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ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

DEPARTMENT OF PROJECT MANAGEMENT

POST GRADUATE PROGRAM

Assessment of Project Risk Management Practices: The Case of
Ethiopian Airlines Construction Projects

By: Liya Dessalegn

A Project Work Submitted To Addis Ababa University School Of
Commerce In Partial Fulfillment Of The Requirements For The
Award Of Master Of Arts Degree In Project Management

Advisor: Fisseha Afewerk (A/Professor)

July 2023

Addis Ababa, Ethiopia

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Declaration

I, the undersigned, hereby declare that the research project "Assessment of Project Risk Management Practices: The Case of Ethiopian Airlines Construction Projects " is the result of my effort and study and that all sources of materials used for the study have been acknowledged. I have conducted the study independently with the guidance and comments of the research advisor.

This study has not been submitted for any degree in any university. It is conducted for the partial fulfillment of the Master of Arts Degree in Project Management.

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Without my advisor's advice, my friends' support, and my family's unwavering encouragement, this Project work would not have been possible. To my adviser, Fisseha Afewerk (A/Professor), I would like to express my profound gratitude and admiration for his rapid responses, helpful criticism, direction, and recommendations during this study.

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Acronyms

ET -Ethiopian Airlines

PMBOK -Project Management Body of Knowledge

PMI -Project Management Institute

PMO -Project Management Office

PRM -Project Risk Management

RA- Risk Analysis

RI -Risk Identification

RMP- Risk Monitoring and Control

RP- Risk Planning

RR- Risk Response

RM -Risk Management

RMP -Risk Management Process

SPSS -Statistical Package for the Social Sciences,

Abstract

The purpose of this study was to assess Risk management practices of the projects implemented in Ethiopian Airlines construction projects. The five risk management practices of planning, identification, analysis, response, and monitoring and control are used to evaluate the project's risk management implementation. The study was a descriptive type, which made use of both qualitative and quantitative approaches as a methodology to address the research objective. 32 participants were provided with the questionnaire, which was made depending on every risk management element; 26 of them returned it, which was used for the study's analysis. The data received from interviews were examined qualitatively and used as supplementary information to the quantitative analysis of the data obtained from the questionnaire. Using the software SPSS version 26, descriptive statistics were used to explain the primary outcome of the variables. Conclusions drawn from the research shows Ethiopian Airlines implements a five-step risk management cycle adapted to international best practices. The general practices of risk management showed that there was a defined/standardized risk management processes, there exists a person or department responsible to handle risk with mainly being the project manager and all team members, and relevant stakeholders were involved in the risk planning process in the study, and planning was done methodically with care and attention. And also among project risk management processes, it was seen that relatively Risk response was very well implemented in the project.

Keywords: Risk, Project Risk Management Practices, Construction Projects

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Project is aimed at practically providing a solution to a predetermined problem identified through research. A project is described in the seventh edition of the Project Management Body of Knowledge (PMBOK) as " a temporary endeavor undertaken to create a unique product, service, or result." The temporary nature of the projects indicates a beginning and end to the project work or a phase of the project work.

There are projects, which can be implemented in various organizations like government organizations and non-government organizations. In this case, project management is a key strategy for project success in any sector. As a result, the risk management process and project management are compatible.

Risk management (RM) is a term that applies to all industries. From the IT-related economy to the automotive, pharmaceutical, and construction industries. Each industry develops its own RM standards, but the general idea of the concept tends to remain the same regardless of industry. Risk management is one of the nine knowledge areas identified by the Project Management Institute (PMI), and its successful integration is seen as a vital component and essential to project success.

Risk management, as a concept is widespread in various companies. In many cases, some companies develop a risk management approach in their projects to improve productivity and increase profits. Risk management nowadays is a fundamental constituent of project management (Olsson, 2007) and it is noteworthy that the most impenetrable activity is to dictate what the risks of projects are and how to prioritize those risks (Anderson, 2009). It is an important process of project management and most managers are aware that risk management is the foundation of project management (Baloi and Price, 2003).

The risk management process involves the systematic application of management policies, processes, and procedures to the tasks of establishing the context, identifying, analyzing, assessing, treating, monitoring, and communicating risks (Cooper, Grey, Raymond & Walker, 2005). Project risk management involves understanding the potential problems that may arise in the project and their impact on the success of the project. Project risk management implements processes to ensure that management receives organized risk information early enough to implement corrective actions that enable realistic schedules and cost estimates and ensure successful project completion (Tinnirello, 2000). Increasing the impact of positive project events and reducing the impact of negative project events is the main objective of project risk management.

1.2 Background of the Organization

Ethiopian Airlines (Ethiopian) is Africa's fastest-growing airline. Over seven decades, Ethiopian has become one of the continent's leading airlines with unmatched efficiency and success.

Ethiopian controls the majority of the pan-African passenger and cargo network, flying to more than 95 foreign locations on five continents with the newest and most advanced aircraft. Ethiopian's asset of modern, environmentally friendly aircraft, including the Airbus A350, Boeing 787, Boeing 777-300ER, Boeing 777-200LR, Boeing 777-200 Freighter, and Bombardier Q-400 double cabin, has an average fleet age of five years. Ethiopian Airlines is the first airline in Africa to possess and operate these aircraft.

Ethiopian is currently implementing a 15-year strategic plan called Vision 2025 to become Africa's leading airline with seven commercial hubs: Ethiopian Domestic and Regional Airlines; Ethiopian International Passenger Airlines; Ethiopian Cargo; Ethiopian MRO; Ethiopian Aviation Academy; Ethiopian in-flight catering services; and the Ethiopian Land Service. Ethiopian Airlines is a multi-award-winning carrier that has had 25% annual growth on average over the past seven years.

The office responsible for physical infrastructure projects within the company is the Ethiopian Airlines Group Infrastructure Planning and Development Office, which was established in 1995 GC. The office was initiated 25 years ago as corporate planning due to the rapid growth of the Airline and the insufficient space within the compound (Ethiopian

Airlines master plan report, 2014). During the initial period with a limited number of staff on board, they executed small maintenance in the compound. However, as the Company expands many projects started to emerge for example building new terminals, big expansion projects in the technical area as well, Housing projects, five-star Hotel projects Etc.

1.3 Statement of the problem

The nature of building construction projects is usually susceptible to risks. It resulted from poor planning and lack of knowledge on subsequent risk identification through to developing risk response strategies for critical risks. It brought about cost and schedule overrun as the construction process progresses (Serpella et al, 2014). Consequently, effective risk management has to turn out to be a main problem area that challenges the building construction sector.

Thus, knowledge and understanding of risk management are significant to identify and managing critical risks effectively and analytically to attain the project goals of time, cost, and quality. Being unsuccessful to accomplish effective risk management can be the reason for projects to go beyond the financial plan, lag in schedule, fail in decisive performance goals, or unveil any incorporation of these difficulties (Santoso, et.al, 2015).

Risk management is one of the primary concerns of executives and professionals working on projects today. The results of post-project evaluations clearly show that this topic is intensifying. Even though it is acknowledged that risk management is one of the most important aspects of project management, not much has been done in this area. According to Yimam's (2014) research, the risk management maturity survey indicates that there are essentially few or no risk management practices used in projects carried out in Ethiopia.

The research problem arises from the essence of risk management itself, for the attribute risk management has been given as one of the most important tools in determining any project's success. In addition to this undertaking, an inquiry into the relationship between risk management and project success is important because most of the projects are operating in a very dynamic and rapidly changing environment with non-fixed circumstances and uncertainty factors surrounding the project environment. In such an environment adopting changes very quickly is a must for the project overall to grow or even survive. Therefore, having all this information and proper risk management enables us to avoid such a negative

scenario, the researcher initiated to assess the overall risk management process of the Ethiopian Airlines Projects. Moreover, as understood from the above the importance of proper risk management is also vital for project success.

1.4 Research questions

In light of the problems discussed above the study is going to be guided by the following research questions:

1. What does the current practice of project Risk Management look like?
2. In which stage of the project life cycle is PRM highly implemented?
3. Which project risk management practice in ET construction projects was particularly well implemented?

1.5 Objectives of the Study

1.5.1 General Objectives

The overall aim of the research is to investigate the general practices of project risk management by taking different projects that were implemented in Ethiopian Airlines' construction project management offices.

1.5.2 Specific Objectives

The specific objective of the research is:

- To assess the current practice of project risk management
- To determine which stage of the project life cycle was PRM highly implemented
- To identify which project risk management practices in ET construction projects was particularly well implemented

1.6 Significance of the Study

One of the key factors to a successful project is risk management; it encloses the planning, identification, analysis, response, and control of the risk elements that form a part of the life of a project. Strong risk management means trying to control future outcomes by proactively controlling things and reducing harm. Therefore, efficient risk management has the potential to lower a risk's potential consequences as well as its likelihood of occurring.

This research can be helpful to provide knowledge about construction firms and how they can effectively manage risks. It illustrates how effective risk management help improve the practices of the project that is how to achieve their objectives effectively and efficiently. It also creates awareness that effective risk management practices are a key factor in the successful implementation of projects.

This study can also be used as input and reference to identify which of the project risk management process of the project that the project management office of Ethiopian Airlines group needs improvement. Thus, the findings of the study will be significantly helpful for future similar projects undertaken in this company in particular and other organizations. Furthermore academicians and researchers can use it as an input for future reference.

1.7 Scope of the Study

The study was driven by assessing the effect of risk management practices on project success. The projects are managed by the Office of infrastructure planning and Development of the Ethiopian Airlines Group. The office has ongoing and completed projects. Therefore, this paper will assess how risk management processes are exercised in the selected projects.

1.8 Definition of terms

The essential concepts utilized in the study are defined in this section. The definitions of the terms are given in the context of the study document.

Project: a temporary endeavor undertaken to create a unique product or service (PMBOK 4th edition, 2008).

Project management: is the process of applying information, skills, tools, and techniques to project operations in order to achieve project criteria, according to the aforementioned source (Ibid., p. 10)

Project Management Body of Knowledge: The phrase "body of knowledge in project management" refers to the body of information that is necessary for project managers to be successful. The project management body of knowledge includes proven traditional practices that are widely applied as well as innovative practices that are emerging in the profession” (Ibid, p.716).

Project Management Office (PMO): A project management office is a group or department within a business, government agency, or enterprise that defines and maintains standards for project management within the organization.

Risk: is uncertain event or condition that, if it occurs, has a positive or negative effect on at least one project objective.

Risk Management: Risk management is described as "a comprehensive and systematic approach to identifying, analyzing, and responding to risks to achieve the project objectives" in the context of construction project management. (2012) Banaitiene and Banaitis, p. 431

Risk Planning: Risk planning is the process of defining how to conduct risk management activities for a project.

Risk Identification: The process of analytically determining, evaluating, and categorizing the initial significance of the risks associated with building projects can be referred to as risk identification (Bahamid & Doh, 2017).

Risk Analysis: Risk analysis seeks to identify hazards, evaluate their likelihood, and determine how they may affect project outcomes.

Risk Response: Risk response is the process of identifying/developing risk response options and determining actions for treating the risk, targeting enhancing opportunities, and reducing any threats to project objectives.

Monitor Risks: The process of keeping track of identified risks, identifying and analyzing new risks, and assessing risk process effectiveness throughout the project.

Risk Acceptance: According to Ibid, p.720, "a risk response strategy" is one in which the project team decides to acknowledge the risk but refrain from acting until the risk manifests itself.

Risk Avoidance: "A risk response strategy whereby the project team acts to eliminate the threat or protect the project from its impact" (Ibid).

Risk Category: (PMBOK Guide, 2013, p.557). "A collection of potential sources of risk."

Risk Transferring: transferring the responsibility for a certain risk to another party.

Project success: effectively and efficiently achieving all project objectives in quality, on time, and within budget as per the plan.

1.9 Structure of the paper

There are five chapters in the research paper. The opening section of Chapter One provides basic information on the research including the background of the study, statement of the problem, research questions, the objective of the study, the significance of the study, the scope of the study, and the definition of terms. The second chapter examines the literature related to the subject. The third chapter presents the methodology used to conduct this research. It presents an overview of the research approach and instrument, research sample, and methods of analysis of the research data. Data presentation, analysis, and interpretation are covered in the fourth chapter. The study's findings, a summary, a conclusion, and recommendations are presented in the final section, chapter 5.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

By examining the theoretical, conceptual, and empirical literature to date, this chapter aimed to provide extensive information on risk, project risk management, and risk management procedures. A survey of the pertinent literature also aids in adapting the best techniques and strategies for risk management practices in the study area. A review of literature is a brief overview of articles from journals, books, and other materials that characterize previous and present knowledge about certain research. The researcher can therefore discover current understanding in a particular field by reading the literature on the issue.

2.2 Theoretical Literature Review

By reviewing articles from journals, books, and other writings the theoretical literature review in this study's primary objective was to offer an understanding of the development of risk, risk management, management of projects, common sources of risk, and the risk management process.

2.2.1 Project and Project Management

The Project Management Institute (PMI) defines a project as "a temporary endeavor undertaken to create a unique product, service, or result" in their definition from 2013. It is only temporary because it has a set beginning and end date; it is unique because it is not a routine process; and it is distinct from other similar goods and services. Examples of projects include creating a new product, designing a new device, or constructing a brand-new mall. For the delivery of a specific work while taking into account a range of constraints like time and cost, monetary assets, workers, and goods are coordinated in a project.

Setting defined project objectives is crucial because diverse project components must be appropriately handled in order to complete the project's goals on schedule and within budget. In line with PMI (2013), project management is the use of knowledge, skills, tools, and procedures to create activities that adhere to project criteria.

According to project management experts like Bodicha (2015), the main goal of project management is to anticipate or predict as many risks and issues as possible and to plan,

organize, and control activities to ensure that all challenges and risks are overcome as successfully as possible. This shows that there are dangers associated with every project, and it is the project manager's responsibility to be aware of these risks. There are several project types, and each type may be managed differently depending on its qualities. A construction project is one of these, and it is discussed below.

2.2.2 Construction projects

The process of developing physical infrastructure, such as homes, businesses, and other structures, as well as roads and utilities, falls under the category of construction projects.

The building projects is becoming increasingly complex as it involves risks and uncertainty and requires different types of professional skills to develop a well-thought-out plan at various phases of the project's life cycle. Bodicha, (2015) says that the success of a construction project from concept to completion requires effective planning. Construction projects have phases comparable to all other sorts of projects, and various authors and institutions have proposed alternative phase divisions that result in similar project life cycles. While Zou et al. (2006) separated a construction project's phases into feasibility, design, construction, and operation, Zou et al. (2007) divided them into conceptual, design, tender, preconstruction, and build phases.

2.2.3 Risks and Uncertainties

According to Nasir, et al., (2003), risk is the probability of occurrence of some uncertain, unpredictable, and even undesirable event(s) that would change the prospects for the profitability of a given investment. According to Suleman (2007), construction-related risk is considered a consideration during the construction project, the variation of which leads to uncertainty regarding the project's final cost, time, and quality. Risk decreases the chance of meeting project objectives, which in turn minimizes the overall project benefits i.e., risk has a direct impact on project objectives.

Uncertainty can be deemed as the chance occurrence of some event where the probability distribution genuinely is unknown, meaning that uncertainty relates to the incidence of an event about which little is known except that it could happen (Smith, 2006). Thus, a lack of information is necessary to make a decision at a certain moment in time (Winch, 2010). The occurrence of uncertainty is therefore present when an action leads to more than one possible outcome but the probability of each outcome is unknown (Smith, 2006).

2.2.4 Risks in construction projects

Due to the nature of the construction industry, RM is a very important process here. It is most widely used in those projects that involve a lot of uncertainty. The easiest way to identify risk is to analyze and draw conclusions from previously failed projects. Several risks in the construction industry can be identified and encountered in any construction project, regardless of its size and scope. Changes in project scope and project completion schedules are the most common risks in the construction industry. The further changes in process scope or design are implemented, the more those changes require additional resources, time, and costs. Pre-completed projects can be just as annoying as falling behind. Completing too quickly can be caused by insufficient planning or design problems, which shorten the completion time, but on the other hand, lead to poor quality of the final product and an increase in total cost. And so it is important to maintain a balance in the time-cost-quality trade-off, which is becoming an important issue for the construction industry in general.

Critical risk factors are identified in several types of studies conducted on various projects such as residential, industrial, commercial, infrastructure, etc. in various foreign countries shows that factors like Country risk (inflation, country economic condition), environmental and geological risk (Weather and climatic conditions), design risk (scope and design changes), project implementation risk (introduction of new technology, poor safety procedures, construction delays, insufficient management skills, improper coordination of teams) and resource risk (scarcity of resources) are critical risk factors for many international projects. (Renuka, 2014).

2.2.5 Project Risk Management

The goal of risk management, which has now taken center stage in organizational operations, is to assist all other management functions in effectively and directly achieving the organization's objectives (Tchankova, 2002). It is seen as a crucial procedure that all project managers are aware of as being necessary for effective project management (Serpella, 201).

Once in place, risk management guarantees that the project's purpose is met while staying within its budget and time constraints. Risk planning, risk identification, risk analysis, establishing risk response plans, monitoring, and management of risks to ascertain how they

have evolved are all included in risk management (Kerzner, 2009). Risk management is an essential component of good project management since risks have an impact on the attainment of project objectives.

2.2.6 Risk Management in Construction Projects

RM constitutes the bulk of the construction work. Oztas and Okmen (200) argued that the demand for risk management in construction projects is constantly increasing due to project complexity, size, competition, client consumer demands, political and economic challenges, and great difficult physical conditions. Comprehensive RM reduces the probability of an incident as much as its impact.

Therefore, the risk management process should be part of every construction project. This process cannot remove all (negative) risks from the project, but it helps the company to take the right risks and ensure that the risks are properly managed. It aims to provide an organized framework to help decision-makers manage risks competently. It bears emphasizing that managing risks should be ongoing throughout the project and is not a one-time event (Mills, 2001). The details of each process as well as the separation of the risk management process into additional processes are covered in the paragraphs that follow.

Numerous authors and institutions have broken down risk management practices (RMP) into numerous sub-processes. Harold (2006) identified six process groupings in his contribution to the theory of risk management in project management, including risk management planning, risk identification, carrying out a qualitative and quantitative risk assessment, developing responses to risk, and monitoring and controlling risks to ascertain how much they transform and make a contribution to the project's the end result. The process is broken down into four fundamental steps by Richardson (2015): plan risk, identify risk, plan risk response, and monitor and control stages.

The risk management processes can be broken down into five main categories, including risk plan management, risk identification, risk analysis (qualitative along with quantitative), and risk response, followed by risk monitoring and control.

2.2.6.1 Plan Risk Management

Risk management is the process of developing and documenting a planned, comprehensive, and coordinated plan, according to Kerzner (2009). It includes methods for identifying and analyzing risks, monitoring and managing how risks have changed, developing hazards, and opposition tactics. Plan risk management is also described as the process of articulating how to carry out risk-managing actions for development in the PMBOK Guide (2017). The key advantage is that it makes sure that the company and other users' perceptions of the importance of threats and risks are aligned with the degree, kind, and visibility of risk management. This task is completed all at once or at specific points in the undertaking.

2.2.6.2 Risk Identification

Risk identification can be defined as the process of analytically and continuously identifying, evaluating, and classifying the original meaning of risks associated with construction projects (Bahamid and Doh, 2017). Risk Identification (RI) forms the base for the next steps of risk analysis and control and enables organizations to learn about the areas that are exposed to risk. When properly implemented, RI ensures successful risk management because unknown sources of harm escalate into uncontrollable events with unexpected consequences (Kuang, 2011). RI involves the identification of all possible risks and circumstances that may affect the organization, as well as the conditions giving rise to these risks and opportunities. Risk identification thus facilitates the effective investigation of areas and activities where organizational resources are at risk, affecting their ability to achieve their business goals (Kuang, 2011).

2.2.6.3 Risk Analysis

Once a risk has been identified, its level and priority should be assessed. A qualitative and quantitative analysis of the risk measurement, probability, and impacts is also done in this procedure. Risk analysis seeks to identify hazards, evaluate their likelihood, and determine how they may affect the results of the project. The expert assessment regarding the likelihood and impact of the risks based on their experience can be considered the beginning point for this methodology's qualitative as well as quantitative assessment (Mana, 2013). According to Temesgen, (2015), there are two general types the assessment of risk: qualitative and quantitative risk assessment. The use of qualitative and quantitative risk assessment and risk analysis provides insight into what will happen if the project does not go as planned.

2.2.6.4 Risk Response

Establishing responses to risk comprises both planning and execution with the goal of lowering risks to an acceptable rate and utilizing potential advantages. Specific methods and procedures to deal with known risks and opportunities are included. It needs to work with the RMP and any other instructions the program manager gives (Harold Kerzner, 2013). Plan Risk Responses are the process of creating options, choosing strategies, and deciding on actions to handle both the overall project risk exposure and specific project risks, (PMI, 2017). Effective and proper risk management reduces general exposure while minimizing particular dangers and maximizing specific opportunities.

In addition, Banaitiene (2012) proposed different methods to dealing with risks in a construction project: risk avoidance, risk transfer, risk reduction, and risk acceptance. It is important to identify and allocate the proper management of risk issues. Risk occurrence situations, risk mitigation capabilities, and agreed-upon bodies' understanding of their risk duties can all be accurate. Following the identification of all risks that exist or may exist in the project, steps must be taken to provide clear solutions for each risk

2.2.6.5 Risk Monitoring and Control

According to PMI (2013), risk management is the process of implementing risk management plans, monitoring identified risks and residual risks, identifying new risks, and evaluating the effectiveness of the risk process during the program. Its key benefit of this procedure is that it increases the success rate of the based on risk strategy throughout the project phase, allowing for continual optimization of the reaction to risks. During the course of the project, the intend risk mitigation methods included in the threat record will be put into action, but the assigned work must be continuously inspected for obsolete, fresh, and altering threats. Objectives of th is process are to ensure that risk identification, analysis, and response processes are in place.

Once risks are identified, and assessed and appropriate measures developed, the conclusions must be implemented. Risk monitoring and control involve the implementation of a risk plan, which must be an integral part of the project plan. Two main challenges are usually encountere red during monitoring and surveillance; the first is to implement risk plans and ensure they ar e effective. The second produces important documentation supporting the process (Berenger and Justus, 2016).

2.2.7 Project Success and Risk Management

To enhance the likelihood that a planned project will succeed, an organization must have an understanding of the possible risks, methodically and objectively evaluate the threats, anticipate the reasons for them and their consequences, and afterward develop appropriate mitigation strategies (Moby 2002). The risk management process must be explicitly integrated into the process of making decisions in order to handle potential hazards effectively. Risk management is, therefore, an important tool to deal with such significant risks in projects. By identifying and minimizing potential risks before the project starts, the use of risk management concepts aids in improving quality and enhances budget forecasting. To guarantee that management receives organized risk information early enough to take corrective action, risk management adopts procedures (Tinnrelo, 2000). This enables attainable timelines and budget estimates and ensures the effective completion of projects.

2.3 Empirical Literature Review

Numerous academics evaluated the application of the risk management method on various projects on a local, national, and international level in Ethiopia. The majority of risk management procedures used in Ethiopian projects are inefficient and ineffective, which results in many projects performing below their intended goals.

Negash (2017) investigated the real management of risk procedure applied to the Butajira Asphalt highway construction endeavor and discovered that, despite being prepared with the participation of stakeholders and taking various factors into consideration, the practice of developing an effective risk management plans for the project was subpar. There was no well-developed plan to deal with risk, even if the risk was mostly detected by expert opinion and the identified risks were examined taking characteristics into consideration.

In South Africa, Kuhn and Visser (2014) examined 20 projects related to mining. The findings showed that just a few of the tools and methods for risk identification, qualitative risk analysis, and quantitative analysis were employed by the teams working on the project. Project risk management should be used as a fully integrated method of project management, according to the authors, who claimed that project-related uncertainties were not adequately understood or handled.

Erstu (2017) evaluated the risk management practices utilized in building projects by looking at the situation of the Addis Ababa Saving and Houses Development Enterprise. By paying close attention to quality control and carrying out quality inspections at predetermined intervals, the firm was making progress in managing quality risks, according to the researcher. Risk-related consequences on costs and schedules were, to some extent, reduced by selecting competent project managers and consultants in accordance with the client's requirements. On a structural level, however, the absence of a risk department and the lack of focus on effective risk management resulted in excessive costs; in addition, schedule and quality implications also decreased staff motivation.

All of the articles stress the necessity of employing project risk management procedures to steer projects toward success by minimizing the adverse effects of risks and uncertainties. Projects, however, suffer significant losses as a result of uncontrolled uncertainties over the course of the project because there is a divergence between theoretical frameworks and the actual application of the management system. As a result, the required steps must be taken to ensure that risk management is a fundamental component of managing a project during the undertaking.

2.4 Conceptual Framework

A conceptual framework is an analytical instrument with numerous modifications and settings, claims Wabomba (2015). A solid conceptual framework effectively captures reality and facilitates application and retention.

According to Project Management Institute (2008), Risk management planning, risk identification, risk analysis (qualitative and quantitative), risk response, and risk monitoring and control are all part of the project risk management practice. A risk management plan, which is a document that a project manager creates to anticipate risks, is the first step in the risk management process. The accurate identification of all known risks is the following phase in the risk management approach. If you are unaware of the risk, you cannot reduce it. In order to handle all potential known risks at the appropriate moment, this phase must be completed precisely and completely (Olson et al., 2007). The impact and probability of each identified risk are assessed in the third stage. This is carried out since it is not impacted by all business hazards. As a result, it is necessary to assess the likelihood of each effect. Each risk has a different effect on the various businesses it affects. The prioritization of the identified

risks can be determined if these two parameters are recognized (Olson et al., 2007). The degree and severity of the risk and the management strategy can be completely recognized when all the earlier steps have been completed. The cause of the strategy in the first place is the next stage. This is done to reduce the effects of all identified risks as significantly as can be achieved (Olson et al., 2007).

Numerous prior studies have supported the critical importance of risk management in projects that are successful in achieving their goals. An in-depth investigation into the function of various input components in project risk management on projects used in Ethiopia Airlines construction projects is the goal of this study. The relationship between the project's risk management practices and project accomplishments will be investigated based on the research objectives and the proposed framework.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The methods used to conduct the study, the type of research design employed, the target population, the sample size, sampling processes, the procedure used to get samples, and the research equipment and data collection method are all covered in this chapter. It also explained the methods for analyzing and presenting data.

3.2 Description of the study area

The research was conducted at the Ethiopian Airlines project management office and Ethiopian Airlines Group Infrastructure Planning and Development Office is the department in charge of the organization's physical infrastructure endeavors. The research has focused on the risk management practices within the company.

3.3 Research Design

Research design means planning the methods to be used to collect relevant data and the techniques to be used in their analysis, taking into account the purpose of the research and the availability of personnel, time, and money. It is based on the research question and guides the selection of sources and types of information.

This study set out to gain a thorough grasp of how risk management techniques were implemented. As a result, a descriptive research design is an excellent way to stress the necessity of the issue and describe the current situation. It is a type of research design that aims to systematically collect information to describe a phenomenon, situation, or population. Each risk management practices of the projects included in the study were also discussed in the descriptive portion of the study.

3.4 Research Approach

The study approach employed was a mixed approach, which looked for and analyzed both qualitative and quantitative data to answer the research questions. Mixed methods help gain a more complete picture because it combines the advantages of both methods.

3.5 Population and Sampling Techniques

The phrase "target population" implies, according to Cooper and Schindler (2014), to the entire group of individuals or objects from which the study seeks to draw its conclusions. Therefore, Ethiopian Airlines' numerous building project workers were the primary target population for this study. A representative sample of Ethiopian Airlines' overall project portfolio was used in the analysis. The target population chosen is permanently employed and directly or indirectly involved in the study area. The size determined for this study as a primary source was 32 participants. Including 6 project managers and the rest 26 engineers and other employees. The census was performed to gather data from the target demographic because it was a small population (less than 100 people). Project team members then participated in responding to the survey questionnaire that was sent to them by participating in sample projects chosen for the study.

3.6 Data Sources and Types

The research focused on both primary and secondary sources of data. Primary data are those that are collected for the first time and are therefore original. To get the data, an interview and a questionnaire were used. The best method for gathering primary data from the chosen population was a survey using questionnaires, which was mostly used in the study to achieve the objective. On the other hand, secondary data is data that has already been gathered and subjected to statistical analysis. Secondary data on Ethiopian Airlines' construction project risk management is gathered from papers, publications, and journals.

3.7 Research Instrument

Interviews and questionnaires served as the researcher's main data collection methods. According to Owen (2002), questionnaires can be used to contact a large number of respondents; their ability to give respondents sufficient time to respond; gives the respondent a sense of privacy and confidentiality. Therefore, this tool was chosen as a fast and cost-effective way to collect data.

Participants in the study were asked to complete structured questionnaires that the researcher had designed in order to gather their demographic information and other pertinent information. There were both open-ended and closed-ended questions. After giving a brief explanation of the study's goals while taking ethical concerns into account, a questionnaire was issued. The main purpose of the questionnaire was to gather data on project risk management practices of some of the projects Ethiopian Airlines had implemented. Each of this instrument's closed-ended items was scored using a Likert scale using scale from "strongly disagree," which is represented by a 1, to "strongly agree," which is represented by a 5. The Project Management Office team members of Ethiopia Airlines received a total of 32 survey questionnaires. To acquire a complete picture of the initiatives under examination, an interview was also undertaken.

3.8 Data collection procedure

In statistical investigations, data gathering is critical, and the data acquired serves as the foundation for the entire structure. Because data serves as raw material for statistical analysis interpretation, the entire statistical analysis is predicated on how the data was collected or obtained. After applying the approaches, the details of the methods and techniques, the sources and instruments of data collecting, the facilitation selection strategies, and the methods and instruments of data analysis were elaborated.

3.9 Data analysis methods

The data that were collected from the respondents were analyzed after categorizing, summarizing, editing, and entering it into the SPSS software. The analysis was done by applying Descriptive statistical analysis. The purpose of descriptive statistical analysis is to provide an overview of the demographic information of survey respondents, such as age, gender, education level, and employee class and also outline and describe the characteristics of a data collection. Descriptive analysis was done using frequency, percentage distribution tables, mean, and standard deviations.

3.10 Reliability and Validity

Validity, as well as Reliability, reviews the research paper's quality, where validity indicates the accuracy of the research while reliability concentrates on consistency.

3.10.1 Reliability

The accuracy of the measurement process is referred to as reliability. Research is said to be reliable if it provides consistent results.

The main data-gathering instrument that will be employed in this study is a questionnaire. By measuring internal consistency with Cronbach's Alpha, the questionnaire's reliability will be assessed. The Alpha determines if a certain item measures the same construct to determine internal consistency. The value quantifies the level of agreement on a standard scale of 0-1. Higher values indicate higher agreement between entities.

Table 0-1 Reliability statistics of variables

Reliability Statistics		
Variable	Cronbach's Alpha	N of Items
Risk Planning	.975	6
Risk Identification	.979	6
Risk Analysis	.944	4
Risk Response	.963	3
Risk Monitoring and Control	.989	4

Source: SPSS Version 26 output (2023)

Table 0-2 Reliability statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
.991	40

Table 3.1 and 3.2 above shows the results of the reliability test conducted on the questionnaire items and the Cronbach Alpha scores for each variable. As reflected in Tables all values of the Cronbach Alpha are > 0.7 hence the questionnaire and its results can be taken as reliable.

3.10.2 Validity

Validity is the most critical criterion and indicates the extent to which an instrument measures what it purports to measure. The qualification can be verified according to the extent to which the measuring device adequately covers the subject of investigation.

The researcher will use a different source of data from the literature, questionnaire, and document review to triangulate the data. The need for triangulation stems from the ethical need to confirm the validity of processes. Triangulation increases the reliability of information and the process of gathering it.

3.11 Ethical considerations

This research will follow ethically and morally acceptable processes throughout the research process. A formal letter was provided to the respondents and the data were collected accordingly. In this regard, the names of the respondents will not be disclosed, and information will not be available to anyone who was not directly involved in the study. To safeguard the rights of the participants, the benefit of the study was explained to the participant.

CHAPTER FOUR

DATA PRESENTATIONS, ANALYSIS AND INTERPRETATIONS

4.1 Introduction

The presentation, analysis, and interpretation of sample data gathered from the respondents are the topics covered in this chapter. In order to gather information for the study questions, 32 questionnaires were personally sent to team members of projects carried out in the Ethiopian Airlines Construction Project Management Office, as is demonstrated in the research methodology in Chapter Three.

With the use of the statistical computer program SPSS Statistics version 26, the data were analyzed using quantitative descriptive statistics, and the results were presented using tables displaying frequencies, percentages as well, and values for mean. Data from project teams and the project manager were gathered through questionnaires and interviews to determine the implementation of risk management practices. The information from the interviews is examined qualitatively and utilized to supplement the information obtained from the questionnaire.

4.2 Response Rate

The questionnaire's 40 closed-ended parts served as the basis for the primary data collection. Of the 32 questionnaires distributed to project management office experts, project teams, and the project manager, 26 of them had a proper completion with a response return rate of 81.3%. The survey had multiple-choice questions as well as a Likert scale with the following values: Strongly Disagree (SD) – 1, Disagree (D) – 2, Uncertain (U) – 3, Agree (A) – 4, and Strongly Agree (SA) – 5. Interviews were additionally employed to triangulate survey results. The next sections provide analysis, interpretation, and presentation of the gathered data.

4.3 Demographic Information

The general information about the study participants is shown in this section. This information includes the participants' gender, age, educational attainment, years of work experience, and organizational position. As a result, the data is displayed in a table as follows.

Table 0-1 Demographic Profile

Demography	Description	Frequency	Percentage
Gender	Male	23	88.5
	Female	3	11.5
	Total	26	100
Age in years	18-25	1	3.8
	26-35	15	57.7
	36-45	7	26.9
	Above 45	3	11.5
	Total	26	100
Educational Background	Diploma	2	7.7
	Degree	18	69.2
	Masters and above	6	23.1
	Total	26	100
Work Experience	Below 5	9	34.6
	6-10 years	3	11.5
	10-20 years	10	38.5
	Above 20 years	4	15.4
	Total	26	100
Organizational Position	Division Manager	1	3.8
	Project Manager	6	23.1
	Engineer One	1	3.8
	Engineer Two	8	30.8
	Engineer Three	10	38.5
	Total	26	100

Source: Own Research, 2023

4.3.1 Gender

The participants' gender distribution is shown in Table 4.1 above, where 88.5% of respondents -- the majority of the participants -- were male and 11.5% were female.

4.3.2 Age

As indicated in Table 4.1 the PMO's age distribution ranges from the ages 18 to 25 years having a 3.8% and between the ages 26 and 35 with a percentage of 57.7%, 26.9% of the population is between the ages 36 and 45, and 11.5% are above 45 years old.

4.3.3 Educational Level of the Respondents

According to Table 4.1 analysis results for educational level, 7.7% of respondents had a diploma, 69.2% had a first degree, and 23.1% had a master's or higher. This shows that the majority of respondents had an educational level of a first degree, which in turn suggests that the respondents had sufficient experience to answer questions regarding the research subject matter.

4.3.4 Work Experience of the Respondents

When the respondents' careers in the construction industry were investigated, it was found that, as indicated in Table 4.1 above, 34.6% of them had less than five years of experience, 11.5% had between six and ten years of experience, 38.5% had between ten and twenty years experience, and 15.4% had more than twenty years. This demonstrated that most of the respondents had between 10 and 20 years of work experience in the construction sector, indicating that they have plenty of experience in the field.

4.3.5 Position of the Respondent

The respondent's position within the company consists of 3.8% division managers, 23.1% project managers, 3.8% Engineer one with 2 years of ET employment experience, 30.8% Engineer two who have 3 years of working experience in ET and lastly 38.5% are Engineer 3 which have above 5 years working experience in ET.

4.4 Descriptive Statistics of Risk Management Practices

The descriptive statistics of mean scores and standard deviation of risk management practice variables are discussed in the below consequent tables in each category. The main reason for using descriptive statics was to demonstrate the average responses of respondents for each question that was included under each category and variable. Finally, the interpretation is made by using the average mean and frequency of each independent variable question for the

aim of achieving the research objectives of the study. The interpretation was made based on the following measurement scales. Mean value scores are 4.51-5.00 excellent or very good, 3.51-4.50 good, 2.51-3.50 averages or moderate, 1.51-2.50 fair, and 1.00-1.50 is poor (Poonlar Btawee: 1987)

4.5 Project Risk Management Practices

This section of the study analyzes the project team's overall knowledge of project risk management, which is highly helpful in determining its relationship to project success. The following is a summary of the analysis and discussion:

4.5.1 General Overview In Risk Management Practices

The purpose of the research was immediately addressed in the second section of the questionnaire. The introductory questions concentrate on broad themes pertaining to the project under study's risk management procedures. The respondents were asked to express their opinions about the risk management procedures used in the project they are working on using a five-point Likert scale, with 1 denoting strongly disagreement, 2 denoting disagreement, 3 denoting uncertainty, 4 denoting agreement, and 5 denoting strong agreement.

This section of the study examines the project team's overall grasp of project risk management, which is highly helpful to determine how it relates to project success. We will discuss each of the statements listed one by one.

Table 0-2 Response about consideration of risk management in early phase of the project.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	19.2	19.2	19.2
	Disagree	8	30.8	30.8	50.0
	Uncertain	6	23.1	23.1	73.1
	Agree	7	26.9	26.9	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

When asked whether risk management is taken into account at the early stages of a project in the first statement, respondents gave the following responses: 5 (19.3%) strongly disagreed, 8

(30.8%) disagreed, and 6 (23.1%) unsure of the answer. While 7 (or 26.9%) of the group were in agreement. This demonstrates that the majority of respondents were in disagreement and that poor risk management practices were used in the project's early stages.

Table 0-3 Response about defined /standardized risk management process.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	7.7	7.7	7.7
	Uncertain	4	15.4	15.4	23.1
	Agree	16	61.5	61.5	84.6
	Strongly agree	4	15.4	15.4	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

Regarding the second statement, when asked if the company has a standardized and defined risk management procedure, 2 respondents (or 7.7%) disagreed, 4 others (or 15.4%) were unsure, 16 others (or 61.5%) agreed, and the other 4 respondents (or 15.4%) strongly agreed. We can also see that the majority of respondents concurred that the particular company follows standard, well-stated risk management principles.

Table 4.4 Response about continuous risk management process in the project.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	7.7	7.7	7.7
	Disagree	5	19.2	19.2	26.9
	Uncertain	4	15.4	15.4	42.3
	Agree	10	38.5	38.5	80.8
	Strongly agree	5	19.2	19.2	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

The third statement that is taken into account in this section is if risk management is consistently applied throughout all project phases to achieve the goals. In this regard, 2 (or 7.7%) of the respondents strongly disagreed, 5 (or 19.2%) disagreed, and 4 (or 15.4%) were unsure regarding the continuing practice of risk management. The remaining 10 respondents, or 38.5%, agreed, with 5 of them (or 19.2%) firmly agreeing that the management of risks is handled as an ongoing procedure in the course of the endeavor.

Table 0-4 Response about responsible person or department to handle risk or uncertainty problem when it occurs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uncertain	5	19.2	19.2	19.2
	Agree	5	19.2	19.2	38.5
	Strongly agree	16	61.5	61.5	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

The response to the question of whether the firm has a responsible body to handle risks that arise in the project or company is represented in Table 4.5, where 5 respondents, or 19.2%, were uncertain and equally agreed that the organization has a responsible body to handle risks. However, 16 respondents (61.5%) said they strongly agreed with the statement. These findings show that the majority of respondents firmly believe that a responsible body exists to manage risks that arise in the organization.

Table 0-5 Response about general understanding of the projects obligation for risk management.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	23.1	23.1	23.1
	Uncertain	2	7.7	7.7	30.8
	Agree	15	57.7	57.7	88.5
	Strongly agree	3	11.5	11.5	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

Regarding the fifth statement, the respondents were asked whether risk management is completely understood in their project and their responses as shown in Table 4.6 that 6(23.1%) disagreed, 2(7.7%) were uncertain, 11.5% highly agreed, and 15 (57.7%) agreed that the responsibility of management is understood in the company.

Table 0-6 Response about existence of a record of threats from previous projects that can be used to inform risks for new initiatives.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	7.7	7.7	7.7
	Disagree	9	34.6	34.6	42.3
	Uncertain	10	38.5	38.5	80.8
	Agree	5	19.2	19.2	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

In the last part of this section, the respondents were asked if past project risks were documented and the majority 10(38.5%) of the respondents were uncertain, and, only 5(19.2%) agreed with the statement.

Table 0-7 Response about the stage in which risk management is implemented

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Project Initiation	4	15.4	15.4	15.4
	Project Planning	10	38.5	38.5	53.8
	Project Implementation	10	38.5	38.5	92.3
	Project monitoring and control	2	7.7	7.7	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

When asked to rank the project management stage in which risk management is implemented, the respondents provided the following response: The majority of respondents rated the planning and execution stages as most important, followed by initiation and monitoring and control. This suggests that risk management is applied throughout project's phase, while the majority of the participants think it is used during the project's planning and implementation phases.

4.5.2 Project Risk Planning Response

Risk planning is the step that prepares the organization for risk with support systems and defined roles and procedures, setting a high priority on risk management as an integral part of the project management process. Six questions about risk-planning practices in the research area were presented to the participants, and their responses were rated on a five-point Likert scale. The results are shown below.

Table 0-8 Planning for risk management is carried out methodically and with the necessary care.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	7.7	7.7	7.7
	Disagree	5	19.2	19.2	26.9
	Uncertain	5	19.2	19.2	46.2
	Agree	10	38.5	38.5	84.6
	Strongly agree	4	15.4	15.4	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

An important question intended to know whether Planning for risk management is carried out methodically and with the necessary care. And the summary responses as seen in Table 4.9 was that only 2(7.7%) of the respondents strongly disagreed and 5(19.2%) disagreed, also at the same time 5(19.2%) were uncertain that there was systematic planning to carry out risk management. But, 10(38.5%) of them agreed and 4(15.4%) absolutely agreed.

Table 0-9 response regarding the participation of important parties in the planning stage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.8	3.8	3.8
	Disagree	6	23.1	23.1	26.9
	Uncertain	5	19.2	19.2	46.2
	Agree	12	46.2	46.2	92.3
	Strongly agree	2	7.7	7.7	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

Only 1 (3.8%) of the 26 respondents that were chosen strongly disagreed, while 6 (23.1%) disapproved and 5 (19.2%) were unsure regarding the presence of the appropriate parties. However, 12 (46.2%) of them highly agreed, and the remaining 2 (7%) strongly agreed, that risk management planning should incorporate important stakeholders.

As a result, it is clear that the majority of respondents approved of the participation of pertinent stakeholders in the planning of risk management.

Table 0-10 Response about the use of adequate risk management tools, knowledge, and meetings throughout the planning stages of risk management.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.8	3.8	3.8
	Disagree	5	19.2	19.2	23.1
	Uncertain	5	19.2	19.2	42.3
	Agree	10	38.5	38.5	80.8
	Strongly agree	5	19.2	19.2	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

The third question the respondents were asked was whether enough expertise and tools were involved and again 1(3.8%) strongly disagreed, and the respondents equally disagreed and were uncertain with 5(19.2%) each. But the majority of the respondents agreed with 10(38.5%) while 5(19.2) strongly agreed with the statement. The above result also indicates that meetings are held during risk management planning.

Table 0-11 Response about incorporation of risk management plan during project planning.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	15.4	15.4	15.4
	Uncertain	5	19.2	19.2	34.6
	Agree	8	30.8	30.8	65.4
	Strongly agree	9	34.6	34.6	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

The inclusion of planned risk management actions within the project plan was a crucial question that needed to be addressed, and the respondents responded as shown in Table 4.12 above, with 4 (15.4%) disagreeing and 5 (19.2%) remaining unsure. However, 8 (30.8%) of them concurred and 9 (34.6%) strongly concurred with the risk management plan is well integrated with the relevant project plan.

Table 0-12 Response about if project team members are properly trained or knowledgeable enough to deal with uncertainties.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	7.7	7.7	7.7
	Uncertain	6	23.1	23.1	30.8
	Agree	11	42.3	42.3	73.1
	Strongly agree	7	26.9	26.9	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

As shown in Table 4.13 the response on the issue of adequate risk management training provided by the organization and having enough knowledge about how to handle risks clearly shows that 2(7.7%) disagreed with that statement while 6(23.1%) remained uncertain. But, 11(42.3%) agreed, and even 7 people (26.9%) strongly agreed that they would develop and carry out training to make it easier for the team members to handle risks.

4.5.3 Project Risk Identification Response

This section's goal was to determine the degree to which the project's identification of risks was done in the research field. The results, which were based on a five-point Likert scale, are displayed below.

Table 0-13 Response about the identification of risks at initial stage of the project or early in the project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	7.7	7.7	7.7
	Uncertain	8	30.8	30.8	38.5
	Agree	10	38.5	38.5	76.9
	Strongly agree	6	23.1	23.1	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

As can be referred from above Table 4.14, 2(7.7%) of the respondents disagreed, 8(30.7%) were neutral and 10(38.5%) agreed, and the remaining 6(23.1%) strongly agreed that they identify risks at the initial stage or early in the project. Overall, this shows that risks are identified at the initial stage of the project. Identifying risks at the initial stage of a project is a very important step in risk identification and for project success.

Table 0-14 Response about the involvement of all project team members in this process.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	7.7	7.7	7.7
	Uncertain	6	23.1	23.1	30.8
	Agree	12	46.2	46.2	76.9
	Strongly agree	6	23.1	23.1	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

Respondents were questioned about whether project team members participated in the risk-identifying technique in relation to the second statement. And 2(7.7%) disagreed, 6(23.1%) were uncertain and 12(46.1%) agreed and finally 6(23.1%) strongly agreed on the statement. This shows that project team members were involved in the risk identification process.

Table 0-15 Response about structured and formal risk identification practice in the project.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	7.7	7.7	7.7
	Uncertain	9	34.6	34.6	42.3
	Agree	9	34.6	34.6	76.9
	Strongly agree	6	23.1	23.1	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

In the study, as shown in Table 4.16, 2(7.7%) participants disagreed and Although 9 (34.6%) were unsure, they also confirmed that their project uses organized and formal risk identification and, the remaining 6(23.1%) of the respondents strongly agreed on the statement.

Table 0-16 Response of risk being clearly defined in this phase to create a foundation for the subsequent processes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.8	3.8	3.8
	Disagree	1	3.8	3.8	7.7
	Uncertain	9	34.6	34.6	42.3
	Agree	10	38.5	38.5	80.8
	Strongly agree	5	19.2	19.2	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

The ability to frame the discovered risks so that they are available for analysis is one sign that the risk identification process is accomplished. The researcher made this remark to the respondents in order to learn about these traits, and their responses are shown in Table 4.20 above. Here, we can observe that one (3.8%) objected to the statement while nine of them (34.6%) were unsure. However, 10 of the 26 respondents (38.5%) agreed with the statement, and 5 (19.2%) of the participants strongly agreed. This indicates that most respondents agreed that risk is clearly defined in this stage to create a foundation for the subsequent steps.

Table 0-17 Response about the identification of risk sources and impact areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	11.5	11.5	11.5
	Uncertain	10	38.5	38.5	50.0
	Agree	8	30.8	30.8	80.8
	Strongly agree	5	19.2	19.2	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

The majority of respondents (38.5), as shown in Table 4.18, were unsure whether the precise sources for risks, subjects with impacts, and their accompanying causes and possible effects had been determined at this point in the project. Nevertheless, 5 (19.2%) people agreed with the assertion.

Table 0-18 Response about who primarily deal with the project's risks and concerns

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	The project Manager	8	30.8	30.8	30.8
	The client	2	7.7	7.7	38.5
	The consultant	2	7.7	7.7	46.2
	A Risk Management team	6	23.1	23.1	69.2
	All project team members	8	30.8	30.8	100.0
	Total	26	100.0	100.0	

Source: SPSS version 26 (2023)

Who mostly manages project uncertainties was the most crucial issue that participants were asked to respond to and their response indicated that the project manager and all team members with a 30.8% each was the most frequent answer. Followed by a risk management team with 23.1 % and the client and consultant with 7.7% each.

Table 0-19 Response about to which risks are your projects most vulnerable to

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Technical Risks	6	23.1	23.1	23.1
	Financial Risks	10	38.5	38.5	61.5
	Environmental Risks	2	7.7	7.7	69.2
	Political Risks	1	3.8	3.8	73.1
	Operational Risks	4	15.4	15.4	88.5
	Market Risks	3	11.5	11.5	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

When asked which source of risk was most frequent during the risk identification stage of risk management, respondents gave the answers shown in the table above, ranking financial risk at the top, followed by technical risks at number six (23.1%), operational risks at number four (15.4%), and market risk at number three (11.5%). Only 1 (3.8%) of the participants mentioned political threats, while the other 2 (7.7%) chose environmental risks.

As can be seen, the vast majority of those who participated indicated that financial hazards were the sources of risk that their organization encountered the most frequently.

Table 0-20 Response about ways risk is mainly determined in projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Expert Judgment	9	34.6	34.6	34.6
	Checklists	2	7.7	7.7	42.3
	Brainstorming	6	23.1	23.1	65.4
	Document Review	5	19.2	19.2	84.6
	Information gathering	3	11.5	11.5	96.2
	Assumption analysis	1	3.8	3.8	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

The last and equally important question was given. It is evident that the majority of participants agreed with 34.6% that expert judgment is the one primarily used. The other responses were 23.1% for brainstorming, 19.2% chose document review, 11.5% for information gathering, and the rest 11.5% together for checklists and assumption analysis.

4.5.4 Response to a project Risk Analysis

Risk analysis aims to map particularly hazardous activities to get a better understanding of their effects. The project team evaluates the likelihood of each risk event occurring and the possible loss involved after potential hazards have been identified. In theory, it's possible that not all risks are equally likely to take place and have an adverse effect on the project.

Below, we will discuss the risk analysis process's analysis methods and problems.

Table 0-21 Response on Risk Analysis

	N	Mean	Std. Deviation
Proper & consistent measurement system is employed to analyze the identified risks.	26	3.65	.977
Risks are explicitly examined in terms of their tendency to occur and the size of their influence on project success.	26	4.00	.800
After risks are examined, project documents are modified.	26	3.62	.852
Valid N (listwise)	26		

Source: SPSS Version 26 output (2023)

When we look at the individual means in Table 4.22, most of the respondents agreed (3.65) that to analyze the identified risks proper and consistent measurement was used in their project. It has been accepted with the respondent's agreement (4.00) that risks are explicitly evaluated in terms of their influence on project success and chance of occurrence. The last question asked on risk analysis was whether documents were updated after risks are analyzed and respondents agreed on the statement with a mean of 3.62.

The majority of the risk analysis factors have been confirmed by respondents' agreement on the factor rating statements, as shown by the average mean value for risk analysis (3.76), and each risk factor statement rated between 3.5 and 4.0 also demonstrates consistency in the results.

Table 0-22 Response about techniques used to forecast probability of occurrence of risks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Numerical Analysis methods (Quantitative)	8	30.8	30.8	30.8
	Probability based on an expert judgment (Subjective)	4	15.4	15.4	46.2
	Probability ranking based on past experience	11	42.3	42.3	88.5
	Probability assessment based on historical data (Qualitatively)	3	11.5	11.5	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

The most often utilized approaches for predicting the likelihood that risk would arise in a project are methods for numerical analysis and evaluating probabilities based on prior experience.

4.5.5 Project Risk Response Replies

Risk response comprises planning and executing to lower risks to an acceptable level and utilize potential opportunities. It includes particular strategies and approaches to deal with known risks and opportunities.

Table 0-23 Response to risk

	N	Mean	Std. Deviation
The program has a well-established risk response strategy.	26	4.08	.744
When addressing risk, variables including budget, timetable, and resources are taken into account.	26	4.15	.675
Valid N (listwise)	26		

Source: SPSS Version 26 output (2023)

The mean value (4.08), in above Table 4.24 for the question, if there exists a well-developed risk response strategy within the program to respond to risk, indicates that the program is using a well-developed strategy to respond to risks. Regarding considerations like budget, schedule, and resources taken in responding to risks, the mean value was 4.15, which shows respondents agreed with the statement.

Table 0-24 Response on the project's method for responding to identified risks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Avoidance	6	23.1	23.1	23.1
	Transferring	2	7.7	7.7	30.8
	Mitigate	14	53.8	53.8	84.6
	Acceptance	4	15.4	15.4	100.0
	Total	26	100.0	100.0	

Source: SPSS Version 26 output (2023)

The different types of risk response strategies as discussed in the literature review are Avoidance, Transferring, Mitigation, and Acceptance. The respondents were asked which of the above-listed strategies they use in their project and the responses are as followed. The majority of 53.8% agreed with the use of a mitigation strategy and 23.1% avoidance, 15.4% acceptance and the rest 7.7% chose Transferring.

4.5.6 Project Risk Monitor and Control Responses

You must monitor and manage the project risks after you've identified the risk, evaluated the probability and impact of the risks, and planned what to do if the risk event emerges. Risk monitoring is a procedure that keeps track of how agreed-upon risk management policies are being carried out, according to (PMI 2017). This section discusses responses in relation to the program's risk monitoring procedures and noted difficulties.

Table 0-25 Response of Risk Monitor and Control

	N	Mean	Std. Deviation
The projects risk monitoring and control processes adhere to the required standards and guidelines.	26	3.35	.892
Risks are reviewed periodically.	26	3.42	.945
Effectiveness of risk management process is evaluated throughout the project.	26	3.46	.905
Risks are registered and communicated properly.	26	3.42	.857
Valid N (listwise)	26		

Source: SPSS Version 26 output (2023)

The responses for the practice of risk monitoring and control are shown in Table 4.26 and the respondent's overall mean was 3.41, which is in the average and moderate stage. Risk monitoring and controlling processes somehow compile with the standards and procedures and risks were reviewed and communicated properly.

4.6 The descriptive analysis Summary

The mean score for each of the five risk management practices has been calculated and is displayed in the following table to allow for the generalization of the descriptive analysis's findings:

Table 0-27 Standard deviations and mean of risk management techniques

Descriptive Statistics			
	N	Mean	Std. Deviation
Risk Planning	26	3.6923	.96459
Risk Identification	26	3.8013	.83669
Risk Analysis	26	3.8750	.75581
Risk Response	26	4.1538	.64794
Risk Monitor and Control	26	3.4135	.88584
Valid N (listwise)	26		

Source: SPSS Version 26 output (2023)

The Ethiopian Airlines construction project Office's risk management procedures all have above-average mean scores except risk monitoring and control, as shown in the table. The mean score for the project risk response is comparatively the highest of all the independent factors. This shows that generally speaking, the reaction to the identified risk was extremely well executed in the sampled projects in Ethiopian Airlines' construction projects. The project office, in comparison, has a moderate level of overall project risk monitoring and control. This variable's mean score value is comparatively the lowest of all the practices.

4.10 Analysis of interview questions

The information from the interviews is examined qualitatively and utilized to supplement the information obtained from the questionnaire. The interview was conducted with two project team members and the codes of the participants were assigned as “A” and “B”.

The respondents both agreed that Ethiopian Airlines follow the five-step risk management practices adapted to international best practices.

General review of standardized project risk management practices in the company: -

The respondent under code “A” who participated in different projects explained that Project management is thought to include risk management as a crucial element. A document that records the risks of previous projects is available, and it contains standard and established risk management principles.

The respondent under code “B” replied that there is a standardized process to handle uncertainties and all team members are encouraged to share their concerns regarding risk or raise any risk issues, where meetings are held to discuss such situations. And mainly the project manager and all team members generally handle risks.

Training of project team members on risk management: -

The respondent under code “A” said that training is given to the team members according to the schedule outlined by the upper management offices. It aids in raising risk awareness as well as assisting in risk management in a way that doesn't interfere with the project's purpose or target.

The respondent under code “B” explained that training is indeed given on how to handle uncertainties and also while taking action or responding to risk, factors like schedule, budget, and objective of the project taken into consideration.

Association of managing risk and project success: -

The main question raised by the interviewer was their opinion on whether managing risk has an effect on project success and their response is as follows:

The first respondent “A” responded on the issue that there is no doubt about a proper risk management process is a must for a successful project. Risk management is important during the life cycle of the project. Managing risk is essential for project success.

The respondent under code “B” said that managing risk and project success are related and risk can be categorized into different types like financial, technical, operational, and more and each have its way of handling techniques. And all types of risks need to be managed to ensure a successful project.

And finally, the last question was about which of the risk management practices deeply affect project success, and *both respondents “A” and “B” agreed on RI, RA, and RR in that order.*

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The data that were evaluated, presented, and interpreted in the preceding chapter are compiled in this chapter. The primary findings are summarized, conclusions are drawn, and then crucial recommendations are provided in order to strengthen and improve the present methods and opportunities for the future.

5.2 Summary of Findings

The case company was found to have standardized and defined risk management guidelines, and risk management is continuously used throughout all phases of the project, primarily at the planning and implementation stage to achieve the objectives, according to the responses provided by the respondents to the basic and general questions regarding risk management practices. The survey also discovered that there is a body in charge of handling risks, with the project manager and all team members primarily responsible for doing so.

The practice of risk planning in the study involved relevant stakeholders in the process and planning was done systematically with due attention and care, enough risk management expertise and tools were involved, and appropriate meetings and training for team members were held so as to teach and guide them to handle unforeseeable risks.

According to the study, the risk was identified in this stage to serve as a foundation for the subsequent processes. According to the respondents, financial threats were the most typical source of risks in the example company's projects. Expert judgment was the main identification method employed.

The outcomes of the risk analysis showed that risks were identified and ranked according to their likelihood of occurring and severity. It was also discovered that probability ranking based on prior experience, followed by the numerical analysis method, is the most frequently utilized technique to forecast the likelihood of the development of threats in their projects.

In regards to the risk response stage of the risk management process, Budget, scheduling, and resource considerations were made when responding to threats after they had been correctly identified and assigned. And from within five response techniques, the Mitigation response strategy was primarily used. The findings on risk monitoring imply risks were reviewed and communicated properly.

The descriptive statistical analysis also examined the mean values of each of the project risk management practices.

The response for the practices of Risk Planning had mean values of 3.35, 3.31, 3.50, 3.85, and 3.58, which shows high agreement between the respondents on the detailed practices. And the response for the practices of Risk Identification had mean values of 3.77, 3.85, 3.73, 3.65, and 3.58, which falls in the above average mean values.

According to the respondents, the mean values of the risk analysis practices were 3.65, 4.00, and 3.62, all of which were above average.

According to the respondents, the mean values of the risk response practices were 4.08 and 4.15, all of which were above average.

The mean values for the practice of Risk Monitoring and Control were 3.35, 3.42, 3.46, and 3.42, which were average or moderate.

5.3 Conclusion

The purpose of the research study was to assess risk management procedures at the Ethiopian Airlines Construction Project Management Office. The researcher also made an effort to go into detail about the findings of the study in chapter four's data analysis in the introduction and literature review. The following significant research conclusions are derived from the findings to discuss the main purpose of the study.

Ethiopian Airlines implements a five-step risk management cycle adapted to international best practices. The five project risk management practices being risk planning, risk identification, risk analysis, risk response, and risk monitoring and control.

According to the replies given by the respondents, risk management is consistently used across all phases of the project, mainly at the planning and execution stage to meet the objectives of the project.

The general practices of risk management showed that there was a defined/standardized risk management processes, there exists a person or department responsible to handle risk with mainly being the project manager and all team members, and relevant stakeholders were involved in the risk planning process in the study, and planning was done methodically with care and attention.

The respondents concurred that financial risks were the most prevalent source of risks in this particular company's projects. Expert judgment was a primary identification technique.

According to the study, the grand mean values for risk identification, risk planning, risk analysis, risk response, and risk monitoring and control were 3.81, 3.69, 3.86, 4.15, and 3.41, respectively.

The study has shown that of all project risk management processes, relatively proper Risk response was very well implemented in the project. This demonstrates that the sampled projects' execution of the response to the identified risk was highly well done.

This research is concluded as being successful in meeting the research objective, which was to assess risk management practices.

5.4 Recommendations

The Ethiopian Airlines Project Management Office's risk management procedures were generally sound. The following suggestions, however, have been made by the researcher and are anticipated to lower unexpected risks by enhancing risk management procedures that will allow the business to manage projects on schedule, with the best level of quality, and efficiently.

- According to PMBOK, risk management implementation is crucial at every stage of a project's lifecycle. However, according to the responders, during the planning and implementation phases, risk management was employed. Risk management should be incorporated into every phase of the project.
- Planning needs to receive enough attention since a good planning process will help decision-makers identify risks, analyze them, develop responses, and monitor, manage, and report on them throughout the project. By supplying information regarding the goals and objectives of using risk management, an effective and workable plan will make all the other activities run more smoothly.
- The respondents identified financial threats as the risk area they encountered most frequently. Therefore, it is important to pay more attention to financial risks by training workers to reduce their severity and the potential impact on the project's overall goals.
- Lastly, the researcher suggests that additional research be done on the topic using projects from various industries to evaluate the use of risk management in those projects and explore its effects on perceived project success and other crucial aspects of project management, such as performance.

5.5 Limitations of the study

The study's conclusion exclusively depends on the unique responses provided by the respondents who took part in the study. The results may not be generalizable beyond the particular division from which the sample is derived due to the limited sample size as well. The sample size restriction meant that the conclusion could not be applied to all initiatives within the organization or to projects carried out in other industries. To generalize the study's findings, the researcher suggests performing longitudinal research with more samples and better sampling techniques.

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APPENDIX A: QUESTIONNAIRE

Addis Ababa University College of Business and Economics School of Commerce Masters of Art in Project Management Questionnaire

Dear Participants,

My name is Liya Dessalegn, I am a graduate student at Addis Ababa University School of Commerce and currently, I am conducting research for the completion of my Master's in project management. This research work is a study of the Assessment of Project Risk Management Practices in the Case of Projects that were implemented in the Ethiopian Airlines Construction Projects.

I kindly request you to participate in this research study by completing the attached questionnaire. In order to ensure that all information will remain confidential please do not include your name anywhere in the questionnaire. I also sincerely request you respond to the questions as honestly as possible and return the completed questionnaires. Knowing that your time is valuable please, take a few minutes of your time to complete the questionnaire.

In case of any question please contact me via “liyadessalegn86@gmail.com” or “0925355398” Thank you in advance for your committed cooperation!

General Instructions and Information:

- **Section I:** includes questions on general demographic characteristics of the respondents,
- **Section II:** includes questions that are directly related to the research objectives where it allows you to select more than one answer
- **Section III:** includes close-ended questions
- Please attempt to answer all the questions and indicate your opinion by marking the appropriate number corresponding to your choice for the five point scale questions and by circling the letter of your choice for the multiple choice questions that best describes how you perceive risk management is applied in the project.

Section I: General questions on demographic characteristics of respondents

1. Gender: Male Female
2. Age: 18-25 years 26-35 years 36-45 years above 45 years
3. Level of Education: Diploma Degree Masters and above other
4. Years of work Experience: below 5 years 6-10 years 10-20 years above 20
5. Position in the organization: Department Manager Project Manager Engineer 1
Engineer2 Engineer3

Section II: includes question where it allows you to select more than one answer.

A. General questions about Risk Management

1. Who mostly handles the uncertainties and hazards that occur in the project?
- a. The project Manager
 - b. The client
 - c. The consultant
 - d. A Risk Management team
 - e. All project team members
 - f. Other
2. In which stage of your project is risk management implemented? (*Risk Planning*)
- a. Project Initiation
 - b. Project Planning
 - c. Project Implementation
 - d. Project monitoring and control
 - e. Project closure

3. To what types of risks are your projects highly exposed? *(Risk Identification)*
- Technical Risks
 - Financial Risks
 - Environmental Risks
 - Political Risks
 - Operational Risks
 - Market Risks
4. How is risk identified primarily in the project? *(Risk Identification)*
- Expert Judgment
 - Checklists
 - Brainstorming
 - Document Review
 - Information gathering
 - Assumption analysis
 - Other, please specify: _____
5. What techniques do you use to forecast the probability of occurrence of risks in your project? *(Risk Analysis)*
- Numerical Analysis methods (Quantitative)
 - Probability based on an expert judgment (Subjective)
 - Probability ranking based on past experience
 - Probability assessment based on historical data (Qualitatively)
 - Other, please specify: _____
6. The risk response strategy used in the project is: *(Risk Response)*
- Avoidance: deliberately taking another course of action
 - Transferring: shift the burden of a particular risk to another stakeholder
 - Mitigate: act to reduce the probability of occurrence or the impact of the risk.
 - Acceptance: Retaining risks without mitigating them

Section III: Close ended questions

Main Questions on project risk management practices, please answer by marking in the box that corresponds to your choice (1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree and 5 = Strongly Agree)

S. N	Statements	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
		1	2	3	4	5
GENERAL QUESTIONS ABOUT RISK MANAGEMENT PRACTICES						
1	Risk management is considered in early phase of the project.					
2	Your company/project has defined /standardized risk management process.					
3	The project treats risk management as an ongoing activity.					
4	There is a responsible person or department to handle risk or uncertainty problem when it occurs. +					
5	In general, the responsibility of risk management is completely understood in your Project.					
6	There is a document that registers past project risks to learn for future projects.					
RISK PLANNING						
7	Risk management planning is done systematically with due attention and care.					
8	Relevant stakeholders are involved in the planning.					
9	Enough risk management expertise and tools is involved, and appropriate meetings are held during risk management planning.					
10	Risk management plan is included during project planning.					

11	Team members within the project receive training or have enough knowledge about how to handle uncertainties.					
12	To what extent do you agree that effective risk planning at the beginning of the projects contributes to the success of the projects?					
RISK IDENTIFICATION						
13	Risks are identified at the initial stage of the project or early in the project.					
14	All project team members are involved in the risk identification process.					
15	Structured and formal risk identification is practiced in our project.					
16	Risk is clearly identified in this step to develop a basis for the next steps: analysis and control of risk management.					
17	Sources of risks, areas of impacts, and their corresponding causes and potential effects were identified in the project.					
18	To what extent do you agree that effective risk identification contributes to the project's success?					
RISK ANALYSIS						
19	Proper & consistent measurement system is employed to analyze the identified risks.					
20	Risks are explicitly examined in terms of their tendency to occur and the size of their influence on project success.					
21	After risks are examined, project documents are modified.					
22	To what extent do you agree that effective risk analysis contributes to project success?					

RISK RESPONSE						
23	The program has a well-established risk response strategy.					
24	When addressing risk, variables including budget, timetable, and resources are taken into account.					
25	To what extent do you agree or disagree with the statement that the response taken to different risk has an impact on project success?					
RISK MONITOR AND CONTROL						
26	The projects risk monitoring and control processes adhere to the required standards and guidelines					
27	Risks are reviewed periodically.					
28	Effectiveness of risk management process is evaluated throughout the project.					
29	Risks are registered and communicated properly.					

30. Please put an idea you have in mind about practice of risk management related activity in the company you deemed important to be included

Thank You Very Much for Your Cooperation and Time!!!!

APPENDIX B: INTERVIEW GUIDE

Addis Ababa University School of Commerce

Department of Project Management

Post Graduate Program

Interview Guide

The Effect Of Risk Management On Project Success: The Case of Ethiopian Airlines

Construction Project Management Office

1. Does your company follow the five-step risk management process?
2. Is there a standardized or formal documented process on how to manage uncertainties within the project? What is the current practice of risk management within the project?
3. Are project teams given risk management training? If so, do project team members understand how to manage risk in a way that doesn't compromise the project's aim or objective?
4. While taking action or responding to uncertain events within the project what factors are kept in consideration? Are factors such as schedule, budget, and objective of the project considered?
5. Do you think managing risk and project success are related?
6. Which of the risk management processes deeply affect project success?