Assessing Risk Management Practices for Risks Identified in construction companies in Ethiopia: A case study of Quick Quality Construction P.L.C

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Declaration

I, Maria Mulugeta, declare that this final project work entitled "**Assessing Risk Management Practices for Risks Identified in Construction Companies in Ethiopia: A case study of Quick Quality Construction P.L.C**" represents my own work with the guidance of my advisor and it has not been previously included in any project work, dissertation or report submitted to any university for degree, diploma or other qualification. It is conducted for the partial fulfillment of the requirement for the Degree of Masters of Arts in Project Management and submitted to School of Graduate Studies of AAU, School of Commerce.

Name: Maria Mulugeta

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Date: _____

Certification

This is to certify that this final project work prepared by Maria Mulugeta entitled "**Assessing Risk Management Practices for Risks Identified in Construction Companies in Ethiopia: A case study of Quick Quality Construction P.L.C**" submitted in partial fulfillment of the requirement for the Degree of Masters of Arts in Project Management complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Signed by the Examining Committee:

Advisor: _____ Signature: _____ Date: _____

Examiner: _____ Signature: _____ Date: _____

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Abstract

The paper has assessed risk management practices for risks identified in Quick Quality Construction P.L.C at Addis Ababa. The study has given focus to risk management practices which has been ignored by the construction Industry.

The study used descriptive analysis techniques; the population of the study was determined to be 60 respondents working actively on projects at QQ. Closed-ended questionnaires were administered to respondents while interview with three project managers is also carried out. The questionnaires covered main aspects of risk management practices including categories of risks that are mostly occurring in the company during the construction phases, pre-risk management practices that are implemented to manage the identified risks, the risk management practices that are implemented during the occurrence of the identified risks and post-risk management practices that are implemented after the risks have occurred. The data were entered to Excel and interpreted and analyzed by SPSS version 20 software program. Triangulation was used to analyze the data collected from the questionnaire and interview.

The finding of the study indicated that there are some pre- risk management practices in the absence of post risk management practices, that means there is no documented policy or guideline on how to handle a certain similar risk, there is also lack of responsible person and department to manage risk. Unfortunately risk is managed by project managers since it is seen as a common crucial activity for project manager's to have specialized risk management team. Even though in the company there is an attempt to manage risks it has been undertaken spontaneously rather than scientifically. Some recommendations were given among them the construction company shall give weight establishing the risk management office, by recruiting new expertise and also providing training for the staffs.

***Key words**: Risk, pre-risk, post-risk, risk management*

Acknowledgement

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Acronyms and Abbreviations

GDP-Gross Domestic Product

QQ- Quick Quality Construction PLC

PMBOK - Project Management Body of Knowledge

BC-1- Building Contractor grade 1

WBS- work breakdown structure

CI- Construction Industry

RM- Risk Management

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CHAPTER ONE

Introduction

This chapter aims to set the tone of the project work by outlining its background, statement of the problem and objectives. It also lists down research questions, significance of the study to various stakeholders in the construction sector and the scope of the study. This chapter gives an introduction of assessing risk management practices for risks identified in construction companies in Ethiopia a case study on Quick Quality Construction P.L.C.

1.1 Background of the Study

As Oxford Advanced Learner's Dictionary (1995), risk is defined" *the chance of failure or the possibility of meeting danger or of suffering harm or loss*". Every human endeavor involves risk and the success or failure of any venture depends crucially on how those risks are dealt with (Dey and Ogunlana, 2004).

According to (Ogunsami et al.,2011), it was argued that risk occurs in every dimension of human life and as such construction projects are not an exception from this as they are characterized by activities that are prone to different types of risks ranging from political to construction risk.

As cited by (John and Peter, 2010) where risk was defined as exposure to the possibility of economic or financial loss or gain, physical damage or injury, or delay, as a consequence of the uncertainty associated with pursuing a particular course of action.

According to (Chong and Brown, 2000) risk is a fundamental aspect of RM, the main aim of which is to minimize or maintain risk at a level that is acceptable for an enterprise. RM may be compared to drawing a map of hazards and the probable harm they may cause; the map can then be used to solve the challenges caused by risks.

Risk Management (RM), sometimes referred to as "uncertainty management", it can be generally defined as being a systematic process that a company follows in order to reduce the likelihood of

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unexpected events occurring in order to maximize profit. Many authors defined risk management as uncertainty management in their literature as risk itself is an uncertain thing.

The most two popular definitions of RM are published by PMI and APM: "The systematic process of identifying, analyzing, and responding to project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives" (PMI, 2016). "A process whereby decisions are made to accept known or assessed risks and/or the implementation of actions to reduce the consequences or probability of occurrence". (APM, 2012) Although both organizations similarly define RM, the major difference between these definitions concerns PMI's consideration of risk as sometimes being negative and on the other time being positive. Positive "risk" may also be referred to as "opportunity" in a RM plan, Whereas APM definition focuses on how to mitigate the negative risks. Though many authors have previously described risk only being negative, in which where different measures are initiated in RM plans in order to reduce the probability and impact of negative events, some see certain types of risk as potential opportunities.

(Stephenson et al., 2011) describe RM in terms of two dependent variables: risk identification and risk analysis. In risk identification, all potential risks should be determined within the organization's boundaries, whereas in risk analysis, probable impact, cause and control over those risks should be determined. To utilize the available resources and reduce time consumption in the RM process, it is very crucial to have clear knowledge of the risks that a business faces. Almost every business faces different types of risk, according to the corresponding sector(s) of the enterprise. Regarding that, each enterprise should focus on identifying the specific risks it faces and take action according to a proper risk response strategy (Institute of Risk Management, 2011). Loader (2007) states that, risk management is very important for any business, but that it does not necessarily ensure the ultimate success of a project.

According to Stranks (1994) defines RM in terms of identification, evaluation and control of exposure to each risk that hinders project success. He formulated four basic principles of RM: (1) minimization of negative impacts of risk in a business; (2) recognition, evaluation and economic control of risks that hinder business success and profit; (3) determination of the most relevant

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way to tackle major and minor risks to a company's profit; and (4) a procedure for adapting to the impacts of progress.

RM is a process with the main objective of identifying both the risks and opportunities that the project or business faces in its early stages, and take action according to the necessary response rates, in order to mitigate or utilize risks for the success of the business. As both risk and opportunity is uncertain, RM can also be called uncertainty management.

The project work focuses on a BC-1 construction company named as Quick Quality Construction PLC. Quick Quality Construction PLC is founded by two owners under partnership. QQ has been participating in different Governmental and non -governmental organization as main contractor and sub-contractor. It works successfully with moderate growth of the company staring from its establishment up to now, the company has participating in different construction project, and manage to secured quit sufficient work successfully with moderate growth of the company, the success rate is quite increasing as per the current market share of the competitors with in BC-1.

1.2 Statement of the Problem

Construction work involves the production of a long lived capital product. The CI, perhaps more than most of other industries, is overwhelmed by risks. If these risks are not dealt with satisfactorily, there is a maximum likelihood of cost overruns, time delays and low quality, resulting in dissatisfaction of clients and the public at large (Nadeem, 2010).

To be successful, a project organization should be committed to address risk management practices proactively and consistently throughout the project. A conscious choice should be made at all levels of the organization to actively identify and pursue effective risk management practices during the life of the project. Project risk could exist at the moment a project is initiated. Moving forward on a project without a proactive focus on risk management practice is likely to lead to more problems arising from unmanaged threats (PMI, 2013)

The motivation that initiates the study to choose assessing risk management practices for risks identified in construction companies in Ethiopia as a project work topic is despite there is presence of a defined or standard risk management process, it is not practiced in a well-defined

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manner and it is not applied properly in practice too (Rediet, 2017), risks are expected on the construction projects but on the first place there is a question whether there is any risk identification practice in the company and there is a well-defined risk management practice in the company.

According to Tesfamichael, (2018), it is founded risk management is a continuous process and having a department to handle risks play an important role to employ guideline and defined standard risk management process that can help in minimizing uncertainties in the project. There is no official risk management office in the company, not only that the risk management culture is questionable, the risk documentation systems are also unclear; although construction work is the result of a complex interaction of design, construction, finance, law and insurance. This interaction involves a wide range of risks, the potential severity of accidents and the frequency with which they occur require that contractors and consultants to be out of their pre-planned schedule and costs them serious or even ruinous financial loss and time extension. In order to accomplish project objectives with specific attention on time, cost, quality, safety and environmental sustainability, construction project risk management practices has been identified as a key step to embark on (Alhassan, 2016). Therefore risk management practices should be emphasized in construction project, regardless of the project size to assure the achievement of project objectives.

1.3 Research Questions

1. What are the categories of risks that are mostly occurring in the company during the construction phases?
2. What are pre-risk management practices that are implemented to manage the identified risks?
3. What are the risk management practices that are implemented during the occurrence of the identified risks?
4. What are post-risk management practices that are implemented after the risks have occurred?

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1.4 Objectives

1.4.1 General Objectives of the Study

The overall objective of this project work is to assess risk management practices for identified risks in construction companies in Ethiopia taking the case study of Quick Quality Construction P.L.C.

1.4.2 Specific Objectives of the Study

The following specific objectives are developed to specifically address the research questions.

1. To identify the categories of risks that is mostly occurring in the company during the construction phases.
2. To describe the pre-risk management practices that is implemented in the company.
3. To describe the risk management practices that is implemented during risk occurrence.
4. To describe the post-risk management practices that is implemented in the company.

1.5 Significance of the Study

This project work has been significant in contributing reasonable and reliable data on the risk management practices that are implemented on construction projects. Knowing the outcome of the relationship certainly supports the decision-making process of top management.

The second beneficiaries of this study are companies in the construction sector that are implementing whether vast and complex construction projects or small and short time projects, but who are hesitant to have risk management practices within their organizations. The results of the project work serves as a baseline for this company by providing the data on the rate of project performance with risk management practices have attained.

Finally, as risk management practices are central to facilitate and practice project management; this project work highly contributes to the growth and development of the Project Management field in Ethiopia.

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1.6 Scope of the study

The main emphasis of the project is assessment of risk management practices for risks identified in Quick Quality Construction P.L.C. The report considers only one case located in the city of Addis Ababa. Even from the project aspect, not only everything is covered. Detail risk competition and analysis aspect are not focus of this study. The main area of study is only assessing the practical application of the project risk management knowledge area in the project. The study tries to describe the risk management practices for risks identified with respect to pre-risk management, risk management practices during risk occurrence and post- risk management practices.

1.7 Limitation of the study

The researcher sees COVID 19 pandemic as a limitation of the study since it limits communication between the researcher and respondents. The next limitation is 60 questionnaires were distributed to respondents but only 40 of them are returned on time this was another limitation for the project work results. The last limitation is related with the project that is a single case consideration. Since the project report employed single case, only sampled from one case are taken. This could affect generalizability of finding of the study to other cases..

1.8 Organization of the study

The rest of the paper is organized into three sections. The first section presents a detailed and elaborated review of existing literature and findings relevant to the project work topic. Important concepts and variables that are necessary to understand the project work's objective are also defined. Moreover, the chapter contains a careful and critical review of previous empirical and theoretical studies on risk management practices. The next chapter is the research methodology. This chapter provides the appropriate type of research design, measurement, data collection method and sampling technique to be used in the project work. The final chapter is data analysis, results, and discussions on the findings.

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1.9 Definition of terms

Risk- Is an uncertain event that if occurs, has a positive or negative effect on the project objectives (PMO, 2017).

Project Risk - An uncertain event or condition that, if it occurs, has a positive or a negative effect on at least one project objective (PMO, 2017)

Risk Management - "systematic process of identifying, analyzing, and responding to project risks. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives" (PMI, 2016)

Pre -risk management - a risk management practiced before the risk happens.

Post -risk management - a risk management practiced after the risk happens as a document and guideline for the next similar risk.

Accident- is an unplanned event that sometimes has inconvenient, undesirable or even disastrous consequences, other times being inconsequential. The occurrence of such an event may or may not have unrecognized or unaddressed risks contributing to its cause.

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CHAPTER TWO

Literature Review

Introduction

This chapter presents the findings from different reviewed literature with regards to risk management practice for construction companies. This chapter includes the theoretical and empirical reviews. The theoretical review helps to understand the various definitions and importance of the main concepts and models in the topic of study. Variables are identified and the conceptual frame work of the study is also included. The empirical review part presents previous findings regarding risk management practices from different published sources and adds the researcher's point of view on it.

2.1 Theoretical Reviews

2.1.1 Risks in Construction

(Odeyinka, 2006) described risk in construction as a variable in the construction process whose variation results in uncertainty as to the final cost, duration, and quality of the project. In the lights of these definitions, he viewed risk as a psychological phenomenon that is meaningful in terms of human reaction and experiences and as an objective phenomenon that may or may not is recognized in terms of human reaction and experience. Common consequences of project risks are cost overruns, time overruns, poor quality, and disputes among parties on a construction contract.

Furthermore, risks in construction projects arise from a variety of sources; environmental/political; health and safety/hazard; market conditions; and technical/functional sources.(Fong,2015) argued that those risk sources generally recognized within the CI are continually faced with a variety of situations involving many unknowns, frequently undesirable and often unpredictable factors that include timing schedule, slippage of the project tasks, technological issues, people oriented issues, finance, managerial and political issues (Lockyer and Gordon, 2012).

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According to (Osama and Salman, 2003), three kinds of construction risks were highlighted and those are: financial-where project exceeds its budget and endangers the financial health of the company, time and design –related risks. It has been generally established that in the execution of building project, the final contract sum often varies from the budgeted sum of the contract. This could be caused by either a decrease or an increase to the original contract sum and sometimes it is due to the complex nature and time span required for the execution of projects.

2.1.2 Categories of Risks in Construction

As the study already tries to show above, there are a vast number of risk factors in the CI sector. To define CI risk in a more detailed way, the study takes a closer look at the top five risk categories that should always be taken into consideration when assessing risk management practices:

1. **Risks on the project management process**

It is a risk associated with project management and the smooth progression of the project. The first technique that needs to be considered is a resource management analysis in terms of tools, resources, and personnel. They must next assign duties and set an accurate timeframe for each activity after defining the project's necessity. It is always important try to think carefully about the obstacles that might emerge during the process. In that manner, you can be prepared for any sort of interruption (Montoya, 2011).

2. **Financial risks**

Budget overruns are one of the most serious dangers to a project's success. However, it is critical for the construction management team to accurately identify financial risks prior to the commencement of the project. (Jones, 2017). This type of risk depends vastly on the type and the location where the construction project is taking place. Simply put, here are some potential risk factors when we refer to financial risks:

- Local tax system
- Inflation
- Currency rates

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All these parameters should be thoroughly examined before the project takes off.

3. **Legal risks**

Contracts can lead to severe disagreements during the construction phase. As a result, you must devote additional time and effort to ensuring that all contractual agreements are properly handled. Each party's responsibilities and rights should be clearly defined, and an unambiguous solution for each possible event should be anticipated. In that aspect, a competent legal team is always a necessary addition as it can decrease significantly any legal risks in your project (Amaju, 2015).

4. **Safety risks**

Accidents are one of the industry's most vexing problems. Working on-site necessitates a high level of concentration and attention to detail. It doesn't take much to realize that the project management team should always do their best to make the field a safe and accident-free environment. That is a continuous procedure which should take place both during the design and development phase of the project (Construct connect, 2017).

5. **Environmental risks**

Natural disasters (earthquakes, floods, lightning, and so on) can pose a threat to the smooth progress of your project in some situations. As a result, an assessment of the environmental conditions in the area where your project is being carried out is considered a "must." As a result, the management team is able to take all essential precautions to protect both the field workers and the progress of the project (Construct connect, 2017).

6. Technical Risks

In risk management, technical risks (also known as technological risks or innovation risks) refer to the type of business risk. These are the dangers that come with using new or untested technologies, technical equipment, or industrial methods. Technical hazards occur from the introduction of new items to the market as a result of continuous development and innovation.

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2.1.3 Risk management Processes

Risk management in a construction project context is a comprehensive and systematic way of recognizing, analyzing and responding to risks to achieve the project objectives (Carbone and Tippett, 2012). The advantage of the risk management procedure incorporates distinguishing and investigating risks, and improvement of construction project management processes and successful utilization of assets.

Among them, the most commonly used and accepted process model is given by the Project Management Body of Knowledge (PMBOK). PMI (2016) divided RM steps into RM planning, risk identification, risk qualitative analysis, risk quantitative analysis, risk response development and risk monitoring and control. During the RM planning steps, a detailed plan is produced by the project team on how to approach RM activities during the entirety of the project. The main aim is to inform all stakeholders of the risks and to establish support for and commitment to a clear RM practices. This planning step is very crucial for project success and if planning is done extensively and covers the relevant areas, there is less chance of project failure. These steps must be started when project planning is finalized and be completed before project initiation.

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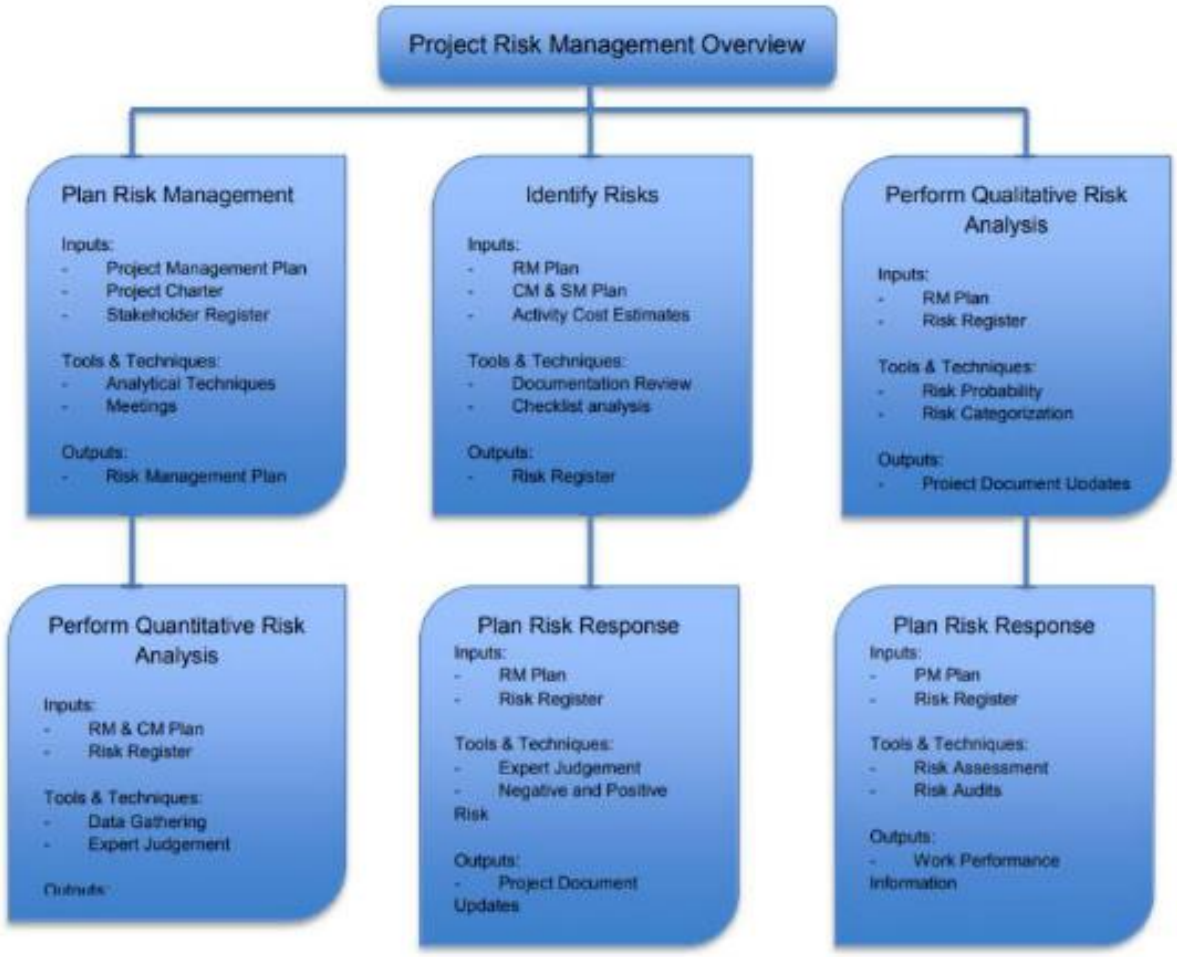

Figure 2.1 project risk management steps (Adapted from PMI, 2016)

In order to handle the complex and increased uncertainty of projects, there are several steps to be followed in the context of RM.

Assessment of Risks: managing changes has led to the introduction of techniques for risk assessment as a major part of the planning process. Risk assessment concentrates on quantifying identified risks by using statistical analysis since the identified risk in most cases can be either quantitively or subjectively assessed factors (Lockyer and Gordon, 1996). The risk management cycle (the risk assessment phase) can be viewed in three stages (Smith, 2008), (Maylor, 2003) and (Zayed et al., 2008): risk identification, risk analysis, and risk response. (Figure 2.2) below illustrates the risk management cycle.

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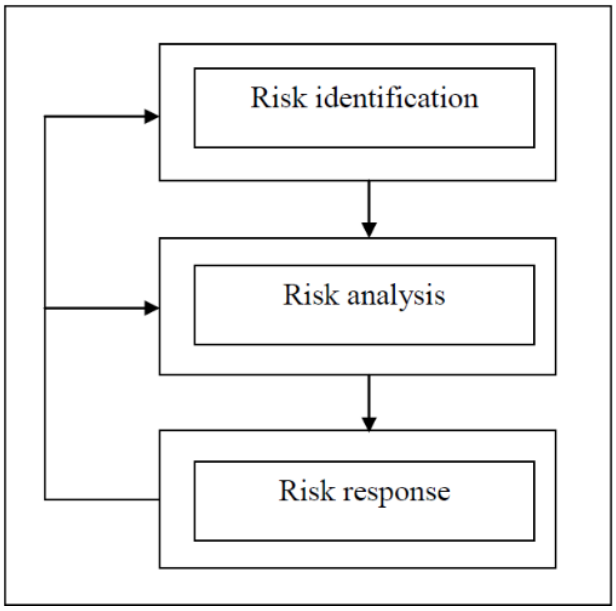

Figure 2.2 Risk assessments

Risk identification: it is the first and maybe the most vital step in the risk management process, as it attempts to distinguish the source and kind of risks. It incorporates the recognition of potential risk event conditions in the construction project and the clarification of risk responsibilities. Risk identification builds up the reason for the following stages: examination and control of-of risk management. Corrects risk identification ensures risk management effectiveness. Carbone and Tippett (2012) expressed that the identification and mitigation of project risks are critical strides in overseeing effective projects. (Figure 2.3) below, illustrates the risk classification.

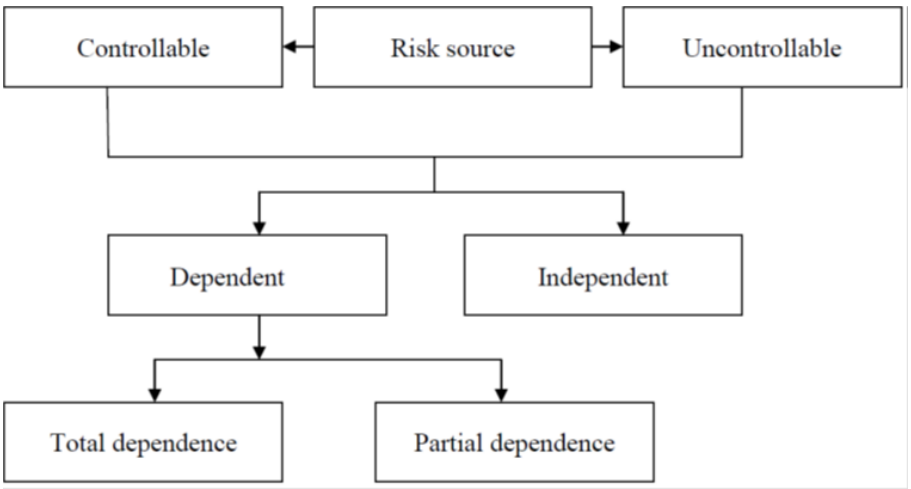

Figure 2.3 Risk classifications

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Risk analysis: it is the intermediate process between risk identification and risk response. Risk analysis techniques are grouped into qualitative and quantitative methods (Oztas and Okmen, 2004). The potential risks are analyzed using a qualitative or quantitative method to evaluate their potential impacts (Zou et al., 2007). Another way of defining risk analysis is estimating what could happen if an alternative action or response were selected (Smith, 1999). According to Gray and Larson (2003), analyzing risks could be qualitative or quantitative. The qualitative analysis represented in experts opinion and it could carry serious errors based on the respondents or the decision maker judgment skills. On the other hand, the qualitative method is more reliable and it requires serious data collection and more detailed analysis. To identify the potential risk factors (RF) and investigate their impact on construction projects completion, a classification that covers all types of presented potential risk factors is needed (Tchankova, 2002).

Risk response: the risk identification and analysis process help decision-makers to make judgments before problems occur. There are many forms of reaction to identified risks, such as risk avoidance, risk reduction or risk transfer (Raftery, 1999). All projects are at risk of potential problems in the form of events or factors called risks, and it is known that they influence the time frame, budget, and quality of projects (Santoso et al., 2003), however, all risks involve both threats and opportunities (Chapman and Stephen, 2002).

Many options are available for responding to risk, such as avoidance, sharing, transfer, reduction, insurance, deference, mitigation and acceptance (Staveren, 2006). Thus, the field of risk management (RM) has developed to analyze and manage these uncertainties and risks (William, 1995), although evaluating the risk and opportunity can be affected by uncertainty, however, it is important to know that both have different mindsets and different data (Smith, 2008). According to (El-Sayegh, 2008), there is a need for risk management processes to be used to manage construction risks.

Risk control: the risk control phase comes after the risk assessment phase. The main act of risk control is to either reduce or accept risk. Activities included in the risk control phase (Cretu et al., 2011) are:

- Track risks on the risk register
- Identify new risks
- Adjust risk responses or develop new responses strategies

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- Monitor the implementation and effectiveness of the responses strategies.

To control risk, identification of specific strategy response will assist in controlling risk. For example, in case of negative risk (threats), it is preferable to accept, avoid, mitigate or transfer risk, however, if the risk is positive (opportunity), it is preferable to enhance, exploit or share risk. Identification of risk responses will provide the best solution (Cretu et al., 2011).

According to (Smith, 2002), all construction parties carry risk at some point, and since every project combines risk and uncertainty, contracts between parties should allocate responsibility for risks during the project's life.

2.1.4 Pre- Risk Management Practices in Construction

According to the articles the researcher has read, it has found that pre-risk management is highly affected by BIM (Building Information Modeling) and insurance systems that are implemented in the country.

On the first place the study likes to give a brief definition on BIM and its implementation all over the world including Ethiopia. Secondly it talks on the insurance system that is implemented in construction industry in Ethiopia. So let's start with the definition of BIM.

What is Building Information Modeling?

Blue prints and drawings were used to represent information about a particular building plan before the introduction of CAD (Computer Aided Design) and BIM (Building Information Modeling). Because blue prints and drawings are two-dimensional, it's difficult to visualize needs and proportions. Following that, CAD entered the market, allowing drafters to grasp the value of blueprints in a digital context. The software upgraded its version and, it turned 3D, which brought more realistic visuals to drawings.

BIM is an abbreviation that stands for "Building Information Modeling" or "Building Information Management." It has been in development since the 1970s, but it was only in the early 2000s that it became a widely accepted term. In different nations, the development of standards and implementation of BIM has evolved at different rates; standards developed in the United Kingdom from 2007 onwards have formed the basis of international standard ISO 19650, launched in January 2019.

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BIM 3D can check for collisions, resolve spatial relations conflicts, and design flaws during the design stage, as well as optimize design stages. BIM can offer information, schedules, costs, and bill of quantities for building at the same time during the construction stage. A 5D automated cost-estimating model has been developed to reduce the risks of inappropriate planning and cost overruns in building projects by providing a more accurate cash flow projection that allows stakeholders to make suitable decisions for various design and payment scheme alternatives. The construction interface and sequence can be intuitively selected via 4D. The contractor and professional construction company's construction coordination becomes evident, and it aids in the analysis of the workplace. Safety control systems, such as laser detection and BIM-based possible threat prediction, have been developed and implemented. (Lee et al., 2007)

According to (Enku, 2018), in most developed nations, BIM is a cutting-edge technology that has addressed major difficulties in the Architecture, Engineering, and Construction (AEC) industries. The production and use of computer-generated n-dimensional (n-D) models to replicate the planning, design, construction, and operation of a facility is referred to as BIM. It helps architects, engineers, consultants, clients and constructors to visualize what is to be built in simulated environment and to identify potential design, construction or operational problems.

BIM is a methodology and technology that supports virtual design and construction methodologies by bringing all team members together throughout the whole design and construction process, as well as during the building's operational and maintenance lifecycle. BIM is a holistic approach that use real-time, intellectual modeling software that works in 3D, 4D (3D + time), and 5D (4D + cost) to boost productivity, save money and time throughout the design and construction phases, and lower operational expenses once the project is completed (Micheal, 2013).

BIM is being implemented by designers all around the world as a new technology for their businesses. Singapore's government gives BIM grants to encourage more widespread use of BIM technology (Singapore Government, 2013).According to McGraw-Hill Construction Report (2012), In the United States, BIM use increased from 49% in 2009 to over 71% in 2012. As part of the UK's general economic development, the government established a progressive program

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mandating the adoption of fully collaborative BIM for government projects by 2016 in order to reduce project delays and cost overruns (UK Government, 2011). In contrast, the Ethiopian construction industry is not tapping the potential of BIM.

What is Insurance?

The Commercial Code of Ethiopia [1960] (Code, 1960) specifies the following legal definition of insurance: An insurance policy is a contract in which a person, known as the insurer, agrees to pay a quantity of money to a person, known as the beneficiary, in the event that a specified risk materializes.

Insurance is a social device in which a group of people (referred to as "insureds") transfer risk to another party (referred to as "insurer") in order to pool loss experience, allowing for statistical loss prediction and payment of losses from a pool of money contributed (premiums) by all members who transferred risk (Pritchett, 1996).

Construction insurance can be defined as a contract in which the insurance company aims to cover and indemnify the construction contractor or the client against a potential risk, loss, damage, or liability arising from the performance of the construction job. (Eschemuller, (2009). In the construction sector, construction insurance is a common way to manage risks. Its main purpose is to shift some risks from clients, contractors, subcontractors, and other construction project participants to insurers in order to just provide contingency money in the event of a problem. Construction insurance is becoming more crucial in insuring project success, with insurers sharing losses caused by natural catastrophes and other unforeseen events. Of all, insurance is just one tool for addressing project risks. It must be noted that not every risk can be insured against, adequately insured against, or covered for a reasonable price. For a risk to be acceptable to an insurer, it must be a "pure risk," which implies it solely has a negative effect (opportunity for loss only).

The Insurability of Risks

Insurable risks are those that can be covered by insurance. While the idea of many people contributing equally for the benefit of one person who suffers a loss is at the heart of insurance

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philosophy, a risk must be a pure risk for an insurer to accept it. This means that it must only have the potential for loss. Certain limitations must be put on that principle to make the insurance transaction viable (Bunni, 2003). Moreover, it has to be sudden and accidental, with statistics available for insurers to simulate past events and generate a creditable premium (Junying, 2006).

The Uninsurablity of Risks

Due to ethical and capacity problems, the insurance industry as a whole is increasingly confronted with risks that it cannot or should not cover. This growth in risks towards the insurability limit is linked to societal and cumulative issues, technological advancements and value concentration, greater complexity, and exposure to many risks. (Berliner, 1985). It is critical to highlight that any contract must clearly identify responsibility and liability for property damage and/or bodily injury resulting from uninsurable risks.

Insurance plans must be written in clear and precise words at all times. When evaluating the above-mentioned elements, risk insurability, in particular, must not be confusing to both parties; otherwise, a dispute may occur if the cost of rectifying the resultant harm is exorbitant. In general, CI insurance policies aid in the development of a pre-risk management baseline for determining how to proceed with the implementation phase of the construction.

Construction Contract Documents

pre-project risk event histories have the capacity to give a decision-maker a rough picture of what can go wrong in a project, what the global ramifications might be, and what factors might influence risk outcomes. Risk event histories from completed projects may aid decision-makers in making more informed judgments in future initiatives. Contract documents are also one of the biggest drivers of risk in construction projects.

2.1.5 Risk Management Practices during Risk Occurrence

In this section the study explains the risk management practices habituated by the time construction risks occurs and factors for risks in CI.

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When risks occur on building sites, it is required to have a clinic; when risks occur, first care is administered there, and if the damage is severe and requires more medication, it is directed to higher health institutions. The building company is responsible for the wounded person's whole medical bill.

There are many risk management practices that are implemented during risk occurrence on the CI. The project work describes major risk management practices that are practiced during risk occurrence in the CI as follows;

i. Accountability

The project manager is responsible for laying out the goals of the project and assigning them. It's his responsibility to ensure that all goals are assigned to the right person or team. Even then, a project manager must ensure all parties are held accountable for their tasks (Novotny et.al, 2018), but in some projects the project manager become unaccountable and risks happen frequently.

ii. Communication

Project managers need to have updates on project status and feedback since project managers are responsible for updating their teams as to the requirements of the stakeholders and upper management. The project manager has to foster open communication or risk falling to the communication encounters in construction project management (Novotny et.al, 2018), since Poor communication can be the death of a project.

iii. Stakeholder's participation

When stakeholders are indifferent to the activity at the site, it can result in rework and delays. Stakeholder's indifference can kill projects, and the lack of stakeholder participation is a common risk we encounter in construction project management. Project managers can communicate with stakeholders and encourage feedback since it's important to have contingency plans in case of issues (Novotny et.al, 2018).

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iv. Managing risk

The project manager is responsible for identifying potential problems and finding ways to mitigate them. They need to gather input and plan ways to prevent the project from veering. Without this, the project most certainly goes over budget or delayed (Novotny et.al, 2018).

v. Defined goals

Sometimes stakeholders don't know what exactly they want, other times they can't agree. However, when the goals aren't clear to a project manager it's difficult to manage the project. Project managers can help prevent this by asking direct questions and continuing to communicate questions throughout the project. A lack of defined goals is one of the big challenges in construction project management (Rachel, 2018).

vi. Realistic expectations

Unrealistic expectations originate whether from impossible deadlines or a lack of resources. Unrealistic expectations create unexpected risks in construction project management because they can hurt morale and productivity. With impossible deadlines looming or a lack of resources, teams sometimes become less productive. In some cases, they won't make the deadline regardless of their high productivity. As a project manager, it's important to advocate for workers and avoid unrealistic expectations and set realistic ones (Rachel, 2018).

vii. Managing scope creep

It is also known as managing changing scope. Scope creep can arise from a lack of defined goals. It can be a huge reason why projects end up delayed or over budget. Concerns about scope adjustments must be communicated to stakeholders by a qualified project manager. As a result, they must be informed of all the modifications to their schedule and budget that was resulted (Novotny et.al 2018).

2.1.6 Post- Risk Management Practices in Construction

Lessons learnt document

Lessons learnt in relation to such relatively controllable elements may lead to better risk management in future initiatives. Learning from risks can be utilized for preserving and updating risk-related information, as well as for post-project evaluation at the end of a project, according

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to the findings. However, subjectivity of the ratings and cultural impediments about storing knowledge on failures (mainly, wrong decisions etc.) may decrease its usability and reliability. To reduce subjectivity, risk assessments may be given individually by project management team members, substantial disparities between the scores could be evaluated, and final scores could be chosen by brainstorming and consensus.

For risk management, a learning-based strategy is offered. A risk memory, which stores and updates risk-related information throughout the life cycle of a project, can help you learn from actual risk incidents. Decision-makers may be able to make more trustworthy decisions about future initiatives based on risk information from previous projects. Rather than a quantitative approach for risk modeling; the intangible risk information may be used to develop informed scenarios about the future.

The RM mindset must shift from "management of unfavorable impacts" to "learning from risks in order to avoid hazards in the first place." Instead of prediction and quantitative evaluation, a focus on learning may shift expectations toward assessment of entire impacts (risk sources combined with vulnerability characteristics), better response planning, and monitoring. It is thought that aspects associated to project vulnerability, such as reaction plans, contract conditions, management and project-related factors, should be specified and preserved because these factors are thought to be the key determinants of the link between a source and a consequence. As those factors are basically about company factors, this kind of risk information has the highest potential to affect future decisions.

MS Access

MS Access is used to create a relational database that may be used to define, analyze, monitor, store, and document four different categories of risk-related data: sources, events, consequences, and vulnerability. A module about standard forms of contract (for example, FIDIC, which is extensively used in international projects) might be added to MS Access so that users can refer to pre-defined contract clauses rather than having to enter the standard clauses for each project independently. Risk events that are frequent in those projects, as well as unique reaction tactics, can be added into MS Access for a company that specializes in a specific type of project (such as

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housing, industrial plants, etc.). Before it can claim to be a trustworthy MS Access for continuous risk management, it must be tested in a variety of scenarios and, ideally, over the life of a project. Nonetheless, MS Access is thought to be a strong illustration of how a risk management method based on learning might be implemented in practice (Dikmen et al., 2008).

2.2 Empirical Reviews

Project managers are actively involved in managing and delivering a project's requirements and objectives. The major reasons for using them are to ensure that a project is completed successfully and that all stakeholders are satisfied. Managerial engagement, in order to accomplish a project on schedule, on budget, and to the pre-planned quality, becomes a source to accidents, serious injuries, pains and even deaths, since nature of construction projects by itself is exposed to risky activities. This indicates the need for assessing risk management practices for construction companies. Though risk management is the responsibility of all departments in a construction project, it should be tightly linked with project management so that risk management practices are handled in the same way as the project's schedule, cost, and quality parameters. Because the project manager is in charge of the entire project, the project manager is supposed to give priority to risk management in each and every phase of a project.

The use of risk management practices in projects ranges from modest to high, with little variation among business kinds, sizes, and risk tolerance. Risk management is also more prevalent in the execution and planning stages of the project life cycle than in the conceptual and termination stages, Risk identification and risk assessment, rather than risk response and risk documentation, are the most commonly employed risk management elements (Terry and Martin, 2004).

By 2017, the United Nations Assembly has called for universal access for all employees, including those in the informal sector. Ethiopia is likely to keep its end of the bargain. Developing countries are burdened with the loss of up to 10% of their GDP due to work-related injuries and disorders (Kumie et al., 2016).

Despite there is presence of a defined or standard risk management process, it is not practiced in a well-defined manner and it is not applied properly in practice too. In addition, the author indicated even though there is a policy or guideline that recommends how to manage risks, it is

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not well known and understood by all project team members. This shows having a proper project risk management by itself does not guarantee managing project risks effectively. Moreover, the author found absence of responsible person assigned to handle issues related to project risk management. (Rediet, 2017)

According to Tesfamichael (2018), it is founded risk management is a continuous process and having a department to handle risks play an important role to employ guideline and defined standard risk management process that can help in minimizing uncertainties in the project. In addition, the author indicated, despite there are tools like expert judgment, meetings or others and relevant stakeholders are utilized for risk planning, the approach is not systematic overall. Though risk management plan is incorporated with the project plan, project team members didn't get required training to handle risks and environmental factors were not considered as an input to plan risk. This give an important insight since risk management is just about planning but follow actives are needed to properly manage risk and uncertainties.

Project risk management needs an iterative process consisting of well-defined steps that, when taken in sequence, support better decision-making. The author forwarded also; decision makers need to know about possible outcomes to take necessary steps to control risk impact. This is thought to be possible only if project risk management is an integral part of the project management process. Moreover, it is suggested that, since there usually is a conflict of priorities for project managers when it comes to devoting time to managing risk versus managing the project to completion, an independent risk management team is needed. The dedicated resource can then work independently which allows for effective implementation of risk management without fear of overrunning the project budget or wasting project time (Chihuri, 2010).

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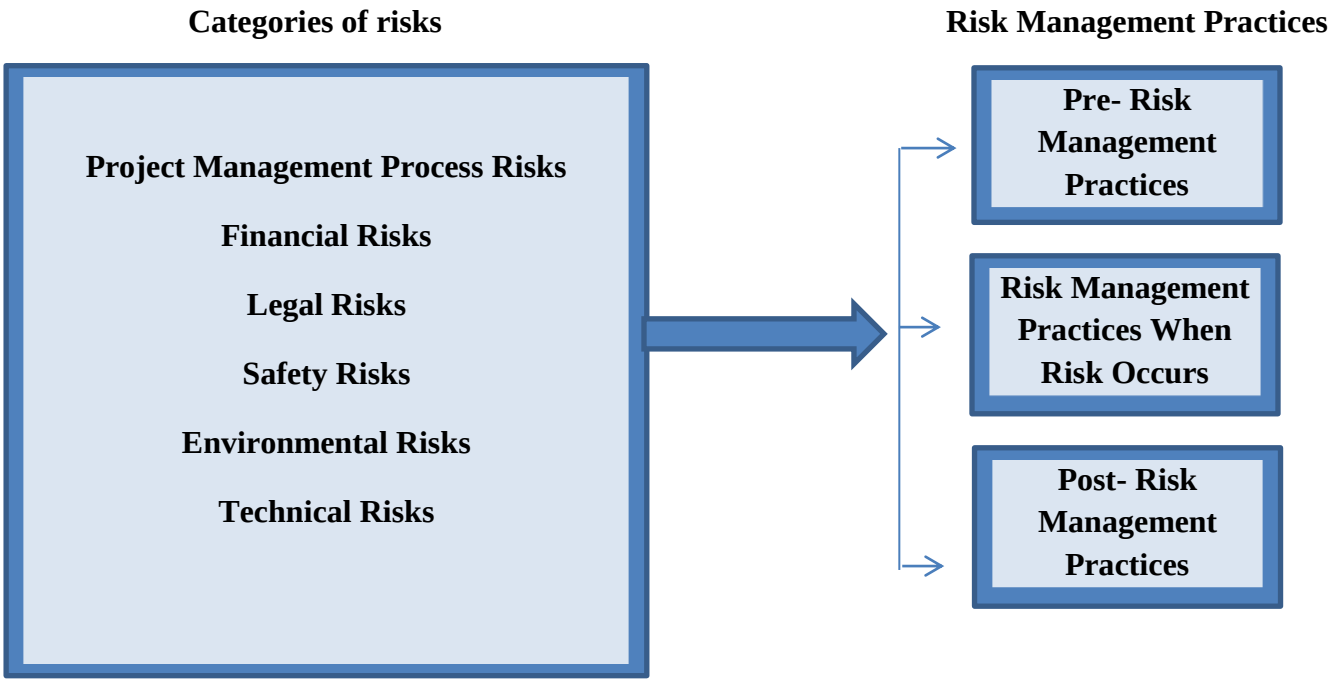
2.3 Conceptual Framework of the Study

With identification of the study variables, reviewing relevant literature, primary and secondary data collection, and the project study aimed at reaching specific findings. The general conceptual model of the study is depicted below.



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CHAPTER THREE

Research Design and Methodology

Introduction

This chapter discusses the research design, research approach and target population, type and source of data collection, data gathering instrument, method of data analysis and ethical consideration used.

3.1 Research Design

The study design that is utilized is descriptive research design. This is because the research questions aim to describe the kinds of risk management practices (pre-risk management practices, risk management practices during risk occurrence and post-risk management practices) employed by QQ in handling the identified risks. The objective of descriptive research is to describe a certain phenomenon or event using precise data and draw conclusions from it.

3.2 Research Approach

The research approach that is employed is a mixed type of research approach. Mixed method is an approach to inquiry that combines both qualitative and quantitative forms. The mixed method approach is better than the two methods alone because combining them provides more information and better quality of information. In addition, to get the quantitative data, the researcher used a questionnaire that is designed based on reviewed literature on risk management practices. However, it was also necessary to obtain data through interviews to incorporate other risk management practices which weren't identified during the literature search.

3.3 Target Population

Assessing risk management practices specifically for QQ needs detailed knowledge and skill, thus, it was necessary for the researcher to involve employees who are subjected to performing risk management practices and who are impacted by the identified risks. So, the company's head office and project office employees are considered. The target populations of the study are the

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general manager, project managers, office & site engineers, foremen and unskilled workers in construction projects. Totally, there are closer to 60 employees at the head office and project office of which all of them were taken as target population for this study. This is referred to as a census since it is able to collect data from every employee.

3.4 Sources of Data Collection

In this study, the researcher used primary source of data supplemented with secondary source of data. The primary data was collected through questionnaire and interview and the sources were the company employees. To collect the primary data from the organization the researcher requested the general management team of the organization for permission. The researcher discussed with the organization‘s respective higher officials by briefing the purpose and benefit of the study. The primary data was collected from head office employees and project office employees particularly General Manager, Project Managers, office & Site Engineers, Foremen and unskilled workers. While secondary data was collected from annual reports and various documentation of the company.

3.5 Instruments of Data Collection

To collect primary data from respondents, structured questionnaire and interview was employed. The questionnaire was constructed in five categories in order to find out the background information, categories of risks in QQ, the pre- risk management practices, risk management practices by the time the risk occurs and post-risk management practices. The questionnaire was close-ended in which the questions restrict the respondents on the options provided. The questionnaire that was used for data collection is customized from previously used research paper by (Ferede, Y.S., 2020) where as some modification was also done by the researcher.

The interview part was designed to gather detail information on the issue and it was held with three project managers.

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3.6 Data Analysis

To assess the risk management practices for risks identified in QQ Construction Company in Ethiopia, the researcher adopted the mixed method approach based on its suitability and strength for this project work.

The method used for data analysis is descriptive statistics analysis by using SPSS software. The quantitative data from the questionnaire was described using mean, standard deviations, percentage, frequency of responses from respondents, and a narrative approach was used for qualitative data gathered through interviews.

3.7 Reliability and Validity Tests

Reliability test measures the consistency of a research instrument used in a research. Among the different measurements, to measure reliability, internal consistency was used for this project work. Internal consistency measures the consistency of responses to the questions in the questionnaire. It is measured using a reliability coefficient value known as Cronbach's Alpha. The Cronbach's Alpha for the questions was calculated and the value is greater the acceptable value 0.7 (George and Mallery, 2003). This indicates that the research instrument is consistent.

Table 4.1 Cronbach's Alpha value for independent variables

Independent variables	Cronbach's Alpha value
Project Management Process Risks	0.837
Financial Risks	0.736
Legal Risks	0.852
Safety Risks	0.742
Environmental Risks	0.891
Technical Risks	0.788

Source: Own Survey, 2021

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Table 4.2 Cronbach's Alpha value for dependent variables

dependent variables	Cronbach's Alpha value
Pre- Risk Management Practices	0.830
Risk Management Practices When Risk Occurs	0.862
Post- Risk Management Practices	0.758

Source: Own Survey, 2021

While reliability test measures how well a questionnaire are reliable, validity test measures how good the questionnaire is to answer the intended research questions. Among the different methods to measure validity, content-related validity of the questionnaire was checked with technical experts in QQ. It was checked if the questions reflect to identify types of risks and measure risk management practices in QQ. It was found that the questions were relevant and measure directly risks and risk management practices.

3.8 Ethical Considerations

Questionnaires and interviews were distributed based on complete willingness of the company and the respondents; likewise the respondents were oriented and made it practical making them free from any form of risk. Moreover the purpose of the study being achieved was clearly communicated to respondents including keeping the confidentiality of the response.

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CHAPTER FOUR

Data Presentation and Analysis

Introduction

This chapter discusses presentation and analysis of data obtained from 40 questionnaires completed by project managers, Architects, resident engineers, quantity surveyors, office engineers and site engineers participating actively in the execution of construction projects at QQ. To assess what it looks like the existing project risk management practices of QQ the researcher employed both questionnaire and interview.

4.1 Response Rate

Sixty questionnaires were distributed to sixty respondents but only forty respondents filled and submitted the questionnaire on time. Beside to this an open ended question or interview was prepared and interviewed three project managers and got all the necessary information. The forty questionnaires responses are summarized as below.

4.2 Demographic Characteristics of the Study Participants

This section of the questionnaire covered the respondent's gender, age, level of education, profession and total year of work experience is presented as follow.

Table 4.3 Demographic Characteristics of the Study

Demographic Characteristics		**Frequency**	**Percent (%)**	**Cumulative Percent (%)**
Gender	Male	26	65.0	65.0
	Female	14	35.0	100.0
	Total	40	100.0	
Age	20-30	15	37.5	37.5
	30-40	11	27.5	65.0
	40-50	8	20.0	85.0

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	50-60	6	15.0	100.0
	Total	40	100.0	
Level of education	Matric (Grade 12) certificate	0	0.0	
	Post-Matric certificate or Diploma	0	0.0	
	Bachelor's Degree	28	70.0	70.0
	Master's Degree (MA/MSC/MBA)	12	30.0	100.0
	Total	40	100.0	
profession	Architect	7	17.5	17.5
	Civil Engineer	10	25.0	42.5
	Project Manager	6	15.0	57.5
	Construction Manager	9	22.5	80.0
	Construction project manager	6	15.0	95.0
	Quantity Surveyor	2	5.0	100.0
	Other, please specify			
	Total	40	100.0	
Total year of experience	Less than 1 year	9	22.5	22.5
	1-5 years	8	20.0	42.5
	6-10 years	12	30.0	72.5
	11-15 years	4	10.0	82.5
	More than 15 years	7	17.5	100.0
	Total	40	100.0	

Source: Own survey, 2021

As far as gender is concerned the table indicates that the number of male respondents by far greater than the number of female respondents and described 65% (26) male and 35% (14) female respondents. This indicated that the existence of gender diversity in the sample respondents.

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As it is seen from the above table 37.5% (15) of the respondents were in the age range of 20-30 , 27.5% (11) respondents were in the age range of 30-40 , 20.0% (8) in the age range of 40-50 while 15.0%(6) respondents were in the age range of 50-60. In terms of age there was a mix of all age categories this enabled the project work to capture the necessary data.

Regarding the educational qualification of the respondents out of the total of the forty respondents, 70% (28) of the respondents have bachelor's degree while 30% (12) of them have master's degree.

To summarize the work experience of forty respondents 30.0% (12) of them have 6-10 total year of experience, 22.5% (9) have got the experience of less than 1 year, 20% (8) have got the experience between 1-5 years, 17.5 % (7) have got more than 15 years whereas 10.0 % (4) respondents have got the work experience of 11-15. There was a good mix of work experience and this enabled the researcher to get adequate information.

Regarding profession of the respondents 25.0%(10) of them are Civil Engineers,22.5%(9) of them are Construction Managers,17.5%(7) of them are Architects,15%(6) of them are project Managers, 15%(6) of them are Construction project Managers and 5.0%(2) of them are Quantity Surveyors. This shows that there is diversity of professions on the project works.

4.3 Results for Analysis of Research Questions

To answer the research questions, the data collected from 40 respondents was analyzed using SPSS software. Overall 40 variables were created. The variables are ordinal variables and are ranked using Likert scale from strongly agree (1) to strongly disagree (5). The entered data was analyzed using descriptive statistics. As a result, the frequencies, percentages, mean values and standard deviation of the variables were calculated.

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4.3.1 Categories of Risks which are most occurring in QQ during Construction Phases.

When the data was analyzed, it was identified that the risks can be grouped in three ways: highly occurring risks, moderately occurring risks and least occurring risks.

1. **Highly Occurring Risks**: from the results of the analysis, financial, safety and technical risks have found to be highly occurring risks from the rest.

Financial Risks: these risks refer to the risk of a company's financial loss. Financial risk comes primarily as a result of financial economic volatility and losses caused by changes in currencies, interest rates, and other factors.

Table 4.4 Financial risks

Financial risks	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)	Mean	Std. Dev
Economic slowdowns	3 (7.5%)	2 (5%)	3 (7.5%)	17 (42.5%)	15 (37.5%)	2.025	1.16548
Limited insurance cover	0 (0%)	6 (15%)	7 (17.5%)	13 (32.5%)	14 (35%)	2.125	1.0669
Fluctuation of inflation rate	0 (0%)	8 (20%)	5 (12.5%)	15 (37.5%)	12 (30%)	2.225	1.09749
Fluctuation of exchange rate	0 (0%)	5 (12.5%)	3 (7.5%)	22 (55%)	10 (25%)	2.075	0.91672
Loss of profit	0 (0%)	3 (7.5%)	2 (5%)	11 (27.5%)	24 (60%)	1.6	0.90014

Source: Own survey, 2021

The lowest mean rank, (Mean = 1.6), implies that more participants agree that the most common risk among financial risks is loss of profit. In addition, loss of profit risk has a lowest standard deviation among the five questions. This shows that participants consistently agreed on their response towards this question.

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32 participants or 80% of them agreed that there is a risk of economic slowdown affecting QQ company. Economic slowdown risk is the second most common risk after loss of profit risk, with a mean value of (Mean = 2.025).

The third financial risk that exists in the QQ firm is exchange rate fluctuation risk. Its mean value is 2.025.

The fourth risk in QQ's company is a lack of insurance coverage. 67.5% (Mean = 2.125) of respondents agreed that there is a risk of limited insurance coverage.

The risk of inflation rate fluctuation is the least common one among the financial risks, with a mean value of 2.225.

Safety Risks: are the most prevalent workplace dangers or hazards which occur during working conditions and can result in injury or death.

Table 4.5 Safety risks

Safety risks	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)	Mean	Std. Dev
Availability of Clinic on sites	0 (0%)	4 (10%)	8 (20%)	19 (47.5%)	9 (22.5%)	2.175	0.9063
Have stand by Ambulance at sites	0 (0%)	5 (12.5%)	9 (22.5)	14 (35.0)	12 (30%)	2.175	1.00989
Put first aid kits on site	8 (20%)	9 (22.5%)	8 (20%)	9 (22.5%)	6 (15%)	3.1	1.37375
Fulfill safety requirements before operating the site works	0 (0%)	4 (10%)	6 (15%)	18 (45%)	12 (30%)	2.05	0.93233

Source: Own survey, 2021

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The risk of not meeting safety requirements such as wearing a helmet or wearing a safety shoe (Mean = 2.05) ranks top among safety risks.

Both the risk of clinic availability at QQ site and the risk of backup ambulance availability had a mean value of 2.175. However, the risk of clinic availability at QQ location has a standard deviation of 0.9063, while the risk of backup ambulance availability has a standard deviation of 1.009. When the two standard deviation values are compared, the risk of clinic availability at QQ site has a low standard deviation value.

Despite the fact that the two risks have the same mean, the risk of clinic availability at QQ location is more likely to occur than the risk of backup ambulance availability due to its low standard deviation value. The low standard deviation figure implies that participants' responses on the risk of clinic availability at the QQ site were all consistent.

Finally, with a Mean = 3.1 value, the risk of first aid kits being available scored last among the safety risks in QQ.

Technical Risks: these risks can occur due to a lack of funding and materials, a lack of site assessment, changes in project scope and needs.

Table 4.6 Technical risks

Technical risks	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)	Mean	Std Dev
Not managing risks on real time basis	0 (0%)	4 (10%)	9 (22.5%)	19 (47.5%)	8 (20%)	2.225	0.8912
Project delays	0 (0%)	2 (5%)	3 (7.5%)	23 (57.5%)	12 (30%)	1.875	0.75744
Project failure	0 (0%)	2(5%)	6 (15%)	15 (37.5%)	17 (42.5%)	1.825	0.87376
Materials Scarcity	0 (0%)	5 (12.5%)	5 (12.5%)	19 (47.5%)	11 (27.5%)	2.1	0.95542
Equipment	4 (10%)	5	4 (10%)	18 (45%)	9	2.425	1.25856

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Damages		(12.5%)			(22.5%)		
Accidents to workers	2 (5%)	3 (7.5%)	7 (17.5%)	10 (25%)	18 (45%)	2.025	1.18727

Source: Own survey, 2021

In the QQ Company, the mean values for technical risks vary from 1.825 to 2.425. When the mean values are ranked, the value 1.825 indicates that project failure is the risk that happens most frequently among the other technical categories of risks. For the occurrence of project delay risk in the QQ Company, 30% of the participants selected strongly agree answer for the occurrence of project delay risk in QQ Company. This risk has a mean value of 1.875 and it is ranked secondly.

The risk of accidents to workers is placed third, with a mean value of 2.025. According to 28 people response, this risk is present in QQ. The risk of material scarcity is ranked fourth with a mean score of 2.1.

The risk of not managing risks in real time is ranked fifth, with a mean score of 2.225. Finally, among the technical risks, equipment damage, with a mean value of 2.425, is the risk with the lowest score.

2. **Moderately Occurring Risks**: from the results of the analysis, project management process risks and legal risks have found to moderately occurring risks.

Project Management Process risks:

The project management process is an administrative procedure for planning and controlling the delivery of services or the execution of a project. It is the process of recognizing, analyzing, and responding to any risk that develops during the course of a project's life cycle in order to keep the project on track and accomplish its objectives.

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Table 4.7 Project management process risks

Project Management process risks	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)	Mean	Std. Dev
Inadequate forecast information	5 (12.5%)	7 (17.5%)	12 (30%)	10 (25%)	6 (15%)	2.875	1.24422
Undefined project plans	5 (12.5%)	7 (17.5%)	14 (35%)	8 (20%)	6 (15%)	2.925	1.22762
Going beyond compliance	4 (10%)	5(12.5%)	10(25%)	13 (32.5%)	8 (20%)	2.6	1.23621

Source: Own survey, 2021

Among three risks on the project management process risks, going beyond compliance risks is the highest occurring risk with 2.6 mean value or 21 participants agree that there is going beyond compliance risk in QQ. The second risk is inadequate forecast information with a mean value of 2.875 or 16 respondents agree that inadequate forecast information risks occurs in QQ. The third one is undefined project plans risk with 2.925 mean value or 14 respondents agree that there is a risk of undefined project plans in QQ Company.

Legal risks: these risks stem from the construction project's inconsistency with local legal laws and regulations. The project's legal risks can be managed by the project's owner, as he/she has all of the project's legal rights and responsibilities (Sharma and Bhatnagar, 2014).

Table 4.8 Legal risks

Legal risks	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)	Mean	Std. Dev
Breach of contract by project partners	6(15%)	7(17.5%)	10(25%)	9(22.5%)	8(20%)	2.85	1.35021
Improper	10(25%)	5(12.5%)	10(25%)	8(20%)	7(17.5%)	3.075	1.43915

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verification of contract							
Dispute over contract	4(10%)	9(22.5%)	11(27.5%)	9(22.5%)	7(17.5%)	2.85	1.25167
Loss of future contracts	7(17.5%)	7(17.5%)	9(22.5%)	9(22.5%)	8(20%)	2.9	1.39229

Source: Own survey, 2021

All legal risks are moderately occurring risks in QQ. The risk of breach of contract by project partners and the risk of dispute over contract have a high chance of occurring among the rest of the legal risks with a mean value of 2.85. However, the risk of breach of contract by project partners has a standard deviation of 1.35021, while the risk of dispute over contract has a standard deviation of 1.25167. When the two standard deviation values are compared, the risk of dispute over contract has a low standard deviation value. Despite the fact that the two risks have the same mean, the risk of dispute over contract at QQ is more likely to occur than the risk of breach of contract by project partners due to its low standard deviation value. The low standard deviation figure implies that participants' responses on the risk of dispute over contract at the QQ company were all consistent.

The second risk is loss of future contracts with a mean value of 2.9 or 17(42.5%) of the respondents agree that there is loss of future contracts risk in QQ.

The third risk is improper verification of contract with a mean value of 3.0758 or 16(37.5%) of the respondents agree that there is improper verification of contract risk in QQ.

3. **Least Occurring Risks:** from the results of the analysis environmental risks have found to the least occurring risks.

Environmental risks: are possible risks or unfavorable consequences on construction operations and the construction environment, such as flooding, cyclones, tornadoes, and so on.

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Table 4.9 Environmental risks

Environmental risks	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)	Mean	Std. Dev
Increased competition	8(20%)	14(35%)	10(25%)	2(5%)	6(15%)	3.4	1.29694
Change in climate condition (flood, lightening)	7(17.5%)	12(30%)	5(12.5%)	9(22.5%)	7(17.5%)	3.075	1.40306
Safe and healthy working environment for the workers.	8(20%)	9(22.5%)	9(22.5%)	4(10%)	10(25%)	3.025	1.47609
Negative work environment	6(15%)	15(37.5%)	11(27.5%)	5(12.5%)	3(7.5%)	3.4	1.12774
Under-utilization of opportunities	11(27.5%)	6(15%)	11(27.5%)	7(17.5%)	5(12.5%)	3.275	1.37724

Source: Own survey, 2021

In the QQ Company, the mean values for environmental risks vary from 3.025 to 3.4. When the mean values are ranked, the value 3.025 indicates that safe and healthy working environment risk happens most frequently among the other environmental categories of risks. 40% of the participants selected the strongly agree and agree answer for the occurrence of the change in climate condition (flood, lightening) risk in the QQ company. This risk has a mean value of 3.075 and it is ranked secondly.

The risk of under-utilization of opportunities is placed third, with a mean value of 3.275. According to 12 people, this risk is present in QQ. The risk of negative work environment for the workers and increased competition is ranked fourth with a mean score of 3.4. However, the risk of negative work environment at QQ has a standard deviation of 1.12774, while the risk of increased competition has a standard deviation of 1.29694. When the two standard deviation

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values are compared, the risk of negative work environment at QQ site has a low standard deviation value. Despite the fact that the two risks have the same mean, the risk of negative work environment at QQ is more likely to occur than the risk of increased competition due to its low standard deviation value. The low standard deviation figure implies that participants' responses on the risk of negative work environment at the QQ site were all consistent.

4.3.2 Pre-risk Management Practices

Pre-risk management: a risk management practiced and implemented to manage risks before the risks happens.

Table 4.10 Pre- risk management practices

Pre-risk management practices	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)	Mean	Std. Dev
Implementing BIM software	11(27.5%)	14(35%)	9(22.5%)	4(10%)	2(5%)	3.7	1.13680
Conducting Insurance agreement	2 (5%)	11(27.5%)	10 (25%)	12(30%)	5(12.5%)	2.82	1.12973
Utilizing construction Contract documents	4(10%)	7(17.5%)	8(20%)	11(27.5%)	10(25%)	2.6	1.31656

Source: Own survey, 2021

Among three risks on the pre-risk management practices, utilizing construction contract documents is the highest occurring risk with 2.6 mean value. 21 participants agree that QQ utilizes construction contract documents as a pre-risk management practices. Secondly, conducting Insurance agreement is a risk management practice with a mean value of 2.82. The least implemented pre-risk management practice in QQ is implementing BIM software with 3.7 mean value. Only 6 respondents agreed that this practice exists. Almost all respondents disagree that BIM software is implemented in QQ to prevent the risks.

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4.3.3 Risk management practices during the occurrence of the identified risks

The table below describes the list of risk management practices which are implemented when risks occur.

Table 4.11 Risk management practices during the occurrence of the identified risks

Risk management practices	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)	Mean	Std. Dev
Accountability	3(7.5%)	3(7.5%)	10(25%)	16(40%)	8(20%)	2.425	1.129
Communication	2(5%)	10(25%)	9(22.5%)	9(22.5%)	10(25%)	2.625	1.2544
Stakeholder's participation	1(2.5%)	13(32.5%)	10(25%)	6(15%)	10(25%)	2.725	1.24
Managing risk	0(0%)	16(40%)	10(25%)	4(10%)	10(25%)	2.8	1.223
Defined goals	17(42.5%)	0(0%)	17(42.5%)	6(15%)	090%)	3.275	0.715
Realistic expectations	1(2.5%)	15(37.5%)	18(45%)	6(15%)	0(0%)	3.275	0.75
Managing scope creep	8(20%)	23(57.5%)	3(7.5%)	4(10%)	2(5%)	3.775	1.049

Source: Own survey, 2021

In the QQ Company, the mean values for risk management practices during the occurrence of risks vary from 3.775 to 2.425. When the mean values are ranked, the value 2.425 indicates that accountability risk management practice happens most frequently among the other practices. 16% of the participants selected the strongly disagree and disagree answer for the managing risk practice in the QQ company. This risk has a mean value of 2.8.

The practice of realizing expectations and defining goals are ranked fifth and sixth respectively with a mean score of 3.275. However, realizing expectation practice at QQ has a standard deviation of 0.715, while defining goals has a standard deviation of 0.75. When the two standard deviation values are compared, the practice of realizing expectations at QQ site has a low standard deviation value. Despite the fact that the two risks have the same mean, the practice of realizing expectations is more likely to be done than the practice of defining goals due to its low

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standard deviation value. The low standard deviation figure implies that participants' responses on the practice of realizing expectations at the QQ site were all consistent. With 3.775 mean value, the managing scope creep practice is the least practiced when risks occur at QQ.

4.3.4 Post- risk Management Practices

Post -risk management - a risk management practiced after the risk happens.

Table 4.12 Post-risk management practices

Post-risk management practices	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)	Mean	Std. Dev
Lessons learnt document	10(25%)	15(37.5%)	5(12.5%)	6(15%)	4(10%)	3.525	1.30064
MS access	7(17.5%)	19(47.5%)	7(17.5%)	4(10%)	3(7.5%)	3.57	1.12973

Source: Own survey, 2021

With 3.525 mean value, 25 participants disagree that there is a lesson learnt document as a post-risk management practice in QQ. Moreover, with a mean value of 3.57, 26 respondents disagree that there is using MS access as a post-risk management practice in QQ.

Risk management is the responsibility of all departments in a construction project; it should be tightly linked with project management so that risk management practices are handled in the same way as the project's schedule, cost, and quality parameters. Because the project manager is in charge of the entire project, the project manager is supposed to give priority to risk management in each and every phase of a project. The gap that is observed on the study, it is known that risk management is the responsibility of all departments but on the contrary at QQ risk management is left for the project managers and risk management department must be established for effective practice of risks throughout the phases of the project.

According to (Terry & Martin, 2004) risk management is more prevalent in the execution and planning stages of the project life cycle than in the conceptual and termination stages, On the findings of this study there is few pre-risk management practice in the company whereas there are no post- risk practices.

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Despite there is presence of a defined or standard risk management process, it is not practiced in a well-defined manner and it is not applied properly in practice too. In addition, the author indicated even though there is a policy or guideline that recommends how to manage risks, it is not well known and understood by all project team members. This shows having a proper project risk management by itself does not guarantee managing project risks effectively. Moreover, the author found absence of responsible person assigned to handle issues related to project risk management.

The other supporting finding adapted from idea raised by (Rediet, 2017) said that having a proper project risk management by itself does not guarantee managing project risks effectively and the author also revealed absence of responsible person assigned to handle issues related to project risk management, so the researcher assess that absence of responsible person to handle risks in QQ and it also reviles there must be a department whose main task is to manage risks on every phase of the construction project,

4.3.5 Results from the Interview

According to the information gathered from the interview all the three interviewees agreed on a point that there are risks in QQ expected to happen on different phases of the project. But the main gap that is not filled with the right procedure is, there are only small pre-risk and no post-risk management practices, according to their response. Before the happening of the risk, they don't do any preliminary preparation and also there is no any documented information put as past experience for the same risk which happened on the previous projects.

Not only there is no record of earlier risks and how they were mitigated, but almost all risks are dealt with by the project team and project manager by the time they occur on site, according to the interviewee's statement. For example: - when one worker is hit by rebar on site without wearing helmet and become unconscious, the site supervisor and his friends will try to stop the bleeding but they don't do any further treatment. If there was safety engineer, a person without helmets would have not been allowed to be in the working area but due to the absence of the Safety Engineer, the site faces similar types of risks repeatedly. In addition, if there had been any kind of safe and healthy working environment on site, the damage caused by the risk would have been prevented.

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The other response the researcher received from the project managers is that there are no post-risk management trends on all sites. Once the risk has passed, there are no any documentation and procedure to have knowhow of that specific risk for the coming projects. So, in terms of the research questions and interview, the researcher began the study by identifying risks that are expected to occur during various phases of the project, but there is no record of information on the most commonly occurring risks that could have been utilized as post-risk management practice.

According to the interviewee's response, experienced project managers are hired for a specific project although the team members who work under them must be motivated for the success of the project too, but only the project manager is experienced and the workers under his supervision needs training and continuous supervision from him in order to be on the same track as that of him.

Wearing safety materials is the primary protective equipment in the event of an accident, however on most projects; the contractor does not spend in purchasing safety equipment because he/she believes it will cost too much money. Despite the lack of a distinct risk manager and risk management department in the organization, the project manager is solely responsible for risk management, as they manage risks using their experiences and expertise.

As per the data from the interview, despite Stakeholder's effort to identify risks early, some high impact unidentified risks were experienced frequently. This shows that proper identification method for pre- risk management was not employed. It's also the case that risk manager that is dedicated for risk management is creating problem and is increasing the occurrence of unidentified risks. The respondents mentioned that these unidentified risks had a severe impact. It had all financial, schedule and quality impacts.

The respondents also answered that they identify the risks when they occur. This was mainly, as per the respondents, since there is lack of risk management understanding or absence of risk management expert in the organization and also project manager's negligence to incorporate detail risk component in the plan. There is also a lack of understanding about the significance of effective risk management.

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They focus on vulnerable areas to risk. This could be related to the experiences of the stakeholders and especially the project managers. The respondents responded that they identify risks by experience. From their experiences project managers and stakeholders identified areas highly vulnerable to risk.

As the results found from the questionnaire indicate, risk management is hardly practiced in QQ. This finding is also supported by the interview where the respondents agreed that there are almost no post-risk management practices and only some pre-risk management practices. In addition, QQ has no risk management department or risk manager dedicated for its projects.

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CHAPTER FIVE

Summary, Conclusion and Recommendation

Introduction

This chapter discussed the summary of the findings; conclusions generated from the analysis & interpretation; suggest the recommendations that might help to improve Quick Quality Construction P.L.C risk management practices and finally suggestion for further study is included.

5.1 Summary

This study attempted to examine assessing risk management practices for risks identified in Quick Quality Construction P.L.C that implements on construction projects in terms of four major questions on risk management:

Based on the data analyzed in chapter four, using percentage frequency of respondents for quantitative data, and narrative approach for qualitative data gathered through interviews the researcher comes up with the following results:

- ✓ According to the identified risks, technical, financial, and safety risks are the most often occurring risks at QQ. While project management and legal risks do exist but they don't happen frequently. Finally, environmental risks are the one that happen the least.
- ✓ QQ suffers from loss of profit risk and if the company does not make a profit from the projects, it will be forced to dedicate or increase additional funds to purchase safety equipment that will allow it to avoid safety risks.
- ✓ Conducting insurance agreements and having contract documents are the most widely used pre-risk management procedures at QQ. However, implementing BIM software is not being practiced as a risk management practice at QQ. QQ doesn't have any primary work before the risk happens. Concerning to the risk analysis the company didn't consider the characteristics of risks before analyzing the identified risk.
- ✓ According to the score of the respondents regarding risk management practices during construction risk occurs most of them replied that when there is accident on the sites

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immediate action is done to correct the problem but the biggest mistake is that, there is no pre-planned and post-registered document that helps to easily solve it.

- ✓ There was lack of responsible person or department to manage risk in the company.
- ✓ There was lack of continuous treatment of risk management process; Uncertainties were managed by project manager and by the consultants.
- ✓ The majority of the respondents replied as the company didn't have measurement system to analyze the risk.
- ✓ The result of the analysis indicated that the company didn't update project documents after assessment of the risk that might occur. There wasn't the practice of project monitor, control and review the process to ensure that it complies with standard and procedures.
- ✓ According to the response of the respondents regarding post-risk management practice, the finding clearly described that the absence of risk management policy or guideline to manage risks. Projects didn't have a defined or standard risk management policy or guideline to manage risk. Once a risk happens and it is managed for that time being, there is no such a trend putting that risk's characteristics, how it is managed and what procedures are taken to manage it. This becomes a burden for the next time.

5.2 Conclusion

The 1.6 mean loss of profit risk score suggests that QQ Company does not make the desired profit or return on projects. As a result, new risks, such as safety hazards, are likely to emerge as a result of the profit loss. This is because if the company doesn't gain any profit from the projects, it is constrained to allocate or increase an additional budget to buy safety equipment that allows it to prevent safety risks.

The risk of limited insurance coverage is frequent in QQ Company, according to what more than 68% of respondents said on the questionnaire. The fact that the company has limited insurance coverage is a major source of other related risks. Due to the limited insurance cover, when there is a possibility of an accident involving workers, QQ Company fully does not protect the lives and health of those affected workers. As a result, it is possible to conclude that the risk of accident on workers won't be properly managed due to the risk of limited insurance cover.

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The risk of not complying with safety standards such as wearing a helmet or wearing a safety shoe is the most serious of all safety risks. As a result, minimizing this risk also helps to prevent the occurrence of other safety risks. In other words, meeting the appropriate safety requirements and regulations in the first place reduces the risks or occurrences that would otherwise be dealt with by ambulances, clinics, and first-aid kits.

The mean score of 1.875 for project delay risk shows that QQ Company does not execute projects on time. If this risk is not adequately handled, the project may be delayed indefinitely, possibly leading to project failure. Equipment damage risk has the lowest mean value among the technical risks, meaning that it rarely occurs in QQ. According to the demographics data, the majority of employees working in construction projects are experts. Because professionals work on equipment, their technical knowledge gives them an advantage in reducing the risk of equipment damage.

When a project is managed, it goes through five processes which are initiation, planning, execution and closure. Throughout this process, it is critical to ensure that the project meets time, cost, and quality compliances. However, from the result, it can be observed that more than 52.5% of participants agreed that going beyond compliance risk is the most prevalent in project management process risk group. The risk of inadequate forecast information also affects the project management process of the company and the existence of these risks leads to the occurrence of poorly defined or undefined project plan risks.

It was found that the risk of breach of contract by project partners and the risk of dispute over contract have high chance of occurring among the legal risks. It can be concluded that the dispute over contract which might have occurred due to lack of consensus on benefits etc. gave rise to the risk of breaching the contract between project parties at the end. This will impose a further negative consequence on securing future contracts; although, a risk of losing future contracts happened less frequently in QQ.

From the least occurring environmental risks, the risk of safe and healthy working environment for the workers scored highly. From the results, it can be concluded that the risk of not having a safe and controlled healthy working environment exposes to an additional risk. For example, when a risk of flood occurs, if there isn't a safe working environment during construction, the workers would find it difficult to resist the flood and continue working.

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Utilizing contract doccmnets as a pre-risk management practice prevents legal risks from occurring. As QQ practices the use of contract documents as a mean of risk management, as can be referred from the results, legal risks are the moderately occurring risks. BIM software gives information both on the design phase and the construction phase, and it prevents some of the technical risks from happening. But since QQ hardly practices implementing BIM software, technical risks in QQ have found to be the highly occurring risks.

The results reveliled that the company doesn't have post risk Management and also the pre risk management practices are questionable, on the empirical review the researcher found that there is no assigned risk manager on the author assessment, the same is here with QQ, there are no hired risk managers and risk management office that is delegated to manage risks that are occurring on the project phases.

5.3 Recommendation

Based on the findings from the study, recommendations are provided to mitigate the risks occurring in QQ and to implement the risk management practices.

- It is recommended that QQ must deal loss of profit risk by any means. First and foremost, the company should allow for a healthy profit margin at the commencement of the tendering process, considering all costs associated with other incoming risks.
- QQ Company's insurance coverage be increased. This can be accomplished by negotiating a flexible insurance contract with insurance providers. The insurance firms' flexibility allows QQ to assess and include various incoming and unintended risks that may arise during the construction phase of projects.
- QQ Company treats expenses related to safety not as cost but as benefit. This is because safety investment not only decreases incidents but it shows that the leadership of QQ Company is concerned about the well-being of employees.
- To avoid project delays and, as a result, project failures, it is recommended that QQ controls its risk in real time and tries to complete projects within the specified time and budget.

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- It is suggested that QQ should plan in detail before the implementation of projects and the company should incorporate adequate forecast information to reduce the existence of other risks throughout the whole phases of the project.
- QQ should clearly outline how benefits and profits will be divided among project parties to avoid any kind of disputes from the beginning. The company should also prepare contract documents in detail and verification of contract must be done periodically.
- The company should consider environmental risks and how to minimize the effect of them on projects. Even though it is impossible to eradicate them.
- It is recommended that post-risk management practices such as lessons learnt document must be practiced in QQ. It can be used as a guide line for any upcoming risks and it gives know-how for new workers how a similar risk is handled previously.

5.4 Suggestion for Further Study

Based on quantitative and qualitative data, this study focused on assessing risk management practices for risks identified in quick quality construction P.L.C. The following suggestions are provided for further study.

This study used a case study research method and focused on only one organization. It is suggested that more studies be conducted with several construction companies that practices risk management in their projects. Thus, it is suggested that subsequent research be conducted using different construction companies and a bigger population size.

Furthermore, the case organization that is chosen for this study is limited to the construction sector. Additional research can be conducted with the participation of other manufacturing, business, and IT companies. As a result, it is suggested that project management professionals and practitioners take the initiative to conduct studies in the field.

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Reference

Al-Shibly, H.H., Louzi, B. and Hiassat, M.A. (2013) The Impact of Risk Management on Construction Projects Success from the Employees Perspective. Inter disciplinary Journal of Contemporary Researches in Bussiness, 5, No. 4.

Banaitiene, N. and Banaitis, A. (2012) Risk Management in Construction Projects. In: Risk Management-Current Issues and Challenges, In Tech, Vilnius. https://doi.org/10.5772/51460

Debela, G.Y., 2018. Construction Risk Management through Insurance in the Ethiopian Federal Road Projects. *Civil and Environmental Research*.

Dikmen, I., Birgonul, M.T., Anac, C., Tah, J.H.M. and Aouad, G., 2008. Learning from risks: A tool for post-project risk assessment. *Automation in construction*, *18*(1), pp.42-50.

Dumbravă, V. and Iacob, V.-S. (2013) Using Probability-Impact Matrix in Analysis and Risk Assessment Projects. Descrierea CIP/Description of CIP-Biblioteca Națională a României Conferința Internațională Educație și Creativitate pentru o Societate Bazată pe Cunoaștere-ȘTIINȚE ECONOMICE, 42.

Enku, D., 2018. Assesing the Potential Applicability of BIM in the Construction Industry of Ethiopia: The case of Dire Dawa Public Construction Projects. *Structural Engineering*.

Ferede, Y.S., Mashwama, N.X. and Thwala, D.W., 2020, July. A Theoretical Assessment of the Impacts of Poor Risk Management in the Construction Industry-A Case of Ethiopia. In *Creative Construction e-Conference 2020* (pp. 8-13). Budapest University of Technology and Economics.

Haimes, Y.Y. (2015) Risk Modeling, Assessment, and Management, John Wiley & Sons, Hoboken.

Hauke, J. and Kossowski, T. (2011) Comparison of Values of Pearson's and Spearman's Correlation Coefficients on the Same Sets of Data. Quaestiones Geographicae, 30, 87.

Kululanga, G. and Kuotcha, W. (2010) Measuring Project Risk Management Process for Construction Contractors with Statement Indicators Linked to Numerical Scores.

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Engineering, Construction and Architectural Management, 17, 336-351. https://doi.org/10.1108/09699981011056556.

Lema, M. (2006) Alternative Project Delivery Methods for Public Constructions:Cases in Oromia Region. Addis Ababa.

Mitikie, B.B., Lee, T.S. and Chang, B.C. (2017) Application of Enzyme to Clay Brick and Its Effect on Mechanical Properties. KSCE Journal of Civil Engineering, 1-10.

Ofori, G. (1993) Managing Construction Industry Development: Lessons from Singapore's Experience. NUS Press, Singapore.

Sacks, R., Eastman, C., Lee, G. and Teicholz, P., 2018. BIM handbook: A guide to building information modeling for owners, designers, engineers, contractors, and facility managers. John Wiley & Sons.

Tsegaye, G. (2009) Design Risk Management in Ethiopian Federal Road Projects. Master's Thesis, Addis Ababa University, Addis Ababa.

Tserng, H.P., Yin, S.Y., Dzeng, R., Wou, B., Tsai, M. and Chen, W. (2009) A Study of Ontology-Based Risk Management Framework of Construction Projects through Project Life Cycle. Automation in Construction, 18, 994-1008.

Wang, S.Q., Dulaimi, M.F. and Aguria, M.Y. (2004) Risk Management Framework for Construction Projects in Developing Countries. Construction Management and Economics, 22, 237-252.

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Appendix I

Addis Ababa University, College of Business and Economics, School of Commerce

MA in Project Management Program

Survey Questionnaire

Dear Sir/Madam

LETTER OF INVITATION FOR PROJECT WORK SURVEY

The Department of Project Management at Addis Ababa University, College of Business and Economics, Ethiopia, is conducting a project work titled **"Assessing Risk Management Practices for Risks Identified in construction companies in Ethiopia: A case study of Quick Quality Construction P.L.C"** We kindly request that you complete the following short questionnaire. Answering this questionnaire would take approximately 10 minutes of your time. Your response is of the utmost importance to us. To protect your anonymity, please do not enter your name or contact details on the questionnaire. Should you wish to know the findings of this project work; the results would be available at the Department of Project Management.

Should you have any queries or comments regarding this survey, you are welcome to e-mail me at mariamulugeta@gmail.com.

Thanking you in advance.

Maria Mulugeta Terefe

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QUESTIONNAIRE ON ASSESSING RISK MANAGEMENT PRACTICES FOR RISKS IDENTIFIED IN CONSTRUCTION COMPANIES IN ETHIOPIA: A CASE STUDY OF QUICK QUALITY CONSTRUCTION P.L.C

PLEASE ANSWER THE FOLLOWING QUESTIONS BY CROSSING (X) ON THE RELEVANT BLOCK

Example on how to complete the questionnaire:

Gender

Male	☒
Female	

SECTION A: BACKGROUND INFORMATION

This section of the questionnaire refers to the background or biographical information. Although we are aware of the sensitivity of the questions in this section, the information would allow us to compare groups of respondents. Once again, we assure you that your response would remain anonymous. Your co-operation is appreciated.

1. Gender

Male	
Female	

2. How many years of experience do you have in the construction industry?

Less than 1 year	
1-5 years	
6-10 years	
11-15 years	
16-20 years	
More than 20 years	

3. State your highest educational qualifications

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Matric (Grade 12) certificate	
Post-Matric certificate or Diploma	
Bachelor's Degree	
Master's Degree	
Doctorate	

4. The main source of obtaining work for your organisation?

Public sector	
Private sector	

5. What is your profession?

Architect	
Civil Engineer	
Project Manager	
Construction Manager	
Construction project manager	
Quantity Surveyor	
Other, please specify	

6. What is the total number of projects executed in the last two years?

1-5 projects	
6-10 projects	
11- 15 projects	
16- 20 projects	
More than 20 projects	

7. The number of years your company has been operating?

1-5 years	
6-10 years	
11-15 years	
16-20 years	
More than 20 years	

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SECTION B: CATEGORIES OF RISKS THAT ARE MOSTLY OCCURRING IN THE COMPANY

8) Please indicate the extent to which the following factors are the **categories of risks that are mostly occurring in the company** by using the following scale: (5 = Strongly Disagree; 4 = Disagree; 3 = Neutral; 2= Agree; 1=strongly Agree).

	categories of risks that are mostly occurring in the company	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
B8.1	There is a risk of economic slowdown affecting QQ company.					
B8.2	There is a risk of limited insurance cover.					
B8.3	There is a risk of fluctuation of inflation rate affecting QQ company					
B8.4	There is a risk of fluctuation of exchange rate affecting QQ company.					
B8.5	QQ has experienced a loss of profit risk					
B8.6	There is a risk of vailability of Clinic on sites					
B8.7	There is a risk of have stand by Ambulance at sites					
B8.8	There is a risk of put first aid kits on site					
B8.9	There is a risk of fulfill safety requirements before operating the site works					
B8.10	QQ doesn't manage risks on real time basis.					
B8.11	There is a risk of project delay.					

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B8.12	There is a risk of project failure.					
B8.13	There is a risk of material scarcity					
B8.14	There is a risk of eqpt damage					
B8.15	There is a risk of accident to workers.					
B8.16	There is a risk of inadequate forecast information					
B8.17	There is a risk of undefined project plans					
B8.18	There is a risk of going beyond compliance					
B8.19	There is a risk of breach of contract by project partners in QQ.					
B8.20	There is a risk of improper verification of contract.					
B8.21	There is a risk of dispute over contract in QQ.					
B8.22	There is a risk of loss of future contracts.					
B8.23	There is a risk of increased competition in QQ					
B8.24	There is a risk of change in climate condition (flood, lightening)					
B8.25	There is a risk of safe and healthy working environment for the workers.					
B8.26	There is a risk of negative work environment in QQ.					

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B8.27	There is a risk of under-utilization of opportunities in QQ.					

SECTION C: PRE - RISK MANAGEMENT IN THE COMPANY

9) Please indicate the extent to which the following factors are **pre-risk management** in the company by using the following scale: (5 = Strongly Disagree; 4 = Disagree; 3 = Neutral; 2= Agree; 1=strongly Agree).

	pre-risk management	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
C9.1	QQ implements BIM software to prevent risks from happening.					
C9.2	QQ has insurance agreement to prevent risks from happening.					
C9.3	QQ utilizes construction contract documents as a pre-risk management practices.					

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SECTION D: **RISK MANAGEMENT PRACTICES DURING CONSTRUCTION RISKS OCCUR**

10) Please indicate the extent to which the following factors are Risk Management Practices during Construction Risks Occurs by using the following scale: (5 = Strongly Disagree; 4 = Disagree; 3 = Neutral; 2= Agree; 1=strongly Agree).

	Risk Management Practices during Construction risks Occur	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
D 10.1	There is a risk of accountability					
D 10.2	There is a risk of communication					
D 10.3	There is a risk of stakeholder's participation					
D 10.4	There is a risk of managing risk					
D 10.5	There is a risk of defined goals					
D 10.6	There is a risk of realistic expectations					
D 10.7	There is a risk of managing scope creep					

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SECTION E: POST-RISK MANAGEMENT

11) Please indicate the extent to which the following factors are **Post-risk management** by using the following scale: (5 = Strongly Disagree; 4 = Disagree; 3 = Neutral; 2= Agree; 1=strongly Agree).

	Post-risk management	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
E 11.1	QQ uses lessons learnt document to prevent risks from happening.					
E 11.2	QQ uses MS access to prevent risks from happening.					

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Appendix II

INTERVIEW GUIDE FOR THE PROJECT MANAGERS

Dear Interviewee!

First of all I would like to thank you for your willingness to respond to my questions. My name is Maria Mulugeta; I am a Masters of Art student in Project Management department at Addis Ababa University, School of Commerce. As part of my MA Project work, I am undertaking assessing risk management practices for risks identified in construction companies in Ethiopia: a case study of quick quality construction P.L.C. This interview is made so as to have more in depth knowledge on the study.

Thus, I kindly request you to answer all the questions assuring you that all responses would be used only as an input for this study.

1. Is there risk management practice in the organization?
2. Is there a standardized or formal documented process on how to manage risks within the project? What is the current practice of risk management within the project?
3. Is there a special department or assigned person to handle uncertainties that occur within the life cycle of the project? At which stage of the project are risks managed in the projects? Who is responsible for risk management in your organization?
4. Are risks that might occur identified early while the project is at startup phase? And what methods are used to identify them?
5. While taking action responding to uncertain events within the project what factors is kept in consideration? Are factors such as schedule, budget and objective of the project considered?
6. Do you think managing risk and project success are related? If yes, how?