ADDIS ABABA UNIVERSITY

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DEPARTMENT OF PROJECT MANAGEMENT

POST GRADUATE PROGRAM

Assessment of Risk Management in Construction Project in Case of Ethiopian Engineering Investment Group Construction

A Research Project Work Submitted to Addis Ababa University School of Commerce for The Partial Fulfillment of the Requirement for Master of Art Degree in Project Management

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DEPARTMENT OF PROJECT MANAGEMENT

ASSESSMENT OF RISK MANAGEMENT IN CONSTRUCTION PROJECT IN CASE OF ETHIOPIAN ENGINEERING INVESTMENT GROUP CONSTRUCTION

BY

SAMUEL TILAHUN

A RESEARCH PROJECT WORK SUBMITTED TO ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF ART DEGREE IN PROJECT MANAGEMENT

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ENDORSEMENT

This Research Project entitled A Study on Risk Management in Construction Projects Evidence from EEIG Construction has been submitted to Addis Ababa University School of Commerce, Department of Project Management, with my guidance and approval as a University Advisor.

……

Dr. Solomon Markos

(Assistant Professor)

DECLARATION

I Samuel Tilahun, the undersigned, declare that, this research paper is my original work, prepared under the guidance of Dr. Solomon Markos (Assistant Professor). All resources and materials used herein have been properly acknowledged. I further confirm that the project work has never been presented either in part or in full to any other university for the purpose of earning any degree.

……

Samuel Tilahun

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List of abbreviation and acronyms

PMI	Project Management Institute
EEIG	Ethiopian Engineering Investment Group
HCB	Hallow Concrete Block
IBM	International Business machines
SPSS	Statistical Package for the Social Sciences
PMBOK	Project Management Body of Knowledge
APM	Associate in Project Management

ABSTARCT

The construction industry in Ethiopia faces more dangers and unpredictability than many other industries. This study looked at how Ethiopian Engineering Investment Group Construction, a top contractor in Ethiopia, thinks about and deals with risks in their construction projects. To know how much the people in charge of building projects know about risks, and how they handle them. It studied the engineers, managers, and project team at Ethiopian Engineering Investment Group Construction to find out their risk awareness and management practices. It also looked at the systems and practices they use to manage risks in their projects and in their company overall. It used a method to ask people questions and gather different kinds of information. It looked at the information to help us reach our research goals. A survey was done to find out the total number of engineers, managers, and team members working on 10 construction projects for Ethiopian Engineering Investment Group Construction and received a 90. 7% response rate, which is good. The research found that most site engineers, project managers, and project management team members at Ethiopian Engineering Investment Group Construction think that there is a lot of risk involved in their work. Most of them see themselves as people who take careful chances. When building something, the company might have problems with technology, management, social issues, money, and the environment. Ethiopian Engineering Investment Group Construction doesn't have a good plan for managing risks, or a way to check if things are going well. They hardly ever hold trainings or workshops to help decision makers understand how to make good plans, put them into action, and keep an eye on them. The engineers and managers on the project team currently have to rely on their experience and any classes they took in school. So, the projects need to get better at managing risks by making sure they do what they're supposed to do in practice, not just in theory. The research used a descriptive type of research in order to answer what the perception of decision makers towards risk management using quantitative and qualitative data analysis.

It can be done more research to understand how people involved in construction feel about taking risks and how they manage those risks.

Key words: Risk awareness, project risk, risk management, risk management process

1. Introduction

1.1. Background of the Study

Construction projects are undertaken in dynamic, complex and challenging environments and therefore the eventual success of these projects is clouded by uncertainty and risk. Having the right plan is essential for any project, and we need to engage the best people to execute the plan. Unfortunately fulfilling both of these conditions does not guarantee success. There are a host of factors which may play a role in determining the outcome whether a project has been successful or not. These are called project risks. According to (Workneh, 2018), the Ethiopian construction industry is subject to more risk and uncertainty than many other industries. The development of a construction project from inception to completion takes a long time and involves many phases. It brings workers with different skills and interests together and involves the use of large and diverse sets of equipment. All of these complex requirements have to be handled with proper co-ordination to provide a smooth flow of activities.

Creating nations are confronted with the issue of rare venture money related assets due to the need of chance appraisal and administration. in spite of the fact that, chance characterized as "possibility of misfortune or injury;" "the chance of misfortune or the dangers to the subject matter of protections contract" moreover "the degree of likelihood of such loss;" and "the chance that a venture (as a stock or product) will lose value" (Merriam-Webster, 2006), hazard is an unavoidable perspective of life. Dangers require cautious thought to decide on the off chance that such chance is worthy or in case it ought to be dodged. Within the corporate world, these dangers play a definitive part in deciding the coherence of the undertaking. Subsequently, it is vital to distinguish and analyze the dangers that will show up amid the execution of the venture.

As such, hazard administration has advanced into an essential viewpoint of the choice making handle for many substances through the application of chance administration within the endeavor to dispose of or decrease the effect of the characteristic risks of hazard. Indeed, in spite of the fact that, chance and vulnerability can possibly have harming results for the development ventures (Flanagan, Norman, & Chapman, 2006). Subsequently, chance mindfulness and administration proceed to be a major highlight of the venture administration of development projects in an endeavor to bargain successfully with instability and startling occasions and to attain extend

victory. Venture Administration Founded characterizes extend hazard as a questionable occasion or condition which the event has positive or negative impact on at slightest one venture objective, such as time, taken a toll, scope, or quality (PMI, 2008). In expansion to this, a number of considers have been conducted to look at components affecting on extend execution in creating nations. Deficiency of aptitudes of labor, destitute supervision and destitute location administration, destitute workmanship; client fulfillment, unacceptable administration; deficiency and breakdown of gear among others contribute to development delays (Management, 2004).

Development ventures can be amazingly complex and full with instability. Development ventures are continuously special and dangers raise from a number of the distinctive Sources (Oyegoke, 2006). Hazard and vulnerability can possibly have harming results for the development ventures (Flanagan et al., 2006). It is well acknowledged that hazard can be viably overseen to relieve its unfavorable impacts on development venture destinations, indeed in case it is common in all extend endeavors. Hence these days, the chance examination and administration proceed to be a major include of the venture administration of development ventures in an endeavor to bargain successfully with vulnerability and unforeseen occasions and to attain venture victory. Hazard administration makes a difference the key venture members; client, temporary worker or engineer, expert, and provider; to meet their commitments and minimize negative impacts on development extend execution in connection to taken a toll, time and quality targets. Customarily, professionals have tended to relate development venture victory with these three perspectives of time, taken a toll and quality results. Whereas dangers cannot be disposed of, fruitful ventures are those where dangers are viably overseen, of which early and compelling recognizable proof and evaluation of dangers is basic.

Hazard administration within the development extend administration setting includes distinguishing proof, appraisal and prioritization of dangers by checking, controlling, and applying administrative resources with a facilitated and conservative exertion so as to play down the likelihood and/or effect of sad occasions and so as to maximize the realization of venture goals (Douglas, 2009). Venture chance administration, which has been practiced since the mid-1980s, is one of the nine fundamental information ranges of the extend administration institutions venture administration body of information (Tuysuz **et al**., 2006).

1.2. Background of the Company

EEIG Construction, part of EEIG Group, is a Grade one construction company operating in Ethiopia. The company builds and provides construction solution to exceed client's expectations for quality, safety, and functionality. EEIG Construction own a Design and Build Capability, which enables it to provide integrated construction solutions to our clients (EEIG Construction.com, 2023).

EEIG Construction's - key activities are high-end complex construction projects, predominately high-rise commercial and residential buildings, real-estate, infrastructure (roads, railways, and airports), and water and energy sectors.

The company believes effective planning is a simple clear plan that can be understood by all stakeholders. The company regularly communicate the agreed simple plan for all stakeholders- (i.e. Client, Consultant, Subcontractors & Suppliers), so that everyone understands the project program and work towards the same project goal. The company ensure that cash expenditure is well planned and communicated, through cost forecasting, cost certainty and final account close out. EEIG (Ethiopian Engineering Investment Group) specializes in delivering high-end and complex construction projects. Their expertise lies in constructing high-rise commercial and residential buildings, as well as infrastructure projects such as roads, railways, and airports. They are also involved in projects related to real estate, water, and energy sectors. (EEIG Construction.com, 2023)

Even though the company is established in 2021 it has successfully completed 13 fit out projects and is currently working on 14 construction projects. (EEIG Construction.com, 2023)

1.3. Statement of the Problem

Taking chances is a normal part of the daily hard work of building things. Uncontrolled risk can ruin value. Every job in construction can cause someone to get hurt or die, lose a lot of money, or make the work take longer. Taking care of risks well can make opportunities and give a better advantage over others.

Right now, there is no official plan to help a project team identify, communicate, and keep track of their management goals. It is still not clear how project teams can use this process to make the

Risk Action Plan better. One big reason projects don't work out is because the risk isn't managed well. Either we don't plan for risks well or we don't take action at the right time to reduce the consequences. Having a good plan for dealing with risks can make it easier to handle the stress of not knowing what might happen in the future. Many organizations are always in crisis because they don't plan for unexpected events. They can't make good decisions quickly. Lots of people refer to this as crisis management or firefighting because the project stakeholders only handle the project risks after they have become a problem.

The quality and process division is in charge of managing the risk management process along with other responsibilities. The staff does not prioritize managing risks and they do not take it seriously. As a result, the company lost money and the project took longer and cost more than expected.

The team members' reports showed that the company's projects were delayed and lost money due to poorly managed risks. Some systems, like MMS, are still running today because they didn't make plans, put them into action, or think ahead before starting the system. This happened because the company lost money and its projects were delayed.

The aim of this study is to connect project risk management methods with theoretical ideas in the field of knowledge. It focuses on the problem of risk that can affect the success of a project, such as the company not identifying risks early and finding solutions for them. The study will also look at how well decision makers are aware of and handle risks. Project managers and team members working on construction projects for EEIG Construction in Ethiopia.

1.4. Research Questions

In attempting to address the issues highlighted under the statement of the problem, the following research questions were developed:

1. What is the risk awareness and perception among project managers and project management team members in construction projects undertaken by EEIG (Ethiopian engineering investment group) Construction?
2. What are the dangers in the Ethiopian construction industry and especially for EEIG Construction when risk on work projects in Ethiopia?
3. What ways does EEIG Construction use to manage risks in their projects and overall business?

4. Which methods of risk identification technique are the company implemented (such as checklists, brainstorming sessions, or historical data analysis?
5. Risk Management plan and risk identification techniques: Assess how the company will overcome the identified risk hazard?

1.5. Objectives of the Study

1.5.1. General Objectives

The general objective of the study is to examine the risk awareness and management practices in construction projects undertaken by EEIG (Ethiopian engineering investment group) Construction and to emphasize their importance for the success of projects.

1.5.2. Specific Objectives

I. To identify the risk awareness and perception among project managers and project management team members in construction projects undertaken by EEIG (Ethiopian engineering investment group) Construction.
II. To identify the risks presents in the EEIG (Ethiopian engineering investment group) Construction while undertaking construction projects in addis ababa, Ethiopia.
III. To assess and evaluate the company's training and development towards risk awareness and management plan for the employees and concerned stakeholders.

1.6. Significance of the study

The results and suggestions of this research could be very important for people who have to make decisions. Construction project managers and team members learn about risk management to improve their ability to handle risks and increase the chances of project success.

The study can also help everyone involved in EEIG construction projects understand how well they have prepared for managing risks. It can help people in school and work understand how construction projects managed by EEIG Construction handle risk.

Finally, this study will help other researchers to study this topic in the future.

1.7. Scope of the study

The scope of this study is limited to the ongoing construction projects undertaken by EEIG Construction, which may restrict generalization of the findings to all contractors operating in the Ethiopian construction sector. This study does not consider completed projects of the company under consideration.

This research explored that the risk management that involves in evaluating and implementing procedures to reduce the impact of risks happening in the construction project specifically in EEIG construction projects. And also evaluating their risk identification method, their risk assessment or risk prioritize method, and their risk mitigation and monitoring system to check the effectiveness of their risk mitigation strategies.

This study tried to underlined the fact that since risk is associated with project decision-making, it is the decision-makers within the organization who will experience risk most directly, and who should be closely involved in managing it. Therefore, the study focused on collecting data only from project managers and project management team members. Nevertheless, risk management cannot be attributed to a single individual or a group of individuals but is a collaborative effort shared by all parties involved that need to have the necessary mindset and awareness. This study will also assess types of risks happening in the EEIG construction projects: safety risk, financial risk, legal risk, project risk.

This study intends to cover the projects undertaken by EEIG which are located at Addis Ababa and nearby Addis Ababa city projects in order to get the available resource. Projects like ministry of finance, ministry of justice, Addis capital goods located in Addis Ababa, Ethiopia are undertaken by EEIG construction.

1.8. Organizations of the Study

This study will contain five chapters:

Chapter One focused on an introductory part containing discussions on background of the study, background of the company, statement of the problem, questions and objectives of the study, significance of the study, scope of the study and organization or layout of the study. Chapter Two presented literature review with general descriptions by different researchers on risk, attitude, risk attitude, risks in construction, risk management, project manager, project management team, national culture, empirical literature review, summary of literature review and conceptual framework. Chapter Three discussed about research methodology. Chapter Four presented research findings and discussions. Chapter Five contained research conclusions, recommendations and areas for future study

2. Literature Review

2.1. Introduction

This section presents the findings from different reviewed literatures on risk, attitude, risk attitude, risk in construction projects and risk management.

2.2. Theoretical Review of Literature Review

2.2.1. Risk

Risk and uncertainty are the two most often used concepts in the literature covering RM field. Although these terms are closely related, a number of authors differentiate between them (Samson, 2009). Also practitioners working with risk have difficulty in defining and distinguishing between these two. Often definitions of risk or uncertainty are tailored for the use of a particular project. To make it more systematized, a literature research was done. The findings of this search resulted in a number of definitions of risk and uncertainties. These have been compiled and are presented in Table 1.

Table 1: Definitions of risk and uncertainty

Author:	**Risk definition**	**Uncertainty definition**
(Winch, 2002)	An organize where there's a need of data, but by looking at past encounter, it is easier to foresee long run. Occasions where the result is known and anticipated.	Instability could be a part of the data required in arrange to require a choice. The desired data comprises of the sum of accessible data and vulnerability. The level of instability will diminish the assist a extend is continuing all through the lifecycle.
(Cleden, 2009)	Risk is the articulation of what may emerge from that need of information. Dangers are crevices in information which we think constitute a danger to the venture.	Uncertainty is the intangible measure of what we don't know. Uncertainty is what is left behind when all the risks have been identified. Uncertainty is gaps in our knowledge we may not even be aware of.
(smith, 2006)	Risks occur where there is some knowledge about the event.	There might be not enough information about the occurrence of an event, but we know that it might occur.

(Webb, 2003)	Risk is a situation in which he possesses some objectives information about what the outcome might be. Risk exposure can be valued either positively or negatively.	Uncertainty is a situation with an outcome about which a person has no knowledge.
(Darnall, 2010)	Risk is a possibility of loss or injury.	
(Cooper, 2005)	Risk is exposure to the consequences of uncertainty	

An incident or occurrence that could have a negative effect on the project is considered a risk. Therefore, a more thorough definition might be an uncertain condition or event that, in the event that it materializes, affects at least one project objective in a favorable or unfavorable way ((Management, 2004)). Similarly, risk is defined by APM 1997 as an uncertain event or circumstance that, if it materializes, may have a favorable or unfavorable impact on a project's goal (PMBOK®, 2000). Risk is something unexpected that happens or a bunch of things that might happen and can affect the project's ability to reach its goals.

The difference between uncertainty and risk comes from thinking about what could happen. Risk is when we don't know what will happen and it's important. If something uncertain doesn't matter, then it's not a risk (Hillson, Managing risk attitude using emotional literacy, 2006).

2.2.2. Awareness

According to the Cambridge Dictionary, awareness means knowing or understanding something or someone and how to act because of it. Attitude means the way our mind and feelings respond to different situations. Some beliefs and habits are very important to a person or a group, but they can still be changed if the person wants to. Other feelings can change more easily. Attitudes are how we feel in certain situations, not just our natural tendencies. We can choose our attitudes based on different factors. If we can figure out what influences our thoughts and behaviors, we can change them and take control of how we think and act. This means that attitudes can change and this is important for understanding and controlling risk. If attitudes were seen as something people are born with and cannot change, then it would be hard to understand and manage them. People's attitudes are not like an aircraft flying freely. Instead, they are like a cruise missile that is

programmed to hit a specific target. (Hillson, Managing risk attitude using emotional literacy. Paper presented at PMI® Global Congress 2006—EMEA, 2006).

2.2.3. Risk Awareness

Risk is when we don't know what will happen and it could have both good and bad outcomes for something or someone. Attitude is what you decide to think or feel about something. It's how you think and look at things. Your risk attitude is how you feel about a situation when you look at it. " Being able to handle uncertain situations that might help or hurt our goals. (Hillson, Managing risk attitude using emotional literacy. Paper presented at PMI® Global Congress 2006—EMEA, 2006). It is a fact that risk attitudes to a particular situation vary from person to person, team to team, organization to organization and, some would say, nation to nation. Risk attitude is a source of significant bias on decision-making and the effectiveness of the risk management process (David Hillson, 2015). (Griffin & et.al, 2009)have studied the relationship between effect of national culture and corporate risk-taking and in their study they assume that national culture affects the risk-taking of managers working in businesses.

A positive relationship between risk aversion and religiosity is observed in a number of studies (Dohmen, Thomas, Armin, David, & Uwe, 2011). However, many of these studies find a connection between being cautious and religious, because of being part of a church community, not because of religious beliefs. People are responsible for setting up good ways to manage project risks. The way they feel about risks can affect how well these systems work. Even though people don't agree on what risk attitude means exactly, it all comes down to how people deal with uncertain situations based on their own feelings and thoughts. The culture of the country where the project team works has a big impact on how willing they are to take risks. (Ahmad M. Rashid, 2016).

People's understanding of the dangers in a situation affects the choices they make. To manage risks effectively, we must understand and control our awareness of potential dangers. Studies and real-life examples show that one of the reasons risk management doesn't always work well is because people's attitudes towards potential dangers and benefits can get in the way. Awareness means having a clear and conscious understanding or view of something. We often have habits in the way we think, but we can still choose to think differently. (David Hillson, Ruth Murray-Webster , 2015). According to (Pengcheng, Fuyuan, & Xiaohui, 2018) the individual ‘s ability, knowledge,

skills and other factors, as well as the level of project management, will directly affect the construction project, and the rules and regulations of the organization will form constraints on individuals and the project team. Building projects involve many different people like the government, owners, contractors, designers, and consultants. How they feel about taking risks and how they act will affect the project. Construction projects also put people in danger during planning, building, and use. There are also risks for people in charge of safety, quality, and time management. Based on research conducted by (Ahmad M. Rashid, 2016). risk attitudes are influenced by many factors such as: individual, group, organizational and situational factors. In addition, risk attitudes are also highly influenced by human factors related to the project team members. Human factors can be defined as individual, group and organizational factors that impact the achievement of project goals by influencing project team members 'behavior. Individual factors can refer to competence, motivation level, emotional intelligence and cultural background, group factors can refer to leadership styles, communication methods, coordination and empowerment, and organizational factors can refer to corporate policies, procedures and senior management style.

According to (Leonard and Don , 2003), the manager 's own risk attitude will determine the courses of action to be followed. Those who are cautious by nature may avoid risky situations and fail to capture opportunities as a consequence. Those who are extreme risk seekers are blind to the danger presented by particular courses of action. As a consequence of their compulsion extreme risk takers usually disappear from the scene. The vast majority of people lie between these extremes.

Generally risk awareness can be classified into: Risk aversion is a type of attitude where an individual gravitates toward certain, as opposed to uncertain, events. On the other hand, Risk seeking is a type of attitude or behavior where a person is inclined to take on less-certain activities in lieu of more certain ones. In the middle are risk neutral/tolerant individuals, who have an indifferent attitude toward risk. (David Hillson, Ruth Murray-Webster , 2015) have developed a risk attitude spectrum which in addition to the attitudes highlighted above adds Risk paranoid and Risk addicted behaviors which are the extreme attitudes in the spectrum. All the attitudes in the spectrum are categorized based on comfort and discomfort levels in relation to response to uncertainty. Considering inputs first, the chosen risk attitude is influenced by the perception of the degree of risk exposure associated with a given situation, and risk perception in turn is affected by

a complex web of factors, referred to as the triple strand of influences (conscious, subconscious, and affective factors). It is common to speak about only a few specific risk attitudes, such as risk-averse, risk-seeking, risk tolerant, or risk-neutral. But in fact, risk awareness exists on a continuous spectrum with an infinite number of possible positions.

2.2.4. Risks in construction

Construction is a complex and challenging process. Among other things, it requires interpretation of and compliance with many laws, codes, and regulations; gathering of considerable resources, including labor, equipment, and material; and communications with and coordination among multiple parties, such as the owner, the design professional, other contractors and subcontractors, and suppliers, all of whom may have differing purposes and goals. In addition, many factors are unknown or unknowable at the start of any project. Not surprisingly then, risks are an expected part of this process (Surety Learn, 2014). Despite its prominent role, the construction industry in Ethiopia, like in other developing countries, faces many challenges in its practice. Some of these challenges are project overruns, poor quality, inappropriate procurement systems, and a failure to cope with project requirements and the inability to adopt best practices (Tadesse, Zakaria, & Zoubeir, Assessment on Performance and Challenges, 2016). Studies show that in Ethiopia around 1.8 million people are involved in construction activities, and with regards to the number of occupational/workplace accidents construction comes second (with approximately 1.9 million cases) after transportation (Shahida, 2019).

Risk is unavoidable in almost all construction projects. Because of exposure to the outdoors, construction is affected by both daily and seasonal weather variations. It is also often influenced significantly by the availability of local construction financing, labor, materials, and equipment etc. These and all the above mentioned factors make construction a very risky undertaking. Construction is especially important in developing countries since it can greatly contribute to the economic growth but as mentioned above the industry is faced with a lot of problems (Addis, 2014).

Risk consequences in construction projects may reach an undesirable level because of inadequate resources and lack of advancements in technologies, therefore a thorough awareness and identification of risks is essential to prepare suitable strategies (Essays, UK., 2018). According to (Tyler Riddell, 2017)Construction Risks can be categorized into the following six categories:

I. ***Technical risks***: This can include uncertainty of resources and availability of materials, inadequate site investigation, or incomplete design etc...
II. ***Environmental risks***: include natural disasters, weather, and seasonal implications etc…
III. ***Management related risks***: include uncertain productivity of resources.
IV. ***Financial risks***: Inflation, local taxes, and availability and fluctuation in foreign exchange etc...
V. ***Socio-political risks***: Customs and import restrictions and difficulties disposing of equipment etc…

The study undertaken by (Tadesse, Zakaria, & Zoubeir, Assessment on Performance and Challenges, 2016), a study on the Ethiopian construction industry showed that the way construction projects were managed was not very good. The level of safety, risk and time management in the practice was very low.

The study found that managing time, money, and risks are the hardest parts of professionals' daily work. The evaluation of how much things have changed from the plan or requirements also supports this result. The project is behind schedule by 61-80% and over budget by 21-40%. Other things like risk, quality, resources, and safety are also not meeting the original plans.

2.2.5. Risk Management

Risk management means carefully studying and dealing with potential problems or dangers that could happen during a project. We want more good things to happen and less bad things to happen so that we can achieve our project goals. Risk management is like making decisions and understanding risks. It involves taking action to reduce the impact and likelihood of bad things happening, to make things easier and increase the chances of success.

Risk Identification: Identify and know the possible dangers that can happen in construction projects. These risks can be things that might hurt people, not knowing how much money you'll need, following laws, and facing problems with the project. Find out what could make the project cost more, take longer, or not be as good as it should be. Assess and measure how much harm the known risks could cause to the company. Planning how to deal with risks and carrying out those plans: Looking at the ways the company handles and lessens risks. Project Controls and

Monitoring: study how the company uses the best methods to make sure everything is organized and risks are managed well. Teaching professionals (like project managers, engineers) about risk management tools and techniques.

Risk Management is a big part of managing a project. Actually, it is one of the 10 areas of knowledge in the Project Management Book of Knowledge made by the Project Management Institute. Risk management is a way to figure out and measure all the possible dangers that could affect a business or project. This helps with making smart decisions on how to deal with the risks. In simple words, risk management means taking steps to prevent and reduce potential problems that could happen to a project in the future. The risk management process is a series of steps that helps find and deal with the risks to make sure a project is successful. If construction risk management is done properly and honestly, it will lower the chance of something bad happening and lessen how much it affects things. Managing risks is the hardest part of running a project. A project manager needs to be able to find and understand why problems might happen in a project and how these problems might affect the project. In construction project management, risk management is a thorough and organized way of finding, studying, and dealing with potential problems to reach the project goals. Managers must make sure that projects are completed on time, within budget, and meet the performance standards. To do this, we need to find and handle the risks for the project at all stages like planning, building, and testing. *(Shankar & Balasubramanian, 2015).* Good risk management is important for a project to be successful. Understanding different cultures and being able to bring people together with common values will make project planning and getting things done better. In 2006 Shirolkar and colleagues (2017) say that the first step in risk management is figuring out what kinds of risks there are and where they come from. It goes on to categorize the different kinds of risks and how they can affect the project. Risk assessment will look at the risks we found and decide which ones are the most important. After looking at the possible dangers, a plan to deal with these dangers is made. During the project, we keep an eye on the risks we found and make sure we handle them properly.

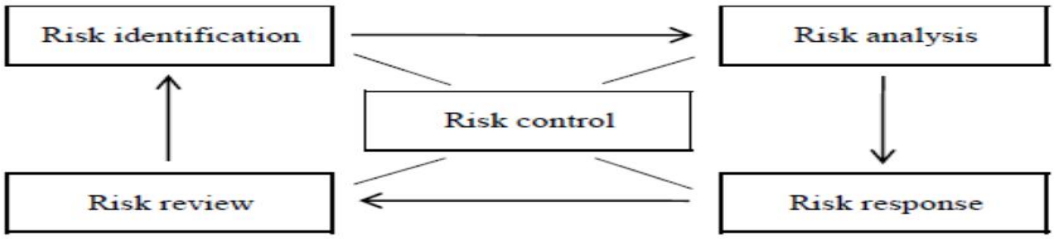


Figure 1: : The process of managing risks ***(Smith. N.J., 2006)***

According to (Akshay, 2018)the risk management process is analyzed in detail below:

2.2.5.1 Risk Identification

Risk identification means finding and keeping track of possible dangers. Risk assessment involves carefully analyzing the risks that have been identified, improving the description of the risk, and estimating how likely it is to happen and what it will do to the project. Risk response means figuring out what could go wrong, deciding how to deal with it, and taking action to make sure the project goes well.

- **Brainstorming**: - Everyone involved in the project comes together to talk about all parts of the project and share their ideas. They also think about any possible problems that might come up. There is someone who takes notes and decides which things are important and which are not.
- **Delphi technique**: - Experts answer questionnaires anonymously in multiple rounds with the goal of reaching a common answer through better judgment after each round. The process stops when a certain condition is met. Rounds, stability are important.
- **Interview/Expert opinion**: - Experienced personnel and relevant people are consulted for their opinions and advice to avoid factors affecting risk.
- **Past experience**: - Similar projects are brought up and perused rigorously to identify the factors that could affect the project.
- **Checklists**: - A list of all the possible problems that could cause problems for the project are studied and compared to similar projects that were done before.

2.2.5.2 Risk Assessment/Analysis

The hardest part of handling risk. This is because it involves evaluating the likelihood of a risk happening and the impact it will have on a project's goals. Its main goal is to assess the likelihood

of bad things happening and how big those bad things could be. This means it is the process of moving from understanding risks to controlling them. It looks at both possibilities and numbers to see how risky something might be.

- **Qualitative method**: - It is often used for small and medium-sized projects and involves making a list of risks and deciding which ones are most important based on the opinions of the right people. The dangers are ranked as high, medium, or low based on the views and limits of risk that the organization can handle. Qualitative method is used when there is not a lot of data or when there is not much time for the project.
- **Quantitative method**: - Quantitative methods are used to analyze the impact of risks by using data and numbers, and they are generally used for big projects. Some ways to measure things are: Decision tree analysis, expected monetary value, expert opinion, fault tree analysis, fuzzy logic, probability distribution, sensitivity analysis, and Monte Carlo estimations. Quantitative analysis is hard because it needs a lot of data to get an exact analysis.

2.2.5.3 Risk Response

- **Risk Transfer**: - There are different ways to pass the risks of projects on to other people or companies. Buying insurance, having a skilled organization do difficult work for you, using a set price instead of paying for each unit of work, and not having any warranty or guarantee terms.
- **Risk mitigation**: - Reducing the impact of risks that can't be avoided or passed on in a project is called risk mitigation or risk reduction. Looking at your project, making things simpler, doing extra tests, and other things can help reduce risks.
- **Risk Acceptance**: - Every job has some kind of danger. Some dangers need to be identified and included in the project with the agreement of everyone involved. Considering the money and time it will take, the people in charge need to know what will happen if something goes wrong.

2.2.5.4 Risk monitoring and Control

It is important to closely watch and manage the identification, assessment, and response to risks in order to ensure they are being handled properly. It makes sure that risk plans are carried out and keeps an eye out for new possible risks during the project. The team has meetings and goes over every checklist made at the beginning. The monitoring authority checks them and makes any necessary changes. We check and control the project from start to finish.

2.2.6. Project Manager

A project manager is the person in charge of leading a project from start to finish. This involves making a plan, doing the work, and overseeing the people, materials, and goals of the project. Project managers need to be focused and determined to set clear and achievable goals and make sure they are done well. The project manager is in charge of finishing the project and has the power to make decisions. A project manager is in charge of the whole project, but they usually don't do the tasks that actually make the final result. The position also makes sure that any related products and services, project tools and techniques are being used properly. Also, project managers have to find and put together teams for the project, and predict the possible problems and unknowns that could happen in the project. Project managers lead and guide a project. Their job is to make sure the project keeps moving as planned, finishes on time, and is given to the client without any problems. He/she takes care of the whole project from the beginning to the end.

2.2.7. The Project Management Team

The project management team is made up of the people who are directly involved in project activities. On small projects, the project management team might not be separate from the project team. Instead, it might include all the members of the project team. Usually, the group that manages a project is organized in a top-down way. It's led by a project management team leader, who is also known as a project manager. The project management team is in charge of leading construction projects all the way from the beginning to the end, according to the review from the Human Resource Department of EEIG constructions. It is made up of: head project manager, project manager, assistant project manager and site engineer. The team's hierarchy and who is the most important depends on their qualifications and how long they have been working in the field. Usually, the project management team makes decisions together when working on a project. But

the final decision and responsibility for the project usually lies with the senior project manager or project manager. The size and complexity of a project determine which project manager and team members will work on it.

2.2.8. National Culture

Culture is when a group of people who live together share their way of life and beliefs. The surroundings around us. It is made up of unspoken rules for how to act in society. It is the way people think that makes one group different from another. Culture is something we learn, not something we are born with. It comes from the people around you, not from your genes. "Culture is different from human nature and a person's personality. Social scientists debate where the boundaries are between nature and culture, and between culture and personality. " In 2010 According to IGI Global, national culture is all the things that a group of people learn and believe in over time, like their ideas, beliefs, values, and things they own. According to Eerik (2017), different cultures can affect how much risk people are willing to take. Differences in the culture of different countries can affect how companies make decisions about taking risks. This happens because culture can have an impact on the rules, economy, and industries that a company deals with. Formal rules and informal cultural traditions in a country are closely linked. Simply put, formal institutions like the government and public services may be shaped by cultural norms. This is because the rules of politics and economics are influenced by society's beliefs about how things should be done.

2.3. Empirical Literature Review

In general, it can be said that risk management in construction projects is overlooked and inexistent causing many challenges on the success of projects. Research undertaken in this sector (Risk attitude and management) is very limited, but some of the findings from local and international researches are reviewed below. Effective project risk management seems to be far more closely aligned with developing the right attitudes, expectations and relationships in and around the project team and with the key stakeholders (Patrick Weaver, 2008).

A Research conducted by (Mohammad and Nicholas, 2012) on awareness, perceptions and practices of contractors towards quality related risks in south Australia showed that 65.21% of the respondents indicated that, they did not follow any kind of standard risk management process.

According to a Research conducted to identify contractors 'opinion on the significance of the construction projects risks; and second, to explore the risk analysis and risk management practices in the Lithuanian construction companies, (Nerija and Audrius, 2012) showed that in the European Union construction is the sector most at risk of accidents, with more than 1300 people being killed in construction accidents every year. Worldwide, construction workers are three times more likely to be killed and twice as likely to be injured as workers in other occupations. The costs of these accidents are immense to the individual, to the employer and to society. They can amount to an appreciable proportion of the contract price Furthermore, this study showed that the risk management perceivers are the project participants, and a contractor is any entity which has the power to influence project decision making directly. Related to experience, only 11% of the respondents affirmed that they have experience in risk management. Most of them are project manager and have more than 15 years 'experience; it proofs that the relationship between risk perception and experience of respondents. And even 34% of the respondents affirmed that they have no experience in risk management, while 55% of the respondents affirmed that they do not have enough experience in risk management (Nerija and Audrius, 2012). (Tadesse, Zakaria, & Zoubeir, Assessment on Performance and Challenges of Ethiopian Construction Industry, 2016) conducted an assessment on performance and challenges of Ethiopian construction industry. Their study showed that the perception of respondents regarding the overall performance of Ethiopian construction industry in practicing the construction project management practices was rated as 56.52 % and 37.68 % respectively, indicating Poor and Moderate rating of their perception. (Bahiru, Tai, & Jaeho, 2017) examined the impact of risk in Ethiopian construction project performance. The study showed that on average, there is about 15.33% cost increment beyond the initially estimated cost of projects and about 84% time overrun according to if the risk factors have the delay of project more than 1 quarter, the risk level is high and if it is more a year and its impact is very high in terms of time and if it increases from 10% - 20% cost, it is high in risk level.

2.4. Summary of Literature Review

Risk is when something might happen that can either help or hurt a project. Attitude is the way you choose to think and feel about something. It's like your mental outlook or how you see things. Risk attitude is how you feel about the uncertain things that could help or hurt a project. Studies

and personal experiences show that people's attitudes toward threats and opportunities can affect how well risk management works. This is why it often doesn't live up to its potential. Different people, teams, organizations, and even countries can have different feelings about taking risks in a specific situation. People's willingness to take risks can greatly impact how they make decisions and how well they manage potential risks. How people see the dangers in a situation affects how they make choices. The culture of the country where the team works has a big impact on how they deal with risks. Additionally, how people feel about risk is affected by their own abilities, how motivated they are, how well they understand their emotions, and their background. It is also influenced by how their group is organized and how they are led, as well as the rules and management style of the organization they work for. To make risk management work, we have to understand and control how we feel about risk. A study on the difficulties faced by the construction industry in Ethiopia showed that the way construction projects are managed is not good enough. They are not using the right project management methods, functions, tools, and techniques. The way people were practicing safety, taking risks, and managing time was really bad. Risk management in construction project management means finding and dealing with potential problems to make sure the project goals are met. Managing risks well is very important for a project to be successful. Understanding and respecting different cultures and being able to bring people together to share their values will help make projects better. Project managers lead and guide a project. They make sure the project is finished on time and given to the client without any mistakes. He or she takes care of everything in the project, from the beginning to when it's finished. They manage the whole project, find and build project teams, and predict possible problems with the project. The EEIG construction project's organization shows that the project management team is in charge of leading the project from the beginning to the end. Usually, the project management team works together to make decisions for a project. But, the senior project manager or project manager is the one who has the final say and is responsible for the project. This study wanted to see how EEIG construction handles risk in their construction projects. The hope is that the results and suggestions can help fill in the gaps and add to the small amount of information about this topic.

Table 2: Summary of Literature Review

Author(s)	Focus of study	Methodology	Key findings
(Mohammad and Nicholas, 2012)	Attitudes, perceptions and practices of contractors towards quality related risks	Descriptive design	About 65.21% of the respondents indicated that, they did not follow any kind of standard risk management process
(Nerija and Audrius, 2012)	Contractors‘ opinion on the significance of the construction projects risks/risk analysis and risk management practices in the Lithuanian construction companies	Descriptive design	Only 11% of the respondents affirmed that they have experience in risk management. Most of them are project manager and have more than 15 years‘ experience. 34% of the respondents affirmed that they have no experience in risk management, while 55% of the respondents affirmed that they do not have enough experience in risk management.
(Tadesse, Zakaria, & Zoubeir, Assessment on Performance and Challenges of Ethiopian Construction	Performance and challenges of Ethiopian construction industry	Descriptive design	Construction project management practices was rated as 56.52 % and 37.68 % respectively, indicating Poor and Moderate rating of their perception

Industry, 2016)			
(Bahiru, Tai, & Jaeho, 2017)	Impact of risk in Ethiopian construction project performance	Descriptive design	15.33% cost increment beyond the initially estimated cost of projects and about 84%-time overrun

3. Research Methodology

3.1. Introduction

In this chapter of the research, research approach, research design, Sample Size and Sample Technique, data collection, Validity and Reliability of the Instrument and ethical consideration are discussed.

According to (Brynard and Hanekom, 1997) research methodology, necessitates a reflection on the planning, structuring and execution of the research in order to comply with the demands of truth, objectivity and validity. Hence, research methodology focuses on the process of research and the decisions which the researcher has to take to execute the research project.

3.2. Research Approach and Design

In order to evaluate risk awareness and management in building projects carried out by EEIG (Ethiopian Engineering Investment Group) building, this study will adopt a descriptive methodology. A scientific approach known as descriptive study design entails watching and characterizing a subject's behavior without exerting any kind of influence on it. Consequently, in order to evaluate risk awareness and management techniques in the building projects carried out by EEIG (Ethiopian Engineering Investment Group) building, this study uses a hybrid methodology, combining qualitative and quantitative techniques. The study's survey approach will enable the collection of both quantitative and qualitative data, which may be examined to provide required information on the research topic regarding risk awareness and management.

According to (Anol, 2012), the descriptive survey involves acquiring information about one or more groups of people asking them questions and tabulating their answers. Descriptive design helps to present a picture of the specific detail of a situation and describing the characteristics of particular situation (Nuamen, 2007). The study applies descriptive research design, since it attempts to assess the practice of project risk management in EEIG construction projects.

3.3. Data Types and Sources

Data for the study was collected using both primary and secondary sources. The primary data was conducted through design of questionnaires and interviews directed to a pool of project managers and project team members that have decision making roles and were responsible for managing construction projects undertaken by EEIG (Ethiopian Engineering Investment Group) Construction at the time of the study. The secondary data was sourced from the published and unpublished sources such as credible web pages, thesis, journals, books and different published journal articles. The secondary data was also use to get an insight of the problem and will considered for content validation of findings obtained from primary data.

A survey research was a popularly used method of collecting information about a population of interest. There are many different types of surveys, several ways to administer them, and many methods of sampling. One of the key features of a survey research are questionnaires: a predefined series of questions used to collect information from individuals. Self-administered questionnaires were used as the main data collection method in this study because, since each person (respondent) is asked to respond to the same set of questions, it provides an efficient way of collecting responses from a sample prior to quantitative analysis. The questionnaire was adapted from earlier researches and studies and it was designed to answer the questions of the study, meet the study ‘s objectives and it was distributed to a sample of selected respondents across all the active projects undertaken by EEIG at the time of the study. The questionnaire was composed of questions in Likert-style rating with a five-point rating scale and each respondent was asked how strongly he or she agreed or disagreed with a statement or series of statements. In this case, 1 represented 'strongly disagree' and 5 represented 'strongly agree'. The questionnaire was designed to consist of 4 sections and was developed in line with the research objectives and questions that are stated in chapter one.

Furthermore, an interview consisting of 4 questions were undertaken on 4 respondents. The interviews were conducted in order to fill the gap in the responses received from the questionnaires.

3.4. Target Population

The project managers and members of the project management team who make decisions and oversee the construction projects carried out by EEIG (Ethiopian Engineering Investment Group) Construction was this study's target audience. The size, complexity, and client needs of each

project determine how many members of the project management team including the project manager are allocated to it, according to information gathered from the company's human resources department. 30 site engineers, project managers and members of project management teams were involved in overseeing 10 projects in Addis Ababa and other regions of Ethiopia at the time of the study, making up the size of target population for this study.

Hence, this study will use census approach as the size of target population was fairly manageable. In addition, the use of census provides a true measure of the population (no sampling error), benchmark data may be obtained for future studies, and detailed information about small sub-groups within the population is more likely to be available.

3.5. Data Collection Method and Design

A survey research is a popularly used method of collecting information about a population of interest. There are many different types of surveys, several ways to administer them, and many methods of sampling. One of the key features of a survey research are questionnaires: a predefined series of questions used to collect information from individuals. Self-administered questionnaires were used as the main data collection method in this study because, since each person (respondent) is asked to respond to the same set of questions, it provides an efficient way of collecting responses from a sample prior to quantitative analysis. The questionnaire was adapted from earlier researches and studies undertaken by (Kalkidan Manyazewal, 2019); (Addis Mesfin, 2014); (Haddush Hintsay, 2016); furthermore, it was designed to answer the questions of the study, meet the study ‘s objectives and it was distributed to a sample of selected respondents across all the active projects undertaken by EEIG at the time of the study. The questionnaire was composed of questions in Likert-style rating with a five-point rating scale and each respondent was asked how strongly he or she agreed or disagreed with a statement or series of statements. In this case, 1 represented 'strongly disagree' and 5 represented 'strongly agree'.

The questionnaire was designed to consist of 4 sections and was developed in line with the research objectives and questions that are stated in chapter one.

3.6. Data Analysis

Data collected through questionnaires was analyzed using quantitative descriptive statistics such as percentage, tables and charts with the help of IBM SPSS Amos version 27 statistical computer software.

3.7. Instrument Validity and Reliability

For research data in order to be of value and of use requires validity and reliability measurements. Both are fundamental bases of scientific method of research. For a research to be reliable, it also needs to be valid.

3.7.1. Instrument Validity

Validity refers to the degree to which results obtained from the analysis of the data actually represents the phenomena under study. Validity is a matter of degree and not a specific value. In order to check instrument validity, a pilot study was conducted to refine the methodology and test instrument such as a questionnaire before administering the final phase. Questionnaires were tested on 4 respondents to make the data collection instruments objective, relevant, suitable to the problem and reliable as recommended by (John, Hafiz, Robert, & David, 2007). Issues that were raised by respondents were corrected and questionnaires were refined. Besides, proper detection and approval by the research advisor was helpful to ensure validity of the instruments. Finally, the improved version of the questionnaires was printed, duplicated and dispatched. Expert opinions and literature search was first analyzed and then used to establish content validity. Triangulation of quantitative and qualitative analysis was made to ensure the consistency of findings corresponding to each research question.

3.7.2. Instrument Validity

Reliability refers to the extent to which an instrument consistently measures what is supposed to. The study measured the internal consistency of cross-sectional data collection instrument, i.e., questionnaire, using Cronbach alpha coefficient. The Cronbach alpha coefficient, which is based on the average correlation among items, was calculated for the 3 main Constructs using SPSS Amos version 27 and the result is presented in the following table:

Table 5: Cronbach alpha values for main constructs

Main Constructs	Cronbach alpha	Remarks as per Nunally, 1978; Sreiner and Norman, 2008
Risk awareness	0.800	Excellent
Construction Risks at EEIG	0.790	Good
Risk management system at EEIG	0.770	Good

Source: Survey data (2024)

Although, there is no generally agreed cutoff, the higher the alpha is, the more reliable the test is. A reliability coefficient alpha is excellent if alpha is larger than 0.79; acceptable if alpha is between 0.40 and 0.74 and poor if alpha is less than 0.4 ((Nunnally, 1978); (Streiner & Norman, 2008)). Accordingly, the Cronbach alpha coefficient of 0.800 and 0.790 shown in the above table indicate acceptable internal consistency of the items in the two main constructs, while the Cronbach alpha coefficient of 0.770 indicates excellent internal consistency of the items in one main construct.

3.8. Ethical Considerations

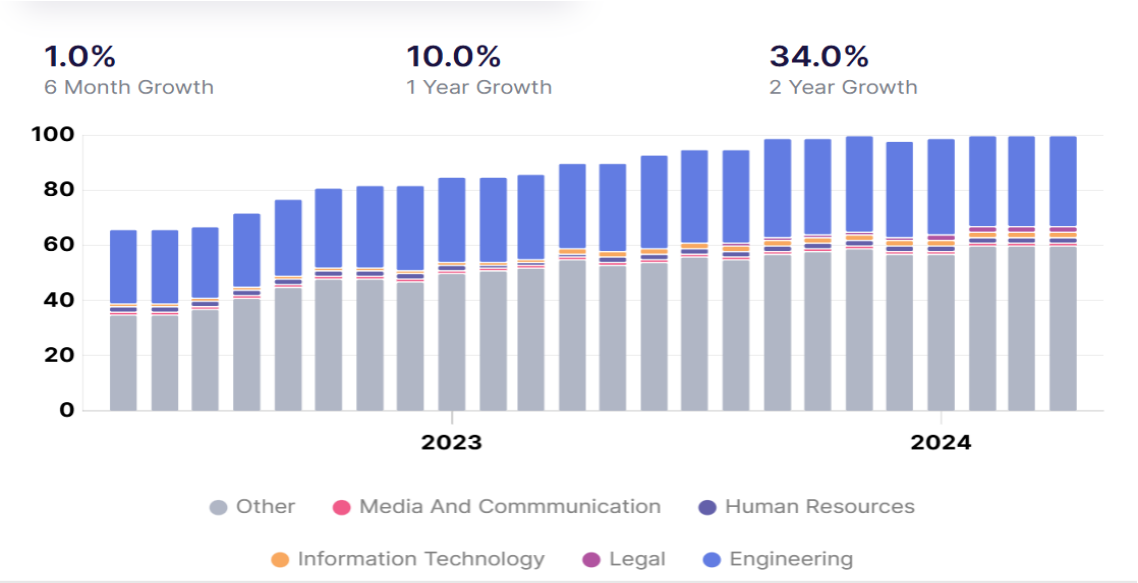
In conducting this study, the privacy of participants was kept in private, and it were known to every participant that the nature of participation was by voluntary. The confidentiality of data and the participants' anonymity also maintained. In all cases, names were kept confidential thus collective names like respondents or study participants of the study. I took into account the issues of feasibility and sufficiency in relation to gaining access to data and the impact of these on the nature and content of the study questions and objectives.

4. Results and Discussion

4.1. Introduction

The results and discussion below is devised in four parts in line with the objectives of this research and also the sections of the questionnaire. The divisions can help tackle one objective at a time. The first part tries to analyze the response rate and the profile of the respondents by gender, education level, job title and experience. The second part tries to present the findings of the questions asked to test the risk awareness of project managers and project management team members who have decision making roles in the projects undertaken by EEIG construction. The third part of the results and discussions contains the findings of the questions directed towards the risks present in the construction industry in general as well as risks faced by EEIG construction while undertaking construction projects in different parts of Ethiopia using SPSS statistics version 27.0 in order to assess project risk management practice. The fourth part is focused on the risk management systems, practices and processes implemented by EEIG construction both at a project level as well as at a company level.

Figure 2 EEIG Employee Growth and Retention



4.2. Response Rate

The primary data that was collected through questionnaire was distributed to 35 individuals who are involved in EEIG construction Project in all the lifecycle of the project. An interview was also

held with the project manager as a source of primary data. Only 30 questionnaires are completed and returned, 3 of the questionnaires were not returned and the 2 of them were discarded because they have defect. Which mean that the response rate is 90.9%

4.3. General Profile of Respondents

This section summarizes and presents the demographic characteristics of the respondents such as age, level of education, year of work experience and current work position.

Table 3 General Profile of the Respondents

Variables		Frequency	Percent	Max
Gender	male	22	73%	73%
	female	8	27%	
	Total	30		
Age	20-25	3	10%	40%
	25-30	9	30%	
	30-40	12	40%	
	above 40	6	20%	
	Total	30		
Highest Educational Level	Diploma	1	3%	47%
	BSc/BA	14	47%	
	MSc/MA/MBA	12	40%	
	Other	3	10%	
	Total	30		
Job Title	Senior Project Manager	4	13%	40%
	Project Manager	12	40%	
	Site Engineer	12	40%	
	Others:	2	7%	
	Total	30		
Years of experience in the construction industry	< 1 year	2	7%	37%
	1-5 years	11	37%	
	6-10 years	8	27%	
	>10 years	9	30%	
	Total	30		
Years of experience in EEIG construction company	< 1 year	2	7%	93%
	1-5 years	28	93%	
	Total	30		

Source: Survey data (2024)

It can be observed that 73.3% of the respondents are male and the rest 26.7% of the respondents are female.

That means, the table also shows that the decision making roles in projects (project manager and project management team members) undertaken by EEIG Construction is dominated by males.

The above table depicts that 10% of respondents age is between 20–25, 30% of them are between 25-30, 40% of them are between 30-40 and the remaining 20% are above 40, This indicates that majority of the respondent are between 25-30.

The above chart reveals that 3.3% of the respondents' holds diplomas, 46.7% of the respondents are degree holders ,50.0% are postgraduates. The finding reveals that EEIG Construction has well educated employees for the study area. From this we can conclude that most of the respondents are educated.

The above table also depicts 13.3% of the respondents are on Senior Project manager position, 40.0% of the respondents are Project Manager, 40.0% of them are Site engineers, and the remaining 6.7% are on other position. From the above information the researcher accredited respondents' qualifications, experiences and positions that they hold allow them to knowledgably and reasonably put their extent of agreement, so that, it has positive contribution on the validity of the study. This indicates that respondents are from different position in the project this helps to get data from different perspective.

The above table depicts 6.7% of the respondent have below 1-year experience on the project,36.7% have 1-5 years' experience on the project, 26.7% have 5-10 years' experience on the project and the remaining 30.0% of the respondent have above 10 years' experience on the project. This indicates that most of the respondents have good experience on the project. Working more years on the project would mean that a more informed response to the questions is given because of the respondents extended knowledge of the project's doings.

The above table depicts 6.7% of the respondent have below 1-year experience on the project,36.7% have 1-5 years' experience on the project, 26.7% have 5-10 years' experience on the project and the remaining 30.0% of the respondent have above 10 years' experience on the project. This indicates that most of the respondents have good experience on the project. Working more years on the project would mean that a more informed response to the questions is given because of the respondents extended knowledge of the project's doings.

4.4. Results of Risk Awareness and Management

The study applied five point Likert scale questionnaire where (1 =Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree) to collect data from respondents. 35 Questionnaire were distributed to the target group of respondents and 30 of them are filled and returned. The data was analyzed and presented using SPSS software program.

4.4.1. Extent of Risk Awareness

In the second part of the questionnaire the respondents are asked general questions about risk awareness. As the purpose of the study is to assess and describe the risk awareness and management practices of construction projects, the introductory questions are designed to provide general information and insight to the actual risk awareness of the respondents involved or involving in the EEIG construction projects.

Table 4 Respondents belief that risk has a negative impact on a project

I believe Risk has a negative impact on a construction project				
		Frequency	Percent	Cumulative Percent
Valid	Neutral	1	3.3	3.3
	Agree	11	36.7	40.0
	Strongly Agree	18	60.0	100.0
	Total	30	100.0	

Source: Own survey data (2024)

Respectively, about the majority of respondents ‘(60%) strongly agree that risk has a negative impact on project outcomes while each of 40% of respondents responded that they were either neutral or agree that risk has a negative impact on a project.

The responses received from the interviews conducted also confirm the view that risk has a potentially disastrous future effect on projects resulting in unknown outcomes with time and cost implications.

Table 5 Respondents belief that risk has a positive impact on a project

I believe Risk has a positive impact on a construction project				
		Frequency	Percent	Cumulative Percent
Valid	Disagree	6	20.0	20.0
	Neutral	15	50.0	70.0
	Agree	9	30.0	100.0
	Total	30	100.0	

Source: Own survey data (2024)

The above table shows that 30% of total respondents agree that risk has a positive impact on a project. On the other hand, 20% of total respondents disagree and the rest of the respondents are uncertain about risk having positive impact on construction projects.

Table 6 Respondents belief that risk can have both positive and negative impact on a project

I believe Risk can have both negative and positive impact on a construction project				
		Frequency	Percent	Cumulative Percent
Valid	Neutral	20	66.7	66.7
	Agree	10	33.3	100.0
	Total	30	100.0	

Source: Own survey data (2024)

The above table shows about the respondent risk awareness that 33.3% of total respondents agree that risk can have both negative and positive impact on a construction project. On the other hand, the rest 66.7% of total respondents are uncertain about risk having both negative and positive impact on construction projects.

Table 7 Respondents well-informed about the key risks faced by the construction industry

I am well-informed about the key risks faced by the construction industry				
		Frequency	Percent	Cumulative Percent
Valid	Disagree	1	3.3	3.3
	Neutral	6	20.0	23.3
	Agree	17	56.7	80.0
	Strongly Agree	6	20.0	100.0
	Total	30	100.0	

Source: Own survey data (2024)

The above table shows about the respondent well-informed about the key risks faced by the construction project and risk awareness that 56.7% and 20% of total respondents agree and disagree respectively that they are well-informed about the key risks faced by a construction project. On the other hand, only 3.3% of total respondents are disagree about their well-informed about the key risks faced by a construction projects.

Table 8 Respondents information regarding emerging risks

I actively stay updated on emerging risks that could impact construction projects				
		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	1	3.3	3.3
	Disagree	1	3.3	6.7
	Neutral	7	23.3	30.0
	Agree	17	56.7	86.7
	Strongly Agree	4	13.3	100.0
	Total	30	100.0	

Source: Own survey data (2024)

The above table shows us most of the respondents are actively updated on emerging risks that could impact the EEIG construction projects that 56.7% and 13.3% of total respondents agree and disagree respectively that they are actively updated on the emerging risks that could impact construction project. On the other hand, only 3.3% and the other 3.3% of total respondents are disagree and strongly disagree about actively updated on the emerging risks that could impact construction project.

The results from the interview also showed us that risk will have a serious impact on the project's success and failure if the risk is not identified as early as possible and also if there is no prepared and well organized plan for risk mitigation. In the other hand the managers stated that risk will also have a positive impact on the project success, if there is a proper risk identification and management plan, which means it will help the project to be completed on time and with the specified quality.

Table 9 Respondents Awareness towards Risk occurring in construction project

Descriptive Statistics			
	N	Mean	Std. Deviation
I believe Risk has a negative impact on a construction project	30	4.57	.57
I believe Risk has a positive impact on a construction project	30	3.10	.71
I believe Risk can have both negative and positive impact on a construction project	30	3.33	.48
I am well-informed about the key risks faced by the construction industry	30	3.93	.74
I actively stay updated on emerging risks that could impact construction projects	30	3.73	.87
I see myself as a Risk Averse person: - I am inclined towards certain, as opposed to uncertain events	30	3.17	.75
I see myself as a Risk Seeker person: - I am inclined to take on less-certain activities in lieu of more certain ones	30	3.53	.63
I see myself as a Risk Neutral person: - I have an indifferent attitude towards risk	30	3.53	.51
Overall Mean for risk awareness of the respondents		3.62	
Valid N (list wise)	30		

Source: Own survey data (2024)

From the above table The average result (3.62), obtained for the question designed to check if the respondents who are working on the construction project undertaking by EEIG, reveals that

majority of respondents have a basic or general understanding about risk factors, risk awareness and individual risk identification ways.

And also the response obtained average (3.45), for the question if there is a policy or guideline that recommends how to manage risks majority of the respondent Agreed for the existence of policy or guideline that recommends how to manage risks. However, interview made with the project Managers indicated that there is policy or guideline that recommends how to manage risks but it is not well known and understand by all project team members and risks are not manage following the policy or the guideline they are simply a written document.

Table 10 Respondents response about Risk management in conceptual stage

I understand risk management is applied at Planning stage of the project				
		Frequency	Percent	Cumulative Percent
Valid	Agree	14	46.7	46.7
	Strongly Agree	16	53.3	100.0
	Total	30	100.0	

Source: Own survey data (2024)

The above table shows us most of the respondents are believes that risk management should applied in the conceptual stage of project lifecycle in the EEIG construction projects that 53.3% and 46.7% of total respondents strongly agree and agree respectively.

Table 11 Respondents response about Risk management in implementation stage

I believe risk management should be applied at Implementation stage of the project				
		Frequency	Percent	Cumulative Percent
Valid	Agree	14	46.7	46.7
	Strongly Agree	16	53.3	100.0
	Total	30	100.0	

Source: Own survey data (2024)

The above table shows us most of the respondents are believes that risk management should applied in the implementation stage of project lifecycle in the EEIG construction projects that 53.3% and 46.7% of total respondents strongly agree and agree respectively.

Table 12 Respondents response about Risk management in all stage

I believe risk management should be at all project life cycle stages				
		Frequency	Percent	Cumulative Percent
Valid	Neutral	2	6.7	6.7
	Agree	11	36.7	43.3
	Strongly Agree	17	56.7	100.0
	Total	30	100.0	

Source: Own survey data (2024)

The above table shows us most of the respondents are believes that risk management should applied in al stage of project lifecycle in the EEIG construction projects that 56.7% and 36.7% of total respondents strongly agree and agree respectively.

Table 13 Respondents response about risk management application stage

Descriptive Statistics			
	N	Mean	Std. Deviation
I believe risk management should be applied at Conceptual stage of the project	30	4.53	.507
I understand risk management is applied at Planning stage of the project	30	4.53	.507
I believe risk management should be applied at Implementation stage of the project	30	4.53	.507
I believe risk management should be at Closure stage of the project	30	4.53	.507
I believe risk management should be at all project life cycle stages	30	4.63	.630
Overall Mean for risk awareness of the respondents about risk management stage		4.53	
Valid N (list wise)	30		

Source: Own survey data (2024)

Risk awareness and management should be considered throughout the entire lifecycle of a construction project, from the early planning and design stages to the final project completion and handover. The data analysis should examine how the application of risk management practices varies across the different project lifecycle stages.

The average result (4.533), indicates for the question Risk management is treated as a continuous process in the project reveals that project risk management process is not continuous throughout the project cycle. An interview made with project managers implies that most of risks are treated when they occur. Risk management didn't have responsible person or department assigned for the project. The average result (2.65), response shows that training is not given for project team members about project risk management.

Table 14 Respondents response about the project manager responsibility

The Project Manager is responsible for managing risk				
		Frequency	Percent	Cumulative Percent
Valid	Agree	7	23.3	23.3
	Strongly Agree	23	76.7	100.0
	Total	30	100.0	

Source: Own survey data (2024)

As the above result shows as most of the respondents 76.7% strongly agreed that project manager is responsible for managing risks, the survey as all concerned stakeholders in the construction project have responsibilities to manage risk even if the project manager takes the higher risk among the stakeholders.

Table 15 Respondents response about the specialized risk management team responsibility

A specialized Risk Management Team is responsible for managing risk				
		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	1	3.3	3.3
	Agree	17	56.7	60.0
	Strongly Agree	12	40.0	100.0
	Total	30	100.0	

As the above result shows as most of the respondents 56.7% agreed that specialized risk management is responsible for managing risks, the survey as all concerned stakeholders in the construction project have responsibilities to manage risk even if the project manager takes the higher risk among the stakeholders.

Table 16 Respondents response for who is responsible for managing risk survey

Descriptive Statistics			
	N	Mean	Std. Deviation
The Project Manager is responsible for managing risk	30	4.77	.43
The Project Management team is responsible for managing risk and is a shared responsibility	30	4.33	.80
The Client is responsible for managing risk	30	4.30	.79
The Consultant is responsible for managing risk	30	4.30	.79
A specialized Risk Management Team is responsible for managing risk	30	4.30	.79
Overall Mean for risk awareness of the respondents		4.40	
Valid N (list wise)	30		

Source: Own survey data (2024)

As the above result shows as the average result (4.4) the respondents answered the survey as all concerned stakeholders in the construction project have responsibilities to manage risk even if the project manager takes the higher risk among the stakeholders.

The analysis of risk awareness and management should consider the various stakeholders involved in the construction project and their respective roles and responsibilities in managing risks. The data collected and analyzed should provide insights into the risk management accountability and collaboration among different project participants.

4.4.2. Risks in Construction Project Undertaken by EEIG Construction

Figure 3 Average Values of Respondents for Risks Occurring in EEIG construction projects

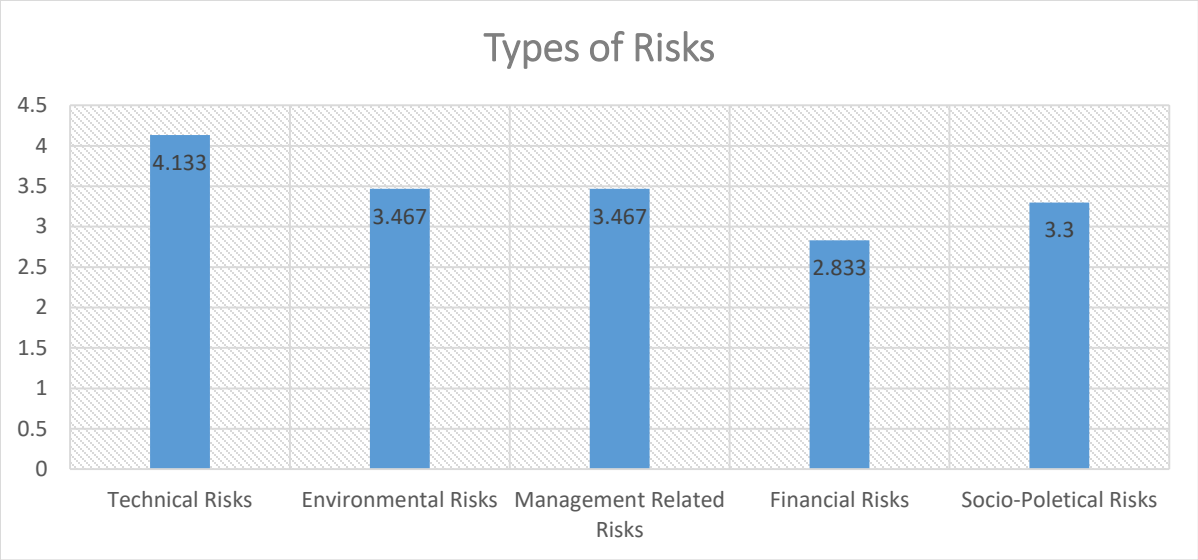


Table 17 Respondents View that EEIG Faces Technical Risks

Below analysis shows that the respondents response about the risks happening in the construction project undertaken by EEIG construction

I think that EEIG faces Technical risks				
		Frequency	Percent	Cumulative Percent
Valid	Neutral	2	6.5	6.7
	Agree	22	71.0	80.0
	Strongly Agree	6	19.4	100.0
	Total	30	96.8	
Total		30	100.0	

Source: Own survey data (2024)

From the above chart and table, the survey gathered from the respondents are as follows: -

- Technical risks- Risks related to the design, engineering, and construction of the project. As per the data around 56.7% and 33.3% of the total respondents agree and strongly agree respectively that the company faces technical risks (uncertainty of resources and availability of materials inadequate site investigations or incomplete designs, substandard quality, inadequate Health & Safety practices...)

Table 18 Respondents View that EEIG Faces Environmental Risks

I think that EEIG faces Environmental risks				
		Frequency	Percent	Cumulative Percent
Valid	Disagree	3	10.0	10.0
	Neutral	10	33.3	43.3
	Agree	17	56.7	100.0
	Total	30	100.0	

Source: Own survey data (2024)

From the above chart and table, the survey gathered from the respondents are as follows: -

- Environmental Risks- Environmental risks in construction projects refer to the potential negative impacts and uncertainties associated with the natural environment and ecological factors that can affect the project's execution and success. 27.3% and 15.2% of the total respondents agree and strongly agree that the company faces environmental risks (natural disasters, weather and seasonal implications etc…)

Table 19 Respondents View that EEIG Faces Management Related Risks

I think that EEIG faces Management related risks				
		Frequency	Percent	Cumulative Percent
Valid	Disagree	3	10.0	10.0
	Neutral	10	33.3	43.3
	Agree	17	56.7	100.0
	Total	30	100.0	

Source: Own survey data (2024)

From the above chart and table, the survey gathered from the respondents are as follows: -

- Management Risks- Management-related risks in construction projects refer to the potential uncertainties and challenges that arise from the planning, organization, and

execution of the project by the management team. Around 45.5% and 15.2% of the total respondents agree and strongly agree that the company faces management related risks (uncertain productivity of resources).

Table 20 Respondents View that EEIG Faces Financial Risks

I think that EEIG faces Financial risks				
		Frequency	Percent	Cumulative Percent
Valid	Disagree	11	36.7	36.7
	Neutral	13	43.3	80.0
	Agree	6	20.0	100.0
	Total	30	100.0	

Source: Own survey data (2024)

From the above chart and table, the survey gathered from the respondents are as follows: -

Financial Risks- Financial risks in construction projects refer to the potential uncertainties and challenges that arise from the financial aspects and economic considerations of the project. 36.4% and 12.1% of the total respondents agree and strongly agree that the company faces financial risks (cost overrun, inflation, local taxes, availability and fluctuation in foreign exchange etc…)

Table 21 Respondents View that EEIG Faces Socio Political Risks

I think that EEIG faces Socio-political risks				
		Frequency	Percent	Cumulative Percent
Valid	Disagree	4	13.3	13.3
	Neutral	13	43.3	56.7
	Agree	13	43.3	100.0
	Total	30	100.0	

Source: Own survey data (2024)

From the above chart and table, the survey gathered from the respondents are as follows: -

- Socio-Political Risks- Socio-political risks in construction projects refer to the potential uncertainties and challenges that arise from the social, political, and regulatory environment in which the project is being executed. 42.4% and 9.1% of the total respondents agree and strongly agree that the company faces sociopolitical risks (customs and import restrictions and difficulties disposing off equipment)

Table 22 Respondents view on the types of risks faced by EEIG Construction while undertaking the projects

	Descriptive Statistics				
	N	Mean	Std. Deviation	CV	Rank based on CV
I think that EEIG faces Technical risks: This can include uncertainty of resources and availability of materials, inadequate site investigation, or incomplete design etc... Quality, HSE	30	4.13	.50742	0.123	1st
I think that EEIG faces Environmental risks: include natural disasters, weather, and seasonal implications etc….	30	3.47	.68145	0.197	2nd
I think that EEIG faces Management related risks: include uncertain productivity of resources.	30	3.47	.68145	0.197	2nd
I think that EEIG faces Financial risks: Inflation, local taxes, and availability and fluctuation in foreign exchange etc...	30	2.83	.74664	0.264	5th
I think that EEIG faces Socio-political risks: Customs and import restrictions and difficulties disposing of equipment etc…	30	3.30	.70221	0.213	4th
Valid N (list wise)	30				

Source: Own survey data (2024)

From Table 22 above, it can be observed that the overall mean value for the types of risks faced by EEIG Construction while undertaking construction projects is 3.44 out of 5 and the coefficient of variation (CV) for the respondents 'view on the types of risks faced by EEIG Construction while

undertaking construction projects is 0.200. Comparison of CVs within items that fall under types of risks faced by EEIG Construction while undertaking construction projects shows that the respondent‘s view that EEIG Construction faces Technical risks was ranked first, followed by respondent‘s view that EEIG Construction faces Environmental risks and Management related risks ranked second, then respondent‘s view that EEIG Construction faces Socio political risks ranked forth, and finally respondent‘s view that EEIG Construction faces Financial risks was ranked fifth.

This shows that there is low variability (high accuracy) with respect to the respondent ‘s view that EEIG Construction faces Technical risks compared to the respondent ‘s view that EEIG Construction faces Environmental risks or Management related risks.

4.4.3. Risk Management System of EEIG Construction

In the third part of the questionnaire the respondents are asked general questions about risk management. As the purpose of the study is to assess and describe the risk management practices of EEIG construction projects, the introductory questions are designed to provide general information and insight to the actual risk management practices of the projects.

Table 23 Risk Management Practices at EEIG Construction Projects

Descriptive Statistics			
	N	Mean	Std. Deviation
There is systematic approach or careful planning done to perform risk management in the project.	30	3.85	.530
Relevant stakeholders are involved in the planning and managing risk.	30	3.54	.53067
As a Project management team I have received training or have enough knowledge about how to handle risks and uncertainties.	30	3.35	.53067
The company has regularly organized trainings and workshops on risk management planning, implementation and monitoring	30	3.35	.53067
EEIG's Risk management plan is incorporated with the project plan.	30	3.70	.53067

Risk management relies mainly on the experience of the project manager	30	3.25	.53067
EEIG's risk management system is aligned with industry best practices	30	3.68	.53067
Valid N (list wise)	30		

Source: Own survey data (2024)

From the above table The average result (3.853), obtained for the question designed to check if there is a defined systematic approach or careful planning has done in order to perform risk management in the project, reveals that majority of respondents agreed in the presence of a defined or standard risk management process that is to be followed.

And also the response obtained average (3.544), for the question if the relevant stakeholders are involved in the planning and managing of risks, majority of the respondent agreed for the existence of relevant stakeholder's involvement in the planning and managing of risk. The average result (3.345), indicates for the question whether the respondents received training or have enough knowledge about how to handle risks and uncertainties. The respondents reply the survey as the company provide a proper training and related learning platforms for the employees regarding risk behaviors and also ways of handling the risk from the initial stage pf the project lifecycle.

The average result (3.704), response shows that as whether or not the company's overall risk management plan was aligned with the company's project risk management plan, and the result shows us the general company's risk management plan was aligned with their project risk management plan in the good manner and it helps the company to early identification of risks as well as risk mitigation and management system.

The results from the interview also confirmed that the company took the issues happening in the projects are well analyzed and response or mitigation plan are always ready by the representative person, that could be the project manager or any other team member.

Table 24 Risk Identification

Descriptive Statistics			
	N	Mean	Std. Deviation
Potential risks are identified and assessed in a methodical way	30	3.90	.66176
All team members within the project play a role in identifying risks.	30	3.97	.55605
SWOT Analysis is used to identify risk by the management	30	3.43	.72793
Risk is identified in every life cycle of the project. Monitoring & Control process is undertaken	30	4.00	.52523
Physical inspection is done by the managers to identify risk.	30	3.57	.67891
Valid N (list wise)	30		

Source: Own survey data (2024)

The average result (3.90), for the question if Potential risks are identified and assessed in a methodical way, greater numbers of respondents agree that Potential risks are identified and assessed in a methodical way. The interview result that was held also supported this statement by elaborating that Potential risks are identified and assessed in a methodical way. The projects do well in terms of identifying sources of risks, areas of impacts and their corresponding causes and potential.

The average result (3.97), for the question to identify All team members within the project play a role in identifying risk the result indicates majority of the respondents agree that team members have an involvement in the process of risk identification.

Regarding the questions if the management used SWOT Analysis and physical inspection to identify risk the average result obtained is (3.43) and (3.57) respectively shows, SWOT Analysis is the preferred way of risk identification for the project. From the question if Risk is identified in every life cycle of the project, the result is obtained is (4.0), this implies that risk is not identified in every life cycle of the project. The interview that was held with the project managers also supported this statement by elaborating that risk is not identified in every life cycle of the project. According to the project manager, once the risk is identified at the beginning stage risks are observed when the occurred.

Table 25 Risk Analysis

Descriptive Statistics of Risk Analysis			
	N	Mean	Std. Deviation
There is a measurement system to analyze the risk	30	3.43	.729
Project documents are updated after assessment of the risk that might occur.	30	3.97	.556
Risks are formally assessed with respect to their likelihood of occurrence and impact magnitude	30	3.43	.727
Valid N (list wise)	30		

Source: Own survey data (2024)

The average result (3.43), about if there is a measurement system to analyze the risk indicates majority of the respondents agree that there is a way to measure risk in order to analyze risks that might occur within the projects. The result of the interview with the project manager also indicated that uncertainties that have the probability to occur are rated in values at the planning stage of the project so that it can help make decisions to the various threats and opportunities that the projects might encounter. Average result (3.97), shows majority of the respondent disagree that Project document are updated after assessment of the risk that might occur.

Question asked to check if risks are formally assessed with respect to their likelihood of occurrence impact magnitude the average result (3.43) is obtained, this implies majority of the respondent Disagree that Risks are formally assessed with respect to their likelihood of occurrence and impact magnitude. Interview made with the managers also implies that risks are not assessed formally.

The overall responses obtained from the respondent revealed that there is a measurement system to analyze risk but project documents are not updated after assessment of the risk. And risks are not formally assessed with respect to their likelihood of occurrence impact magnitude in the project.

Table 26 Risk Response

Descriptive Statistics			
	N	Mean	Std. Deviation
I believe the company develop appropriate risk response strategies (e.g., avoidance, transfer, mitigation)	30	4.10	.54772
The company is identifying and implementing effective risk control measures	30	3.73	.73968
The company ensures that risk management is fully integrated into the project management lifecycle.	30	3.43	.72793
Factors such as budget, schedule and resources are considered while responding to risk	30	4.07	.73968
Valid N (list wise)	30		

Source: Own survey data (2024)

The mean value (4.1), in the above table for the question if there is a well-developed strategy within the project to respond to risk, indicates that the project is practice a well-developed strategy to respond to risk.

Regarding the consideration of budget, schedule and resources, while responding to risk the mean value is (4.07) which indicate the agreement of majority of the respondents on the consideration of budget, schedule and resources while responding to risk.

Table 27 Risk Monitoring and controlling

Descriptive Statistics			
	N	Mean	Std. Deviation
Based on the current result of the project are risks monitored and controlled well.	30	3.50	.8201
The Project monitor, control and review the process for risk management to ensure that it complies with standards and procedures.	30	3.24	.8201
Information available or the history of the project is used to supplement to control risk.	30	2.89	.8201
Risks that occur within the project are controlled in a way that goes with the goal and objective of the project.	30	3.33	5.473
Valid N (list wise)	30		

Source: Own survey data (2024)

The results (3.50) and (3.24) for the questions if risks are monitored and controlled well and if these activities are done in a way that goes with the goal and objective of the project respectively shows there is little practice of risk monitoring and control and this little practice is not done in accordance with the goal and objective of the project.

The result obtained (3.33), for the question if project monitor, control and review the process for risk management to ensure that it complies with standards and procedure, the response shows that majority of respondent disagree that The project monitor, control and review the process for risk management to ensure that it complies with standards and procedure.

Regarding the question asked to rate if the project uses information available and its history, to supplement the risk control practice, the average rating value is (2.89) which indicates the management does not supplement the risk control practice by using information available and the history of the project. These results were also confirmed during the interview held with the project manager. The project didn't monitor and controlled well. The project didn't monitor, control and review the process for risk management to ensure that it complies with standards and procedure. Information available or the history of the project is not used to supplement to control risk. Risks that occur within the project are not control in a way that goes with the goal and objective of the project

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of Findings

In this chapter the summary of finding of the study, the conclusion that should be drawn from data analysis and recommendations, that the researcher propose about the risk management practice of the project to enhance effective implementation of the project by stakeholders should be discussed.

The study set out with the objective of assessing and examining the risk attitude and management in construction projects evidence from EEIG construction with the specific objectives of:

- To identify the risk awareness and perception among site engineers, project managers and project management team in construction projects undertaken by EEIG construction.
- To identify the risks, present in construction industry in general as well as risks faced by EEIG construction while undertaking construction projects in different parts of Ethiopia
- To identify the risk management systems, practices and processes implemented by EEIG construction both at a project level as well as at a company level.

In an effort to achieve these objectives an examination into the literature of the subject matter has been undertaken. The background of EEIG construction and the construction projects being implemented in different parts of Ethiopia, at the time of the study were analyzed. Detailed views and perceptions with regards to risk attitude have been outlined from decision makers i.e. project managers and project management team members. Furthermore, risks in construction and specifically in the Ethiopian construction industry have been examined and the need for an integrated and systematic risk management has been identified.

A survey was conducted by the researcher to assess risk awareness of site engineers, project managers and project management team members and the risk management practices employed at a company level as well as in the construction projects undertaken by EEIG construction.

Primary data collected through questionnaire survey and interviews was analyzed and the results were presented in the previous chapter. This section will present the conclusions and recommendations of the study.

- The data shows that there is a specific way to manage risks for EEIG construction projects. Also, interviews with the project managers confirmed that there is a clear and established process for managing risks. However, it is not clearly explained and not used correctly in reality. And there are rules that tell us how to deal with risks. The project managers said that there is a rule for managing risks, but not everyone on the team knows about it or understands it. They don't follow the rule and just keep it as a written document.
- The person completing the survey said that the project risk management process does not happen all the time during the project. An interview with project managers showed that most risks are only dealt with when they actually happen, instead of being addressed at every stage of the project. Also, most of the people surveyed agreed that there is no one in charge of managing project risks. From talking to project managers, I learned that no one is in charge of managing risks for the project. Instead, the quality and assurance department, along with other teams, handle this task.
- Response of respondent on the question if training is given about risk management shows that more than a half of the respondents confirmed that training is not given for project team members about project risk management.
- The survey showed that there is a carefully designed plan in place to manage risks. The survey shows that when planning a project, people think about how to manage risks. It also found that a lot of people involved in the project are also involved in managing the risks. The project managers' interview results also agreed with this statement.
- Data analyzed about risk identification reveals that potential risks are identified and assessed in methodical way. Moreover, role of all team members within the project in identifying risk rated less by the respondents. And the finding indicates that SWOT analysis is used as a risk identification tool than physical inspection. In addition, the finding implies that information gathering is rated as the primary method used to identify risk by the project.
- About risk analysis, the data analyzed shows that respondents agree about there is a risk measurement system that value risks in monetary terms. Whereas they rated, the practice of updating Project documents after assessment of the risk that might occur is not good. Most of the respondent and even the project managers disagree on risks are formally assessed with respect to their likelihood of occurrence and impact magnitude.

- Based on the rating of the respondents on the process of risk response majority of the respondents agree on the existence of a well-developed strategy with in the project to respond to risk, in addition the project considers budget, schedule and resources while responding to risk. Risk reduces or mitigate strategy is chosen by most of the respondents as a risk mitigation strategy most of the time when risk occurs in the project.
- The findings obtained from the risk monitoring and controlling process revealed that majority of the respondents disagree that risks are not monitored and controlled well. In addition, the respondents disagree on information available or the history of the project is used to supplement to control risk. And risk's that occur within the project are not controlled in a way that goes with goal and objective of the project.

5.2. Conclusion

In an effort to achieve the study 's objectives, the conclusions drawn are presented as follows:

1. The general profile of the respondents shows that almost all of the respondents to the questionnaires and interviews of this study were male. Consequently, this shows that the decision making roles in projects (site engineers, project managers and project management team members) at EEIG construction are predominantly taken by male professionals and this confirms the view of (Nuanthip and Tanit, 2012) that the construction industry is associated with male domination.
2. Most of the managers and team members at EEIG construction are not positive about risk. They think that risks will hurt their projects in the future and stop them from reaching their goals. Many project managers and their team members look at situations carefully before taking risks. Also, they believed that a person's national culture and religious beliefs could influence how they see risk and how they behave in risky situations.
3. Many project managers and team members at EEIG construction think that the Ethiopian construction industry is very unpredictable and risky. They believe that construction projects often have problems like being late, costing more than expected, and not meeting quality standards. Additionally, the industry faces problems like not enough money, bad planning and building methods, political problems, not enough foreign money, not enough skilled workers, not managing contracts well, low quality, spending more money than planned, not enough health and safety rules, and weak government rules about health, safety, and the environment.

The people in charge of the project and the team members think that EEIG construction faces risks when they build things in different places in Ethiopia.

- Technical risks (uncertainty of resources and availability of materials inadequate site investigations or incomplete designs, substandard quality, inadequate Health & Safety practices etc…)
- Management related risks (uncertain productivity of resources).
- Socio-political risks (customs and import restrictions and difficulties disposing off equipment)
- Financial risks (inflation, local taxes, availability and fluctuation in foreign exchange etc…)
- Environmental risks (natural disasters, weather and seasonal implications etc…)

The people in charge of running construction projects at EEIG are responsible for handling any problems that come up while the project is being done. In addition, the client has to help with the project's finances and budget. The consultant and the design team make sure to handle any risks that come from changing the design or specifications. The project managers and team members agree that risk management should be used at all stages of the project. There are also concerns about the policies of the contractors, and government regulations related to health, safety, and the environment. The people in charge of the projects and the team believe that EEIG construction faces various risks when building things in different areas of Ethiopia.

4. The majority of the project managers and project management team members at EEIG construction believe that there is a systematic risk management and appropriate risk management processes (i.e. risk identification, risk assessment, risk response, risk monitoring and control) are being undertaken in their projects. This is due to the fact that EEIG construction ‘s company is enforcing in their projects stringent requirements with regards to risk management, health and safety management, quality management, environmental protection which EEIG construction ‘s project managers and project management team are contractually obliged to adhere to. Based on the analysis of company data out of 15 construction projects being undertaken at the time of this study 10 of these projects have international clients. Furthermore, risk management processes implemented in these projects

rely heavily on the experience of the project manager who has the ultimate responsibility for the project. On the other hand, there is ample consensus among the project managers and project management team members that the company does ‘t have a standard risk management system at a company level and has rarely organized trainings and workshops on risk management planning, implementation and monitoring. The project manager and the project management team rely solely on their experience and eventual academic courses taken in order to develop their knowledge and awareness of risk and its management.

5.3. Recommendations

Based on the findings and conclusions of the study, recommendations are forwarded.

- EEIG construction needs to plan workshops, training sessions, and platforms for sharing experiences. This will help in understanding and shaping how people think about risks, such as identifying risks, analyzing them, and responding to them. It will also help in understanding how decision makers involved in projects view risks. We want to help people who lead projects and work on project teams get better at managing risks and understanding how it's done.
- Additionally, EEIG construction should use its knowledge in the industry and from international clients to create a risk management system that senior management approves and is used in all of its building projects. This includes a manual, guide, and assessments/audits. Besides the staff mentioned earlier, we should encourage and give rewards to staff who own shares of the company.

5.4. Limitations of the Study and Areas for Future Research

The study only looks at one construction company and doesn't include many people, so it's hard to say if the findings apply to all construction workers in Ethiopia.

For this study, only data from one point in time was used. However, collecting information over a long period of time and consistently evaluating it can help us understand the topic better. Also, the research only used opinions as a way to measure how aware people are of risks and how they manage them in the construction industry and other industries.

This study only looks at the construction projects currently being done by EEIG construction. It doesn't include any projects that have already been finished. So, studying more past projects will give us more detailed information about the topic.

Also, the research was done with a special focus on the people who manage projects and the team members of EEIG construction. This study looked at who is in charge of managing risks to achieve project goals. It assumed that it's the decision makers' job. Project managers and the team in charge of managing the project. However, making sure to minimize potential problems and meeting project goals is something we all need to work together on. So, we need to do a study that includes more people and covers everything in this area.

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Appendix

Questionnaire

Dear sir/Madam

My name is Samuel Tilahun and I am currently doing my MA. in Project Management at Addis Ababa University, School of Commerce. I have finished my course work and now I am doing my MA. Thesis entitled: Risk Awareness and Management in construction projects- the Case of EEIG Construction.

I believe your experience and educational background will greatly contribute to the success of my research which is aimed at contributing to EEIG and also the Construction industry at large. So it's with great respect that I ask you to fill this questionnaire. I guarantee that your identity will be kept confidential and the information you provide will only be used for academic purposes. I will be happy to share the findings of this research when it's completed.

Thank you in advance for taking your precious time to fill this questionnaire. Please try to answer all the questions openly, as your answers will have an influence on the outcome of the research. Your 15 minutes or less will greatly contribute to the growth and advancement of knowledge in the company as well as the Ethiopian construction industry.

If you have any questions or comments, please don 't hesitates to contact me. You can reach me by;

- Mobile: +251944 336065
- E-mail: samitilahun2013@gmail.com

With Regards,
Samuel Tilahun

This study entitled Risk Awareness and Management in Construction Projects Evidence from EEIG Construction is designed to identify risk awareness and management among project managers and project management team members who are the decision makers and are responsible for construction projects undertaken by EEIG Construction. The information you provide will be used purely for academic purpose and will be kept confidential. Participation in this study is absolutely voluntary. Please answer with HONESTY & SINCERITY.

1. SECTION ONE: GENERAL PROFILE OF THE RESPONDENT

1.1. Gender: _____
1 = Male 2 = Female

1.2. Age: _____
1 = 20-25 3 = 31-40
2 = 26-30 4 = 41-50

1.3. Highest educational level: _____
1 = Diploma
2 = BSc/BA
3 = MSc/MA/MBA
4 = Others: _____

1.4. Job title: _____
1 = Senior Project Manager
2 = Project Manager
3 = Site Engineer
4 = Others: _____

1.5. Years of experience:
a) In the construction industry: _____
1= < 1 year 2= 1-5 years
3= 6-10 years 4= >10 years
b) At EEIG Construction company: _____
1= < 1 year 2= 1-5 years
3= 6-10 years 4= >10 years

2. SECTION TWO: RISK AWARENESS
Please indicate your opinion by ticking on the appropriate box for the five-point scale questions:

STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
5	4	3	2	1

2.1. Risk and Risk Awareness at EEIG construction

No.	**Description**	**5**	**4**	**3**	**2**	**1**
1	I believe Risk has a negative impact on a construction project					
2	I believe Risk has a positive impact on a construction project					
3	I believe Risk can have both negative and positive impact on a construction project					
4	I see myself as a Risk Averse person: - I am inclined towards certain, as opposed to uncertain events					
5	I see myself as a Risk Seeker person: - I am inclined to take on less-certain activities in lieu of more certain ones					
6	I see myself as a Risk Neutral person: - I have an indifferent attitude towards risk					
7	I tend to examine the situation and take a calculated risk: - I estimate and weigh the advantages and disadvantages before taking any action					
8	I believe risk management should be applied at Conceptual stage of the project					
9	I understand risk management is applied at Planning stage of the project					

10	I believe risk management should be applied at Implementation stage of the project					
11	I believe risk management should be at Closure stage of the project					
12	I believe risk management should be at all project life cycle stages					
13	The Project Manager is responsible for managing risk					
14	The Project Management team is responsible for managing risk and is a shared responsibility					
15	The Client is responsible for managing risk					
16	The Consultant is responsible for managing risk					
17	A specialized Risk Management Team is responsible for managing risk					
18	I am well-informed about the key risks faced by the construction industry					
19	I actively stay updated on emerging risks that could impact construction projects					

3. SECTION THREE: RISKS IN CONSTRUCTION PROJECTS UNDERTAKEN BY EEIG CONSTRUCTION

Please indicate your opinion by ticking on the appropriate box for the five-point scale questions:

STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
5	4	3	2	1

3.1. Risk in the Ethiopian Construction Industry

No.	Description	5	4	3	2	1
1	I think that the Ethiopian construction sector is extremely volatile and showing high levels of risk					
2	I know that most of the projects are facing many challenges: - time delays, cost overruns and quality compliance issues					

3.2. The following are the types of Risks faced by EEIG construction while undertaking construction projects:

No.	Description	5	4	3	2	1
1	I think that EEIG faces Technical risks: This can include uncertainty of resources and availability of materials, inadequate site investigation, or incomplete design etc... Quality, HSE					
2	I think that EEIG faces Environmental risks: include natural disasters, weather, and seasonal implications etc….					
3	I think that EEIG faces Management related risks: include uncertain productivity of resources.					
4	I think that EEIG faces Financial risks: Inflation, local taxes, and availability and fluctuation in foreign exchange etc...					
5	I think that EEIG faces Socio-political risks: Customs and import restrictions and difficulties disposing of equipment etc…					
6	I have a comprehensive understanding of the risk management processes at EEIG					
7	I am able to identify potential risks at different stages of the project lifecycle at EEIG					

8	I am confident in my ability to anticipate and mitigate construction-related risks					
9	I am familiar with the key risk management frameworks and best practices					
10	I am aware of the risk management roles and responsibilities within EEIG					
11	I actively participate in risk identification, analysis, and mitigation processes					
12	I am well-versed in the risk escalation and reporting procedures at EEIG					
13	I effectively identify and assess risks at the project initiation stage.					
14	I collaborate with the project team to develop comprehensive risk response plans					
15	I monitor and review project risks throughout the construction lifecycle					
16	I communicate project risks and mitigation strategies to all stakeholders					
17	I continuously evaluate the effectiveness of risk management measures					

4. SECTION FOUR: RISK MANAGEMENT SYSTEM AT EEIG CONSTRUCTION

Please indicate your opinion by ticking on the appropriate box for the five-point scale questions:

STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
5	4	3	2	1

4.1 RISK MANAGEMENT ASSESSMENT AT EEIG

No.	Description	5	4	3	2	1
1	I believe there is systematic approach or careful planning done to perform risk management in the project.					
2	I believe relevant stakeholders are involved in the planning and managing risk.					
3	As a member of the Project management team I have received training or have enough knowledge about how to handle risks and uncertainties.					
4	I know that the company has regularly organized trainings and workshops on risk management planning, implementation and monitoring					
5	I know that risk management plan is incorporated with the project plan.					
6	I believe risk management relies mainly on the experience of the project manager					
7	EEIG's risk management system is aligned with industry best practices					
8	I am familiar with the risk analysis techniques and risk prioritization methods used at EEIG					
9	I actively participate in the development of risk response strategies and action plans					
10	I regularly monitor and review project risks in accordance with EEIG's procedures.					
11	I effectively communicate and report on risk management activities within my project					
12	I can effectively identify and document potential risks at the project initiation stage					
13	I am skilled at conducting thorough risk assessments to determine likelihood and impact.					

14	I can accurately prioritize risks based on their potential impact on project objectives					

4.2. RISK IDENTIFICATION:

No.	Description	5	4	3	2	1
1	Risk Identification process is undertaken					
2	Potential risks are identified and assessed in a methodical way					
3	All team members within the project play a role in identifying risks.					
4	SWOT Analysis is used to identify risk by the management					
5	Risk is identified in every life cycle of the project. Monitoring & Control process is undertaken					
6	Physical inspection is done by the managers to identify risk.					

4.2. RISK ASSESSMENT:

No.	Description	5	4	3	2	1
1	Risk Assessment process is undertaken					
2	There is a measurement system to analyze the risk					
3	Project documents are updated after assessment of the risk that might occur.					
4	Risks are formally assessed with respect to their likelihood of occurrence and impact magnitude					

4.3. RISK RESPONSE:

No.	Description	5	4	3	2	1
1	Risk Response process is undertaken					

2	I believe the company develop appropriate risk response strategies (e.g., avoidance, transfer, mitigation)					
3	The company is identifying and implementing effective risk control measures					
4	The company ensures that risk management is fully integrated into the project management lifecycle.					

4.4. RISK MONITORING & CONTROL:

No.	**Description**	**5**	**4**	**3**	**2**	**1**
1	Risk Monitoring & Control process is undertaken					
2	Factors such as budget, schedule and resources are considered while responding to risk					
3	Based on the current result of the project are risks monitored and controlled well.					
4	The Project monitor, control and review the process for risk management to ensure that it complies with standards and procedures.					
5	Information available or the history of the project is used to supplement to control risk.					
6	Risks that occur within the project are controlled in a way that goes with the goal and objective of the project.					

Thanks for your time.

Interviews

1. What is your view of risk? How do you describe your risk awareness?
2. What are the risks faced by construction projects in EEIG construction?
3. What is your level of awareness and knowledge of risk management systems and practices? (Risk identification, assessment, response, monitoring & control)
4. Can you please brief me on the project ‘s risk management practice? How do you manage risks? in your project?
5. Who is responsible for managing risks during the execution of projects?