specific project objectives	139	1.00	5.00	4.0863	.73703

Sources: author's own survey, 2024. Based on SPSS v25, Result.

As shown in the above table 6, the study results on project risk analysis practices at Sunshine Construction indicate a strong commitment to effective risk management. The mean score for the use of standard and useful tools and techniques to analyze risks is 4.0216, indicating that respondents agree on the effectiveness of the tools employed. Similarly, the presence of established qualitative and quantitative risk analysis methods scored 4.0288, indicating that the organization employs a systematic approach to risk assessment. This is further supported by a mean score of 4.0432, for the use of a risk matrix that defines probability and impact, underscoring the organization's commitment to a structured framework for analyzing risks.

In terms of overall risk ranking practices, respondents rated this aspect with a mean score of 4.0504, reflecting an agreement that such practices are integral to the organization's risk management process. The quantification of possible outcomes for projects and their associated probabilities also received a high mean score of 4.0360, indicating that the organization actively engages in evaluating potential project scenarios.

Furthermore, the organizations assessment of the probability of achieving specific project objectives mean is 4.0863, indicating that the organization focusses on the understandings of success in relation to their projects goal.

In conclusion, the result shows that the organization implement effective integrated robust risk analysis practices into their project management processes. The overall high mean value shows

that the respondents' perception for this practices has positive and their commitment to utilize standard and structured methodologies for assessing risks.

4.6. Risk Response Planning

Risk management planning had a substantial positive effect on project success. Cooke-Davies (2000) in his research found a positive effect of risk management planning on project success "By doing risk management planning, you inform project team members what you want to do about risk management; you indicate risk management is important ..." The response of the participants of this study about project risk management planning is presented in this part of the study report.

Table 7 Risk Response Planning

Risk Response Planning	Obs.	Minimum	Maximum	Mean	Std. Deviation
Your organization has risk response planning process.	139	2.00	5.00	4.1079	.67771
In your organization there are planned responses as opposed to considering risks as they arise	139	2.00	5.00	4.1655	.60908
Your organization assigns one or more responsible entity for each agreed to risk response.	139	2.00	5.00	4.1151	.79015
Your organization use decision tree analysis to choose the most appropriate response	139	1.00	5.00	4.0144	.84258
Your organization develop primary and backup strategies for the risk response plan	139	2.00	5.00	4.0647	.73434
There is contingency reserve allocation practice for time and cost in your organization	139	1.00	5.00	4.0072	.82967

Sources: author's own survey, 2024. Based on SPSS v25, Result.

As shown in the above table 7, the results regarding risk response planning at Sunshine Construction reveal a strong commitment to proactive risk management. The findings demonstrate a generally positive perception of the organization's strategies for anticipating and addressing potential project risks.

The mean value of the existence of a risk response planning process is 4.1079, which indicates the respondents were agreed about the organization that maintains a structured methodologies' to plan risks, and also supported by the mean of 4.1655 about the availabilities of planned responses that shows the organization emphasizes the reactive measures when dealing with the risks as they arise.

In addition to this, the mean value of the organizations assessment of one or more responsible entity for each agreed to risk response is 4.1151, indicating that the organizations commitment and accountabilities for the risk management process that ensure specific individuals or teams designated to manage identified risks properly. The mean value of decision tree analysis to determine the most appropriate response is 4.0144, indicating the organizations dependent on analytical methods to inform decision making in risk management practices. The mean value of development of primary and backup strategies for the risk response plan is 4.1067 that indicates the organization prepares different scenarios to improve their resilience against potential challenges. The contingency reserve allocation practice for time and cost in your organization has a mean value of 4.0072, which shows the respondents recognize the importance of financial effective risk management practices.

Overall, result indicates, Sunshine Construction investigated a robust risk response planning frameworks that characterized effective strategies, accountabilities and analytical approaches. This result is in line with the previous studies Cooke-Davis (2000). The consistently high mean scores across all areas indicate that respondent's view these practices positively, reinforcing the organization's commitment to managing risks systematically. By prioritizing risk response planning, Sunshine Construction enhances its capacity to navigate uncertainties, allocate resources efficiently, and ultimately improve project success.

4.7. Risk Monitoring and Control

This is the stage in the risk management process at which decision in relation to risks is made depending on the acceptable choice to the project.

Table 8 Risk Monitoring and Control

Risk Monitoring and Control	Obs.	Minimum	Maximum	Mean	Std. Deviation
There is risk monitoring and control process	139	1.00	5.00	4.0647	.78212
The organization monitors and reviews the risks in the achievement of its objectives	139	1.00	5.00	4.0144	.76125
Changes to the organization's risks are identified, assessed and reported on an ongoing basis as to their impact on objectives	139	1.00	5.00	4.0863	.83823
The organization has a clearly defined policy and process for the reporting of changing risks, incidents and control failings as they occur	139	3.00	5.00	4.1140	.33259

Sources: author's own survey, 2024. Based on SPSS v25, Result.

The above table 8, result shows risk monitoring and control process in Sunshine Construction have a positive perception. The mean value of an existence of risk monitoring and control process is 4.0647, indicating the respondents were agreed that the organization has experienced a formal techniques to control the project risks. The organizations monitoring and reviewing the risks in the achievement of its objectives mean is 4.0144, that indicates the organization has effectively monitor and review risks to achieve objectives. Such practices highlight an ongoing commitment to risk management, ensuring that potential threats are consistently addressed.

Respondents rated the identification, assessment, and reporting of changes to the organization's risks with a mean score of 4.0863, emphasizing the importance of adapting to evolving risk landscapes. This proactive approach allows the organization to remain agile in the face of uncertainty, ensuring that risks are not only recognized but also evaluated for their impact on project objectives.

Moreover, the organization's clearly defined policy and process for reporting changing risks, incidents, and control failings scored 4.1140. This high score indicates that respondents feel confident about the organizational framework for addressing risks as they arise, which is crucial for maintaining transparency and accountability in risk management practices.

Overall, the data suggests that Sunshine Construction has developed a comprehensive framework for risk monitoring and control. The consistently high mean scores across all areas reflect a positive perception of the organization's commitment to ongoing risk assessment and management. By prioritizing these practices, Sunshine Construction enhances its ability to identify and respond to risks effectively, ultimately contributing to improved project success and organizational resilience.

4.8. Project Success

Table 9 Project Success

Project Success	Obs.	Minimum	Maximum	Mean	Std. Deviation
In your organization, Projects meet the expected objectives of the project.	139	3.00	5.00	4.0286	.28514
In your organization, projects are delivered on time and within the budget	139	3.60	5.00	4.1475	.32355
In your organization, projects meet the required specification.	139	3.00	5.00	4.0802	.41758
In your organization, projects are delivered based on the scope and expected standard.	139	3.00	5.00	4.1061	.41583
In your organization, projects output products/services meet stakeholders intend.	139	3.00	5.00	4.1216	.37778
In your organization, End users of projects are always satisfied by the delivery of the product/service from the project	139	2.60	5.00	4.4960	.50934

Sources: author's own survey, 2024. Based on SPSS v25, Result.

Table 9 above indicates a generally positive perception of project success at Sunshine Construction. The results show that projects frequently achieve their expected objectives, with a mean score of 4.0286. Respondents also express confidence in the organization's ability to deliver projects on time and within budget, reflected in a mean score of 4.1475. The mean value of the organizations projects delivered based on the scope and expected standard is 4.1061, which indicates Sunshine Construction adheres on project scope and standards, and the mean value of the organizations project meet required specifications is 4.0802, which shows Sunshine Construction has prioritize on the quality of the projects. Furthermore, the mean value of project output products/services meet stakeholders intend is 4.1216, this indicates the organization implements the projects outputs with stakeholders' intention effectively, and the mean value of end users of project satisfaction is 4.4960, for the delivery of products and services. In general, the result of the finding indicates the organization has successfully meets the project objectives, timelines, and expectations of the stakeholders, setting the organizations for the future project success in the delivery of projects.

4.9. Summary of Descriptive Analysis

To generalize about the finding of the descriptive analysis, the mean score for each of the four

independent variables have been computed as shown in the following table:

Table 9 over all summary of Risk Management Practice

Risk Management Practice	Obs.	Minimum	Maximum	Mean	Std. Deviation
Risk Prioritization	139	3.00	5.00	3.9784	.37042
Risk Identification	139	3.00	5.00	4.1295	.44777
Risk Analysis	139	3.00	5.00	4.0719	.50562
Risk Response	139	3.00	5.00	4.0935	.43225
Risk Monitoring and Control	139	3.00	5.00	4.1151	.48273

Sources: author's own survey, 2024. Based on SPSS v25, Result.

The above table 9, indicates the risk management practices in Sunshine Construction have a positive perceptions among respondents. The mean value of risk prioritization is 3.9784 that shows the respondents agreed on the importance of risk prioritizations. Risk identification has the mean value of 4.1295, this indicates that the respondents believed the organization experiences risk identification practices effectively. Additionally, the mean value of risk analysis is 4.0719, indicating the respondents agreed on the effectiveness of analytical methods for investigating risks in the organizations. Moreover, the mean value of risk response is 4.0935, which indicates the organization has a confident for the strategies to addressing risk identification. Risk monitoring and control practices have a mean value of 4.1151, which shows the effective continual monitoring threats. The overall, result shows Sunshine Constructions strong risk management plays a positive impacts on project success.

4.10. Correlation Analysis

Correlation analysis is a statistical tool that is used to measure the strength or degree of linear association between two variables. The Pearson Product-Moment Correlation Coefficient was used to measure the relationship between the variables. Pearson correlation is a statistical tool that indicates the degree to which two variables are related to one another. The sign of a correlation coefficient (+ or -) indicates the direction of the relationship between -1.00 and +1.00. The variables may be positively or negatively correlated. A positive correlation indicates that there is a direct positive relationship between two variables. On the other hand, a negative Pearson

correlation indicates that there is an inverse, negative relationship between two variables. Besides, to this, a Pearson correlation coefficient of 0 shows that there is no linear relationship between independent and dependent variables.

According to Joe et al., (2011) posited on the strength of the correlation and correlation coefficient(r). It is possible to decide as of the 0.10 up to 0.29 is a low association, and from 0.30 up to 0.49 moderate associations, and the correlation value from 0.50 up to 1.00 is considered as substantial associations. Determining the degree of association between the selected employee relation management i.e. employee practice, dispute/conflict resolution, good communication, motivation with the dependent variable i.e. employee productivity were the main purposes of conducting an analysis using Pearson correlation.

Table 10 Correlations Matrix

Correlations							
		Risk Prioritization	Risk Identification	Risk Analysis	Risk Response	Risk Monitoring & Control	Project Success
Risk Prioritization	Pearson Correlation	1					
	Sig. (2-tailed)					.	
	N	139					
Risk Identification	Pearson Correlation	.104	1		.	.	
	Sig. (2-tailed)	.222					
	N	139	139				
Risk Analysis	Pearson Correlation	.202*	.471**	1			
	Sig. (2-tailed)	.017	.000		.		
	N	139	139	139			
Risk Response	Pearson Correlation	.148	.311**	.499**	1		
	Sig. (2-tailed)	.081	.000	.000			
	N	139	139	139	139		
Risk Monitoring & Control	Pearson Correlation	.257**	.333**	.441**	.330**	1	
	Sig. (2-tailed)	.002	.000	.000	.000		
	N	139	139	139	139	139	
Project Success	Pearson Correlation	.242**	.501**	.596**	.587**	.471**	1
	Sig. (2-tailed)	.004	.000	.000	.000	.000	
	N	139	139	139	139	139	139
*. Correlation is significant at the 0.05 level (2-tailed).							
**. Correlation is significant at the 0.01 level (2-tailed).							

Sources: author's own survey, 2024. Based on SPSS v25, Result.

Table 10 shows the correlation between risk management practices and project success in Sunshine Construction. The correlation between risk identification and project success have a strong relationship, which indicates risk identification plays a vital role for project success. Similarly, risk analysis and risk response have a strong correlation with project success, indicating that the importance of risk evaluation and effective strategies for managing risks. The correlation between risk monitoring and control with project success is moderate relationship. However, the correlation between risk prioritization and projects success have a weak relationship. The overall, result indicates effective risk management practice specifically risk identification, risk analysis, risk response and risk monitoring and controlling plays an important role for the success of project performance in Sunshine Construction.

4.11. Inferential Analysis

This part discussed the results of inferential statistics and the section presented classical linear regression assumptions tests, Pearson's product moment correlation coefficient and regression analysis that were performed for the purpose of examining the objectives of the study. With the support of these statistical techniques, conclusions were drawn with regard to the sample and further decisions were made with respect to the research hypothesis.

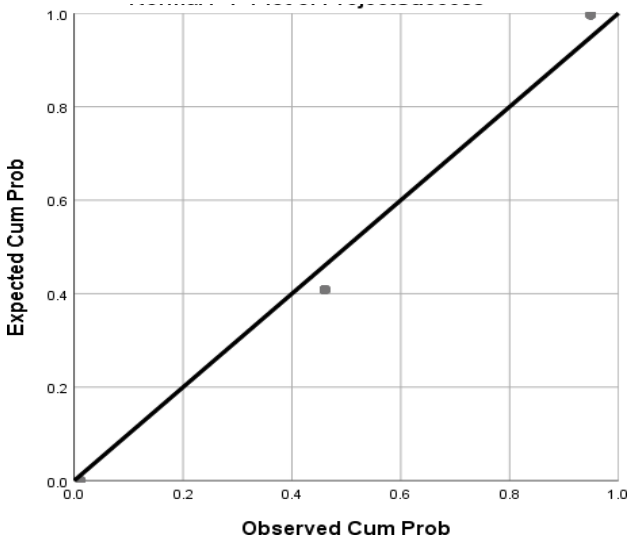
4.11.1. Regression Analysis

4.11.2. Model Adequacy Checking

4.11.2.1. Linearity Test

The first assumption of Multiple Regression is that the relationship between the independent variables and dependent variables must indicate linear relationship which is expressed and characterized by a straight line. A simple way to check this is by producing P-P plots of the relationship between each of study independent variables and dependent variable.

Figure 2 PP plot for Linearity Test



Sources: author's own survey, 2024. Based on SPSS v25, Result.

4.11.2.2. Multi-Collnearity

The concept of multi-collinearity occurs when two or more independent variables are highly correlated with each other or in other word, when there is high inter correlation among independent variables. For this study, the Multi-collinearity tests were conducted using correlation analysis, tolerance and variance inflation factor (VIF) analysis.

Table 11 Multi-Collnearity Test

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Risk Prioritization	.923	1.084
	Risk Identification	.754	1.327
	Risk Analysis	.590	1.694
	Risk Response	.730	1.370
	Risk Monitoring & Control	.746	1.341
a. Dependent Variable: Project Success			

Sources: author's own survey, 2024. Based on SPSS v25, Result.

From table 11 above the VIF of all independent variables were less than 10. Therefore, there was no multi-collinearity between independent Variables.

4.11.2.3. Test for autocorrelation assumption

Autocorrelation assumption tests whether or not the values of the residuals are independent and require observations or individual data points to be independent from one another (or uncorrelated). The assumption is tested using Durbin-Watson statistic that appears in model summery table, this statistic can vary from 0 to 4 and for assumption to be met; the Durbin-Watson statistic value close to 2. Durbin-Watson statistic value for this study is indicated in table 12, is 2.364. It suggests there is some presence of negative autocorrelation in the model residuals. This means that there is some degree of correlation or relationship between the residuals of the model, indicating that the independence assumption of the regression model may be violated. However, the value 2.364 ~2, which indicates there is no sever autocorrelation problem.

Table 12 Autocorrelation Test

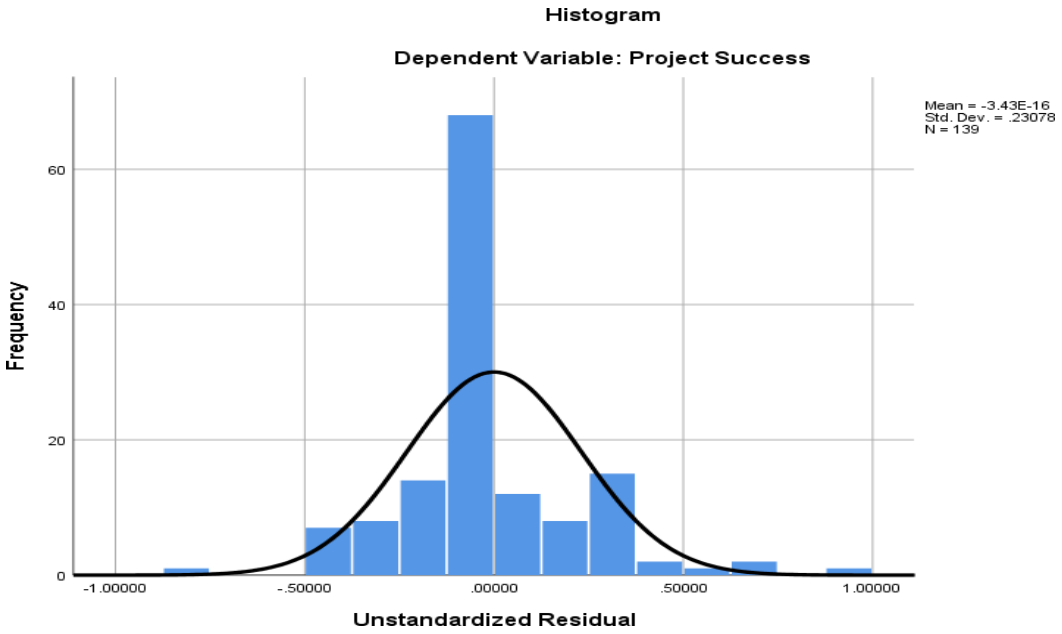
Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.738[a]	.544	.527	.23508	2.364
a. Predictors: (Constant), Risk Monitoring & Control, Risk Prioritization, Risk Identification, Risk Response, Risk Analysis					
b. Dependent Variable: Project Success					

Sources: author's own survey, 2024. Based on SPSS v25, Result.

4.11.2.3. Test for Normality

Figure 3 Normality Test

Figure 4.2 histogram of normality of residue figure meets the assumption of normality.



Sources: author's own survey, 2024. Based on SPSS v25, Result.

4.12. Regression Analysis

Multiple regression analysis is a form of general linear modeling, and it is an appropriate statistical technique when examining the relationship between a single dependent (criterion) variable and several independent (predictor) variables. In this study multiple regressions was conducted in order to examine the relationship between the independent variables risk prioritization, risk identification, risk analysis, risk response, and risk monitoring and control with the dependent variable of the study which is project success.

Table 13 Model Summary of predictors of Project Success

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.738[a]	.544	.527	.23508
a. Predictors: (Constant), Risk Monitoring & Control, Risk Prioritization, Risk Identification, Risk Response, Risk Analysis				
b. Dependent Variable: Project Success				

Sources: author's own survey, 2024. Based on SPSS v25, Result.

The model summary on table 13, shows that regression model that predicts the project success of the Sunshine Construction PLC based on several predictors: risk prioritization, risk identification, risk analysis, risk response, and risk monitoring and control.

The R Square value is 0.544, demonstrating that approximately 54.4% of the variability in the project success can be accounted for by the predictors used in the model. This indicates that the independent variables have statistically significant effect on project success. While, there is 45.6% other independent variables that did not included in this model.

The value of adjusted R Square is 0.527, this shows that takes into account the number of independent variables in the model and adjusts the R square value accordingly. The adjusted R Square value is lower than R Square value, which indicates the inclusion of additional independent variables may not significantly improve the performance of the model.

In conclusion, model summary table provides the overview of the regression models performance in forecasting project success based on the independent variables risk analysis, risk response, risk identification, risk prioritization and risk monitoring and controlling. The value of R Square 54.4% shows the variance in project success can be explained by these independent variables and the model has a good fit.

Table 14 ANOVA of Project Success

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.780	5	1.756	31.775	.000[b]
	Residual	7.350	133	.055		
	Total	16.129	138			
a. Dependent Variable: Project Success						
b. Predictors: (Constant), Risk Monitoring & Control, Risk Prioritization, Risk Identification, Risk Response, Risk Analysis						

Sources: author's own survey, 2024. Based on SPSS v25, Result.

The ANOVA table 14, shows that to provide information about the analysis of variance for the regression model predicting project success of the Sunshine construction based on the predictors: risk prioritization, risk identification, risk analysis, risk response, and risk monitoring and control.

The value of F-statistic is the ratio of the mean square regression to the mean square of the residuals. The F-statistic value 31.775, shows a significant relationship between the independent variables and the dependent variable project success. This indicates at least one independent variables have statistically significant effect on project success.

In general, the ANOVA table provides statistical information about the significance of predictor variables to predict project success in the regression model. The significant F-statistic value indicates that almost all predictor variables are statistically significant impact on project success.

Table 15 Regression Analysis Coefficient

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.877	.298		2.944	.004
	Risk Prioritization	.074	.056	.080	1.317	.190
	Risk Identification	.170	.051	.223	3.310	.001
	Risk Analysis	.160	.052	.236	3.098	.002
	Risk Response	.264	.054	.334	4.880	.000
	Risk Monitoring & Control	.115	.048	.162	2.390	.018
a. Dependent Variable: Project Success						

Sources: author's own survey, 2024. Based on SPSS v25, Result.

Table 15 for summarized regression analysis coefficients shows, which variable is individually significant predictors of the dependent variable and it is measured considering sig. value, β –value and t-statistics. Therefore if the t- test associated with a β –value is significant (when the value in the column labeled sig. is less than 0.05 or 0.1) then the predictor is making a significant contribution to the model.

The regression coefficient β represents the change in the outcome of dependent variable due to a unit change in the predictor (independent) variable when all other variables remain constant and accordingly if a predictor is having a significant effect to predict the outcome then its β- value is always greater than zero. The beta (β) value, t-test (t) and significant (sig.) value of the study is depicted in the above table 15.

As it can be seen from the table each of the beta values has an associated standard error indicating to what extent these values would vary across different samples, and these standard errors are used to determine whether or not beta value differ significantly from zero. The t-test associated with beta-value is significant value (p or sig. value, which is less than 0.05 or 0.1 for all independent variables except for Risk Prioritization) and it implies that the predictor is making significant contribution to the model. The t-values and significance levels (Sig.) associated with each coefficient are also provided. The t-value represents the ratio of the coefficient estimate to its standard error.

Based on the result indicates in the above table 15, there exists a positive coefficient, which means that the predicted value of the dependent variable increases when the value of the independent variables increases. Since the partial regression coefficients for all the five predictors in the model were positive, this indicated that risk management practice had a positive effect on projects success whenever there is an increase in any independent variable.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Where Y is project success

β0. β1. B2. B3, β4 and β5- are parameters,

Xi is the risk identification

X2 is the risk analysis

X3 is risk prioritization

X4 is risk response planning and

X5 is risk monitoring and control.

Taking in to account the result of regression coefficient, the multiple linear regression equation is formulated as follows;

$Y = 0.877 + 0.170X_1 + 0.160X_2 + 0.264X_4 + 0.115X_5$, but risk prioritization is not included in the model because it is insignificant, its sig. value 0.190 is greater than 0.05 and 0.1.

The constant term represents the intercept term in the regression model. In this case, when all predictor variables are zero, the predicted value of the dependent variable (project success) is 0.877. The standard error measures the variability of the estimate, and the t-value is the ratio of the coefficient to its standard error. The significance level indicates that the intercept term is highly significant (Sig. 0.000<0.05).

This predictor variable risk identification (X_1) the unstandardized coefficient is 0.170. This coefficient indicates that for a one-percent change in the risk identification predictor, the dependent variable (project success) is expected to increase by 0.170 percent's, holding all other predictors constant. The standardized coefficient (Beta) of 0.223 suggests a positive relationship between risk identification and project success. The t-value of 3.310 and the significance level of .001 ($p < 0.05$) indicate that this predictor is highly significant in predicting project success.

This predictor variable risk analysis (X_2) the unstandardized coefficient is 0.160. This coefficient indicates that for a one-percent change in the risk analysis, project success is expected to increase by 0.160 percent, holding all other predictor variables constant. The standardized coefficient (Beta) of 0.236 suggests a positive relationship between this predictor and project success. The t-value of 3.098 and the significance level of .002 ($p < 0.05$) indicate that this predictor is highly significant in predicting project success. This finding is in line with Tinnirello (2020) which is a significant impact on project success.

This predictor risk response planning (X_4) has an unstandardized coefficient of 0.264, indicating that a one-percent change in risk response planning is associated with a 0.264 increase in project success when other predictor variables remains constant. The standardized coefficient (Beta) of 0.334 suggests a positive relationship between this predictor and project success. The t-value of 4.880 and the significance level of .000 ($p < 0.05$) shows that this predictor is highly significant at 5% level of significance in predicting project success.

This predictor monitoring and control (X_5) has an unstandardized coefficient of 0.115, indicating that a one-percent change in monitoring and control is associated with a 0.115 increase in project success when other predictor variables remains constant. The standardized coefficient (Beta) of 0.162 suggests a positive relationship between this predictor and project success. The t-value of 4.880 and the significance level of .000 ($p < 0.05$) shows that this predictor is highly significant at 5% level of significance in predicting project success.

Generally, this were in line with Pirwani et al. (2020), Urbański et al., (2019), Masengesho et al., (2020), Marinich, (2020), Sabiel (2020), Nguyen & Watanabe, (2017), Ali et al., (2018), Amoah and Pretrois, (2019), Chilumo et al., (2020), findings, which were positive and significant impact of risk management practice (i.e. risk identification, risk analysis, and risk response) on project success in construction.

CHAPTER FIVE
Conclusion and Recommendation

Based on the previous chapter, result and discussion, this chapter, presents the summary of major findings, conclusion and recommendations. The conclusion and the recommendations are forwarded in relation to the literature reviewed to enhance the Sunshine Construction PLC project success.

5.1. Summary of Major findings

The general objective of this study was to investigate the effects of risk management practice on the project success in Sunshine Construction PLC, specifically three construction sites namely, Gerji apartments, Bole Beshale apartments, and CMC no-2 residential construction projects in Addis Ababa. The data were collected from 139 respondent's shows generally positive perception of the organizations risk management framework, with high mean scores across various dimensions.

Key findings;

- **Risk identification**; is a positive and significant effects on project success, with positive and significance correlation with project success that the organization appears to effectively identify risks associated with project objectives demonstrating a proactive approach in risk management.
- **Risk analysis**; which has positive and significant effect on project success. A positive correlation with project success underscores the significance of thorough risk evaluation in enhancing project success.
- **Risk response planning**; has a significant positive effect on project success, which responses rather than reactive measures indicates structured approach to managing project risks. It has a positive relationship with project success, which shows the significance of effective risk management practice strategies to improve project success.
- **Risk monitoring and controlling**; this provides that the positive effects on projects success has a strong framework for a continuous risk analysis and risk management. While the correlation with project has a weaker, this indicates that an ongoing risk monitoring and controlling is necessary for adjusting to change the circumstances.
- **Risk prioritization**; has no statistically significant impact on projects success in this study.

5.2. Conclusion

Sunshine construction private limited company was 40 years experienced and successful company

mainly in building construction, road construction and real estate sectors. In conclusion the comprehensive analysis conducted on the effects of risk management practice on project success in Sunshine Construction PLC focused on three construction projects in Addis Ababa, revealed significant findings. Based on the major findings of the study, several conclusions can be drawn regarding the effects of risk management practice on project success in Sunshine Construction PLC. The analysis of effects of risk management practice on project success in Sunshine Construction PLC suggests a strong foundation for effectively risk identifying, risk analyzing, risk response planning, and monitoring and controlling project risks.

Risk identification has a positive and significant impact on project success, which indicates the company could implement project related risks effectively. Risk analysis has also a positive and significant effect on project success, emphasizing a significant role of risk evaluation in enhancing project success.

Furthermore, an effective risk response planning plays a vital role in project success, by experiencing effective risk management tools. Risk monitoring and controlling also have a positive and statistically significant impact on project success. However, risk prioritization was not a significant effect on project success in this study.

In conclusion, Sunshine Construction implements systematic approach to risk management strategy that contributes a positive effect on project success, by minimizing risks to handle potential challenges to achieve their strategic goal.

5.3. Recommendation

Based on the result, the following recommendations are made;

- The organization should make a continuous improvement; by evaluating and updating risk management practices to adapt new challenges and construction industry quality standards.
- The organization should invest on training and development of the employees on risk management strategies to develop the employee's risk management culture.
- The organization should enhance collaboration and communication with stakeholders to address the gaps in sharing the company's vision and mission, ensuring consistent communication about project success, and managing risks from different perspectives, and maintaining transparency to build trust and ensure alignment with project objectives.
- Future researchers should be expand the study scope by including more construction project sectors across a country and conduct longitudinal studies to investigate long term impacts of risk management practices, and add other predictor variables not included under this study.

The study was only limited on Sunshine Construction PLC, the researchers should have use comparative studies across different construction organizations or companies that could help to identifying the construction specific risk management.

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Appendix

QUESTIONNAIRE ITEMS

Sent Merry's University

School of Graduates

Master of Project Management

QUESTIONNAIRE

Dear respondents, the purpose of this questionnaire is to gather data on the effect of risk management practice on project success in the case of sunshine construction. The study is purely for academic purpose and thus not affects you in any case. So, your genuine, frank and timely response is vital for successfulness of the study. Therefore, I kindly request you to respond to each item of the question very carefully.

In order to investigate effect of risk management practice on project success in sunshine construction, the researcher prepared the following questions, please tick (√) on the appropriate question number to indicate the extent to which you agree or disagree with each statement.

General Instructions

• There is no need of writing your name

• Where answer options are available, please tick (√) in the appropriate box.

Contact Address

If you have any query, please do not hesitate to contact me and I am available as per your convenience at (Mobile: 0929-13-53-45 or e-mail:pinotadd35@gmail.com')

Thank you in advance for scarifying your precious time

Part I: Demographic Information

1. Sex Male _____ Female
2. Age below 25 _____ 25-35_____35-50_____above 50

3. Level of education Certificate _____ Diploma _____Degree_____ above degree _____
4. Years of Experiences _____
5. Years of experiences in Projects _____

Part II: Respondent's Project related experience

6. Project completion on time
   a. strongly disagree
   b. agree,
   c. disagree
   d. strongly agree,
   e. neither agree nor disagree
7. Project completed within the budgeted cost
   a. strongly disagree
   b. agree,
   c. disagree
   d. strongly agree,
   e. neither agree nor disagree
8. Project quality
   a. strongly disagree
   b. agree,
   c. disagree
   d. strongly agree,
   e. neither agree nor disagree

Part III: Question related to Project Risk Management Practice

The item has five-point Likert type scales; the scales have the following meaning

1 = strongly disagree, 4 =agree,

2 = disagree, 5 = strongly agree,

3 = neither agree nor disagree,

Part III: Questions Related to Project Risk Management Practice

No	Questions/statement	Strongly	disagree	Uncerta	Agree	Strongly
1	**Project Risk Management Planning**	1	2	3	4	5
1.1	The organization's risk management objectives have been clearly set out and have project risk management planning process for all projects					
1.2	There is planning meetings to develop the risk management plan.					
1.3	In your organization RBS is developed to define risk categories for projects					
1.4	There is estimation of resources and costs needed for risk management activities and include them in the project budget					
1.5	Risk management activities define and include in the project schedule					
1.6	Your organization uses standard and useful tools and techniques to plan					
2	**Risk Identification**	1	2	3	4	5
2.1	A common definition of risk is used throughout the organization and uses standard and useful tools and techniques to identify risks					
2.2	The organization identifies the main potential risks relating to each of its declared aims and objectives of the project					
2.3	Changes in risks are recognized and identified when the organization's roles and responsibilities change.					
2.4	The organization assess the likelihood of risks occurring and its potential impact, prioritize its main risks, and prepare risk register for each project					
2.5	All key project participants/stakeholders involved in risk identification					

2.6	Your organization use scope statement, milestones, WBS and deliverables to identify risks					
3	**Risk Analysis**	1	2	3	4	5
3.1	Your organization uses standard and useful tools and techniques to analyze risks					
3.2	There are established qualitative and quantitative risk analysis methods and tools					
3.3	Your organization uses risk matrix that defines probability and impact exist					
3.4	Overall risk ranking is practiced in your organization					
3.5	Quantification of the possible outcomes for the project and their probabilities is practiced in your organization					
3.6	Your organization do assess the probability of achieving specific project objectives					
3.7	Your organization identifies realistic and achievable cost, schedule, or scope targets, given the project risks					
4	**Risk Response Planning**	1	2	3	4	5
4.1	Your organization has risk response planning process.					
4.2	In your organization there are planned responses as opposed to considering risks as they arise					
4.3	Your organization assigns one or more responsible entity for each agreed to risk response.					
4.4	Your organization use decision tree analysis to choose the most appropriate response					
4.5	Your organization develop primary and backup strategies for the risk response plan					
4.6	There is contingency reserve allocation practice for time and cost in your organization					
5	**Risk Monitoring and Control**					

		1	2	3	4	5
5.1	There is risk monitoring and control process					
5.2	The organization monitors and reviews the risks in the achievement of its objectives					
5.3	Changes to the organization's risks are identified, assessed and reported on an ongoing basis as to their impact on objectives					
5.4	The organization has a clearly defined policy and process for the reporting of changing risks, incidents and control failings as they occur					

Part IV: Questions Related to Project Success

1	Project Success	Strongly Disagree 1	Dis agree 2	neither agree nor disagree 3	Agree 4	Strongly Agree 5
1.1	In your organization, Projects meet the expected objectives of the project.					
1.2	In your organization, projects are delivered on time and within the budget					
1.3	In your organization, projects meet the required specification.					
1.4	In your organization, projects are delivered based on the scope and expected standard.					
1.5	In your organization, projects output products/services meet stakeholders intend.					

1.6	In your organization, End users of projects are always satisfied by the delivery of the product/service from the project					