ADDIS ABABA UNIVERSITY

COLLEGE OF BUISNESS AND ECONOMICS

SCHOOL OF COMMERCE

GRADUATE PROGRAM OF PROJECT MANAGEMENT

ASSESSMENT OF THE PROJECT RISK MANAGEMENT PRACTICE OF 20/80 CONDOMINIUM HOUSING PROJECT: THE CASE OF BOLE ARRABSA SITE

PREPARED BY: FERTUNA FEREDE

JUNE 2019

ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY

COLLEGE OF BUISNESS AND ECONOMICS

SCHOOL OF COMMERCE

GRADUATE PROGRAM OF PROJECT MANAGEMENT

ASSESSMENT OF THE PROJECT RISK MANAGEMENT PRACTICE OF 20/80 CONDOMINIUM HOUSING PROJECT: THE CASE OF BOLE ARABSA SITE

BY

FERTUNA FEREDE

ADVISOR

DR. ATSEDE

A PROJECT WORK SUBMITTED TO ADDIS ABABA UNIVERSITY, SCHOOL OF COMMERCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF ARTS DEGREE IN PROJECT MANAGEMENT

June 2019

Addis Ababa, Ethiopia

Addis Ababa University

College of Business and Economics

Department of Project Management Approval

This is to certify that this project work prepared by Fertuna Ferede Assessment project risk management practice of 20/80 Condominium Housing Projects: The case of Bole Arabsa site*"*, which is submitted in partial fulfillment of the requirements for the Degree of Masters in project management (MAPM), complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approved by Board of Examiners:

_____ Signature_____ Date_____

Advisor

_____ Signature_____ Date_____

Internal Examiner

_____ Signature_____ Date_____

External Examiner

_____ Signature_____ Date_____

Chair of Department or Graduate Programs Coordinator

Statement of Declaration

I, Fertuna Ferede the undersigned, declare that this research is my original work and has not been presented for a degree in any other university and that all sources of materials used for this research have been duly acknowledged.

Declared by: Confirmed by Advisor:

Name: _____ Name: _____

Signature: _____ Signature: _____

Date: _____ Date: _____

Dedication

This work is dedicated to

My parents

My sisters

And my friends

Abstract

The performance of construction projects is considerably affected by project risks in terms of cost, time and quality. Risks in the construction industry are not limited to construction projects as it is largely presumed. However, construction companies are not observed trying to cope up with them. The objective of the study to assess the risk management practice of 20/80 condominium housing project in Bole Arrabsa-6. The study is of a descriptive type, which made use of both qualitative and quantitative approaches as methodology to address the research objective. Data was collected via semi structured questioners and open-ended interview questions effectively. Among 107 employees working as the contractor and consultant in the companies being involved in the project, questionnaires were distributed to 55 engineers working in different positions and interview was made with the site manager and construction manager. Participants who involved in completing the questioner were selected using purposive sampling. Descriptive statistics was used to summarize the quantitative data compiled by SPSS 21. Data were summarized using measures of central tendency.

The study generally revealed that the housing and development agency is practicing risk management in an ad-hoc manner, where there is no well designed and workable policy being implemented to guide the risk management and no enough attention is given to risk planning to channel the risk identification, analysis and response concurrently with the project plan and objective. Based on this finding the study has provided recommendations on how to apply risk management process practice in 20/80 condominium housing project.

Key words: Risk management, Risk management practices and construction risk management

Acknowledgement

I thank the almighty God for guiding me all through my life. I would like to forward the deepest of my appreciation and gratitude to my advisor DR ATSEDE TESFAYE for all her expert advice, guidance and support during the development of my study. I also want to tell my heart full of love to the ever great parents Ferede G/Medhin and Semaynesh Belay and my sisters, lucky that you are mine.

I would also like to thank 20/80 condominium contractors and consultants of the project and other staffs for devoting their time for giving response to the questionnaire and interview. Finally, I want to say thank you to everyone who helped me during this study.

Table of Contents

List of tables

CHAPTER ONE
INTRODUCTION

1.1. Background of the study

According to UN-Habitat (2012), Urbanization is a development phenomenon that comes about with the development of a country's economy in general and industrialization in particular. It follows that the rate of urbanization considered as one of the indicators of a country's economic development. The rate of urbanization directly related with the demand for houses that was expected as a country becomes urban. The increasing population in urban centers requires more houses. The practice, however, does not support this in that the acceleration in urbanization accompanied by the provision of adequate housing.

The annual urban growth rate in Sub-Saharan Africa is almost 5 percent twice as high as in Latin America and Asia. It also has the world's largest proportion of urban residents living in slums (UN-Habitat, 2008).

Ethiopia, which is one of the sub-Saharans countries, is also passing through a very rapid urbanization due to different reasons as the report of Ministry of Urban Development, Housing and Construction (2014). About 20 per cent of the total population of Ethiopia currently lives in urban areas, making the country as one of the least urbanized countries in sub-Saharan Africa. Despite this low level of urbanization, the country has one of the highest rates of urbanization even by the standards of developing countries, which is estimated around 4.1 percent. This is much higher than the average growth rate of the total national population, estimated at 3 per cent per annum. The level of urbanization is estimated to have already reached 17.2 per cent by 2013.

The rapid process of urbanization in developing countries accompanied with lack of adequate and affordable housing is one of the 21st century's main development challenges. Like most African cities, the spatial, physical and socio-economic condition of Ethiopian cities is by far behind the requirements fundamental to sustain the livelihood of the city.

Housing has been and still is one of the major problems in Addis Ababa. The housing shortage in Addis Ababa was worse that it had been 15 years earlier. As Mekonen (2006)suggested that various approaches have been experimented of which the integrated housing development project (IHDP) office was created, with the objectives of providing decent and affordable housing for low and middle-income households, creating job opportunities, transferring cost-efficient technology and citizens empowerment through ownership of houses, in 2003 by the city government of Addis Ababa. The project office has seven departments and ten sub-city branch offices. The 20/80 housing project, one of the varieties offered by the IHPD was designed, as the customer will save 20 percent of the total cost of the house and the rest 80 percent will be paid in the future.

Since most of the projects undertaken under this program are construction projects, they are very risky (Ehsan et al. 2010, cited by Haddush 2016). (Bufaied, 1987) described risk in relation to construction as a variable in the process of a construction project whose variation results in uncertainty as to the final cost, duration and quality of the project.

In the early stages of the project where planning and contracting of work, together with the preliminary capital budget are being drawn, risk management procedures should be initiated. There are a number of risks which can be identified in the construction industry and which can be faced in each construction project regardless of its size and scope. Changes in design and scope along with time frames for project completion are the most common risks for the construction sector.

The aim of each organization is to be successful and risk management can facilitate it. However it should be underlined that risk management is not a tool which ensures success but rather a tool which helps to increase the probability of achieving success. Risk management is therefore a proactive rather than a reactive concept (Ewelina G. and Mikaela R., 2011). Perhaps the risk which is inevitable in every aspect of everyone life must be managed in the housing development projects, that the acute housing problem of the city Addis Ababa could be reduced by half as planed in the near future.

1.2. Statement of problem

Risk management is a critical part of project management as "unmanaged or unmitigated risks are one of the primary causes of project failure" by (Royer, (2000). While numerous papers were written on the subject of risk management, little current information exists on the actual use of risk management in practice. Project managers to be successful are ought to carefully manage the fortuitous and/or un-fortuitous events that may happen to projects (Lyons, 2002).

Engineering projects are large-scale, technically complex, object-oriented, long-period, risky and susceptible to construction time and fund, which lead engineering projects to be quite possibly influenced by natural and social environment and other factors (Shen Jian-fei, Yi jing, Suanqiao , 2014).The construction industry operates in a very uncertain environment where conditions can change due to the complexity of each project (Sanvido, 1992).

A construction project is a risky procedure, and if parties involved do not guard against these risks, it is likely to affect the progress of construction and even bring about serious consequences as described by (Shen Jian-fei, Yi jing, Suanqiao (2014). As being observed from a pilot survey made and results from (Guesh, 2017) the housing projects are tangled among various critical problems which are being manifested in terms of poor quality of houses, unsatisfied users, late handing over, unexpected and high cost variance, design changes and others boldly speaking that risk management is either ignored or practiced very randomly.

Nevertheless, risk management is considered as a concept which has become very popular in number of businesses, researchers like Frezewd (2016) and Yimam (2013) have portrayed that "very little or no proper risk management exists" in many business areas in Ethiopia, including the construction businesses. This accentuates that there is a very large gap between the theoretical project risk management and what is being implemented on the ground.

As Frezewd sited, Forsberg et.al (2005), stated that risk management is usually ignored in the project environment and significant cause of project failure occurs due to this. Williams (no date), stated that in many projects, risks are identified and analyzed in a random, brainstorming fashion. It's common to see risks are dealt with on an emergency basis rather than being

prepared in a planned and measured manner. Hence, this paper will be assessing the risk management being practiced in the of 20/80 condominium housing construction project in a descriptive way.

1.3. Research question

The research questions would then be:

1. What kind of risk management approach does the organization follow on 20/80 condominium housing project, at Bole Arabsa site?
2. How are the risk management processes risk planning, risk identification, risk analysis, response and risk monitoring and control applied in practice at Bole Arabsa site?
3. What are the challenges encountered in implementing the risk management process practice in 20/80 condominium housing project, at Bole Arabsa?

1.4. Objective the study

1.4.1. General objective

The general objective of the study is to assess project risk management practice of the 20/80 condominium project at Bole Arrabsa site.

1.4.2. Specific objectives

The specific objectives of this study are:

- To identify whether the project has an appropriate risk management plan on 20/80 condominium housing project, at Bole Arabsa site.
- To assess how risk management process is applied in 20/80 condominium housing project at Bole Arabsa site.
- To identify challenges in implementation of risk management on 20/80 condominium housing project at Bole Arabsa site.

1.5. Significance of the study

The Ethiopian government is striving hard to alleviate housing problems of urban areas. The city administration has also taken significant role in the process of reducing housing problem of the city by 50% (Mekonen, no date). To achieve this goal and see the city's housing problem reduced by half each project should be undertaken effectively & efficiently. In addition, for the projects to be successful which is on time, on budget within scope, there should be an appropriate risk management process.

Projects with poor or no risk management practices will result in an extended time for construction, increased cost, poor quality& loss of revenue besides aggravating the housing problem in the city. Hence, managing risks should be accordingly. This study would then be contributing knowledge to literatures concerning risk management in showing the robust risk management for construction projects. It is expected to suggest important recommendations, which could be of great importance for both the owner of the project (client), and contractors in providing assistance from the planning phase to closure. Moreover, the study will benefit as an input for individuals who are interested in the subject matter to undertake similar studies.

1.6. Scope of the study

This study analyzes the risk management practices of 20/80 housing construction project and the challenges being faced in the process of implementing the project. Out of the projects, I chose 20/80 because it is the largest of the three. The study is limited to the assessing project risk management and challenges of risk management in 20/80 condominium housing project. I focused on bole Arrabsa site. The main reason for selecting this site is the availability of information and limited time for the research. In addition, I can find both finished and in progress construction. Moreover, the result of this study can be projected to any governmental housing projects.

This study only focused one of the ten knowledge areas which is project risk management where the practices of project risk management 20/80 housing project is assessed in a descriptive

manner to let the client learn from its wrong doings and strengthen its poor performances to in enhance the project success.

1.7. Limitation of the study

Due to time, budget and geographic constraints, the study has limitations in generalizability in that the total population was not involved in filling questionnaires, senses was not used accordingly poor generalizability may be observed as the population used was narrow and the interview was also conducted with two engineers.

Findings may not be as accurate as they should be because of methodological, conceptual and instrumental issues, responses from respondents may not be accurate enough because of different reasons willingness, level of awareness, personal conditions and others having a direct effect on the preciseness of the findings.

1.8. Operational Definition of terms

Risk planning: is about defining how to implement and practice the risk management framework's sub process. (PMI, 2009)

Risk identification: is about distinguishing and acknowledging of uncertainties, being focused on relatively higher probability of occurrence and effect on the project. (PMI, 2009)

Risk analysis: is an evaluative process that serves the purpose of establishing some understanding of the magnitude of the risks faced by an organization in understanding a project. It mainly is concerned about rank-ordering risks and keeping eyes on them. (PMI, 2009)

Risk response / mitigation: is the stage where important decisions are made in accordance with the information organized on the previous processes. It is about following some strategy to be able to reduce, abolish the impact of risks or use fortuitous opportunities as efficiently as we can. It involves understanding the project and impacts of various corrective actions midstream. (PMI, 2009)

Risk monitoring and control: is about identifying key risk milestones or project schedule where risk decisions are to be made. (PMI, 2009)

1.9. Organization of the study

The paper is organized in five chapters in the following sequence. The first chapter will begin with the basic research information as an introduction part of the research. The second chapter deals with literature review. The third chapter is cover research design and methodology in order to achieve the objectives of the study. The fourth chapter focuses on the analysis of findings and discussion part. The last chapter will deal the conclusions and recommendations, which forwards based on the major findings of the study.

CHAPTER TWO
LITERATURE REVIEW

2.1. Introduction

This section will be presenting the theoretical and empirical literature reviews of related issues concerning project, project management, project cycles, project risks, risk management processes & the challenges.

2.2. Theoretical literatures

2.2.1. Project, project management and risk management

Project

Defined in different ways the concept of project has always some common features to share. PMBOK Guide 5th_ed. Defines project as a temporary endeavor, emphasizing on the conceived initiation & ending period, undertaken to create a unique product, service or result. Connoting that no exact project has been performed before however, it might have some repeated parts in the deliverables, it will have its own differentiating characters like location, stakeholders, budget, design, time, different settings and so on.

"A unique set of coordinated activities, with definite starting and finishing points, undertaken by an individual or organization to meet specific performance objectives within defined schedule, cost and performance parameters." British Standard 6079 (2000).

The project management association of Japan (2005) has figured project as a value creation process having a specific mission upon completed within a given or agreed timeframe, resources, under constraints and different circumstances.

Ad-hoc set of activities having logical relationship executed by a specific team to achieve a one-off, specified goal within planned performance, time and cost targets. (Brown, 2007).

Having a bit different perspective Dr. J. M. Juran, describes a project as a problem scheduled for a solution, with the thought of problems being divided as positive, the opportunities, and negative, problems or short comings of products or services.

A project could be resulting:

- A product to be a component of certain item, enhancement of an item or a product.
- A service or the capability to give a service.
- An improved product or service line.

In a more comprehensive way Robert k. (2014), in the book Effective project management defined a project as, "a sequence of unique, complex, and connected activities that have one goal or purpose and that must be completed by a specific time, within budget, and according to specification."

Project management

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements as the definition of PMBOK *Guide_5thed.*and PMI (2013).

According to Robert, k. (2014) in his book "effective project management" Project management is a set of tools, templates, and processes designed to answer the following six questions:

- What business situation is being addressed by this project?
- What does the business need to do?
- What will you do?
- How will you do it?
- How will you know you did it?
- How well did you do?

He accentuates that it is not a routinely task in forms and submitting reports, it rather is a challenging where there should be an effective leader and leadership, to function at a best creativity, and be courageous at all times.

Project management is accomplished through the appropriate application and integration of project management processes, which are categorized into five Process Groups (PMI, 2013). These five Process Groups are: Initiating, Planning, Executing, Monitoring and Controlling, and Closing.

Project management is the planning, organizing, directing and controlling of company resources for a relatively short-term objective that has established to complete specific goals and objectives and is about converting vision into reality (Turner, 2009).

Project management processes are grouped into five categories known as Project Management Process Groups (or Process Groups):

Initiating Process Group: processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase. **Planning Process Group:** processes required to establish the scope of the project, refine objectives, and define the course of actions required to attain the objectives that the project is expected to achieve.

Executing Process Group: processes performed to complete tasks defined in the project planning to get the final deliverable and fulfill the project specifications.

Monitoring and controlling Process Group: processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.

Closing Process Group: Those processes performed to finalize all activities across all Process Groups to formally close the project or phase.

Risk management

In dictionary definition terms ‘risk’ means ‘‘hazard, chance of bad consequences, loss, exposure to chance of injury or loss ’’ (Concise Oxford Dictionary). The Last’s Dictionary of Epidemiology 4th ed. defined risk as an event that has a probability of occurring, and could have

either a positive or negative impact to a project should that risk occur. The term usually expresses the probability of occurrence of an outcome following a particular exposure.

Risk is all about uncertainty and as human beings; we are unable to determine what will happen in the future, as future is full of uncertainty. Marcus G. (2014) risk can be found in almost anything that we set out to do or accomplish in life, be it in business or our own personal lives. ISO (2009) define risk as effect of uncertainty on objectives.

Chapman and Cooper (1983) defined risk as "exposure to the possibility of economic and financial loss or gain, physical damage or injury, or delay as a consequence of the uncertainty associated with pursuing a particular course of action."

"When there is a risk, there must be something that is unknown or has an unknown outcome. Therefore, knowledge about risk is knowledge about lack of knowledge. This combination of knowledge and lack thereof contributes to making issues of risk complicated from an epistemological point of view" – Stanford Encyclopedia of Philosophy.

As Osborne (2012), risk management is an essential part of any organization's strategic management whereby risk is methodically addressed together with their activities to achieve sustained benefit within each activity and across the portfolio of all activities. Hence good risk management increases the probability of success, and reduces both the probability of failure and the uncertainty of achieving the organization's overall objectives.

2.2.2. Project risk management

The PMBOK Guide_5th, states that there are nine knowledge areas typical of almost all projects, which require a great concern for the success of projects. The nine knowledge areas are:

a) Project integration management
b) Project scope management
c) Project time management
d) Project cost management
e) Project quality management

f) Project human resource management
g) Project communications management
h) Project risk management
i) Project procurement management

Project risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives such as scope, schedule, cost, and quality. Having said that risk is about not knowing the future it would be logical to say all projects are inherently risky as they are unique, constrained, complex, based on assumptions, and performed by people. Risk is something inevitable that it is not optional. According to PMI (2009), "Practice Standard for Project Risk Management" Project Risk Management addresses the uncertainty in project estimates and assumptions. Therefore, it builds upon and extends other project management processes.

According to PMI (2009), Project Risk Management is a valuable component of project management, which enhances the value of the other project management processes. As with all of these processes, it should be, conduct in a manner consistent with existing organizational practices and policies and be conducted in a way that is appropriate to the project.

Dougals W. (2009), Risk management is the identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or shortly it is being smart about taking chances.

Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project. The objectives of project risk management are to increase the likelihood and impact of positive events, and decrease the likelihood and impact of negative events in the project. PMBOK Guide_5th Ed.

2.2.3. Construction risk management

As the most common and typical project types, construction projects have several characteristics such as specific objective, time limit, financial constraints and economic

requirements, special organizational and legal conditions, complexity and systematic characteristics and for that each investment project itself is a complex system. Especially for the construction projects, there are many risk facets and complicated relations, which will influence it. The complicated relations include direct, indirect, obvious, implicit or unpredictable [Kuang, 2010] cited by (Getachew, 2014).

The construction industry operates in a very uncertain environment where conditions can change due to the complexity of each project (Sanvido et al., 1992). The aim of each organization is to be successful and risk management can facilitate it. However it should be underlined that risk management is not a tool which ensures success but rather a tool which helps to increase the probability of achieving success. Risk management is, therefore, a proactive rather than a reactive concept (Kerzner, 2009).

The subject of risk, its assessment, allocation and management in construction projects has been developed and applied on an increasing scale over the last twenty years (Bunni, 2003). Construction risks are generally perceived as events that influence project objectives of cost, time and quality. Some of the risks associated with the construction processes are fairly predictable or readily identifiable; others may be totally unforeseen (Ahmed and Azhar, 2004).

(Getachew, 2014) A successful construction project depends on how well project participants manage project risks. Risks are managed through sound business and construction practices and through careful preparation and review of the project contract documents. A significant component of successful risk management begins with how well the project participants allocate risks at the contract formation stage.

1) **Risk planning**

The planning process defines the scope, objective, how to implement the techniques and tools, the thresholds of acceptable risk to various stakeholders are stated, and practice the risk management framework's sub-processes. Planning will make the risk management possible in that it exactly tells what to do, when and how. Developing policies regarding risk management, determining steps needed to be taken and their order, any resource requirement, how long might

be needed, who is responsible for specific processes and may even include trainings and seminars for improving the risk management expertise of personnel (PMI, 2013).

The planning process should incorporate all approved subsidiary management plans and baselines should be taken into consideration, to make the plan consistent with them. The risk management plan should also be a component of the project management plan as the project management plan provides baseline or current state of risk-affected areas including scope, schedule, and cost. (Wysocki, 2014). Planning risk management process is important to ensure that degree type and visibility of risk management are commensurate with both risks and importance of the project to the organization. PMBOK Guide 4th_ed.

Moreover, it is vital to communicate the plan with all stakeholders and to get support to ensure the risk management process would be implemented effectively over the project life cycles.

2) Risk identification

Risk identification is a process of which risks may affect the project and documenting there characteristics. Project manager, Project team members, risk management team (if assigned), customers, subject matter experts outside the project team, end users, other project managers, stakeholders could be included as key participants. PMBOK Guide_4th ed.

Risk cannot be managed unless it is first identified. Project Risk Management process aims to identify all the knowable risks to project objectives in an iterative way after risk management planning. It is iterative as new risks may evolve or become known as the project progresses through its life cycle, Risk identification should be done as early as possible in the project lifecycle PMI (2009).

Risk identification sets out to identify an organization's exposure to uncertainty. This requires an intimate knowledge of the organization, the market in which it operates, the legal, social, political and cultural environment in which it exists, as well as the development of a sound understanding of its strategic and operational objectives, including factors critical to its success and the threats and opportunities related to the achievement of these objectives (IRM 2002).

Risk identification is a vital step as the other steps in the risk management process such as analysis and response are only successful if potential risks are identified properly (To Akeley and Ling 1991, Wang et al. 2004). Chapman (2011) mentions the purpose of this step as to identifying both the threats to the business with the potential of reducing and removing the likelihood of the business reaching its objectives, and the opportunities, which could enhance business performance.

3) Risk analysis

The primary purpose of risk analysis is to gain understanding of the risks by assessing both the threats and the opportunities to the business, in terms of their probability, impact and other attributes of the risk (ISO 31000, KPMG 1998, Chapman 2011).

Risk analysis aiming at identifying and assessing the probability of the risks and their impact on project outcomes, it starts with the quantitative and qualitative evaluation of expert/analyst judgment about probability and impact of the risks based on their experience. Once the risk has been identified, there should be an assessment of its level and prioritization. This process analyses the qualitative and quantitative information of the risk description, probabilities and impacts. PMBOK Guide 5th_ed.

Qualitative analysis

Qualitative risk analysis is the process of reviewing and prioritizing risk events and determining the probability and corresponding impact on project objectives (Kerzner, 2013).

Qualitative risk analysis assesses the impact of identified risks using their relative probability or likelihood of occurrence, the corresponding impact on objectives if risks occur, as well as other factors such as the time for response and the organizations risk tolerance associated with the project constraints of cost, schedule, scope, and quality. Such assessments the attitude of the project team and other stakeholders to risk PMBOK Guide_4thEd.

Once major risks have been identified and compiled in a list, a qualitative risk assessment should be conducted and entered in the risk register. The first procedure is to give a short, clear

description of each risk to avoid ambiguity and confusion. After the risk has been described, it should be classified according to its source (there should be sufficient categories to cover as many risks as possible), and the adverse event that will produce the risk should be specified (PMI, 2013).

Quantitative Analysis

Quantitative risk analysis is the process of analyzing the effect of identified risks on the objective of the project numerically. It is performed on risks that have been prioritized via the qualitative risk analysis process as potentially and substantially affecting the project's competing demands. The process may assign numerical to those risks individually or evaluate the aggregate effect all risks affecting the project.

While the Qualitative Risk Assessment is a good tool to analyze individual risks, the Quantitative Risk Analysis analyzes the combined effect of the risks in the project. This is often the only accurate assessment of the overall risk exposure in the project and should be performed where necessary (Hillson, D. 2009). The following figure will precisely show the processes of quantitative analysis.

4) Risk response planning

Planning Risk Response is the process of developing options and actions to enhance opportunities and to reduce threats to project objectives. The key benefit of this process is that it addresses the risks by their priority, inserting resources and activities into the budget, schedule and project management plan as needed (PMI, Practice Standard for Project Risk Management, 2009).

The Risk Responses planning process determines effective response actions that are appropriate to the priority of the individual risks and to the overall project risk. It takes into account the stakeholders' risk attitudes, the conventions specified in the Risk Management Plan, in addition to any constraints, and assumptions that were determined when the risks were identified and analyzed. The objective of this Planning process is to determine the set of actions, which most

enhances the chance to the project success in compliance with the applicable organizational and project constraints (PMI, 2009).

Having identified and assessed risks, the next stage is to take action, to decide how to respond. The effectiveness of responses will determine whether the risk exposure of the organization is influenced for better or worse, resulting in increased or decreased threat and opportunity (Hillson, D. and Murray-Webster, R., 2005). The objective is to align residual risk to the chosen risk appetite or to maximize the benefits from a given opportunity. According to the priority given to the risk and the risk appetite we have, we may plan to use the following strategies.

Strategies for Negative Risks or Threats

Risk avoidance: is a risk response strategy whereby the project team acts to eliminate the threat or protect the project from its impact. Risk avoidance deals with the risks by changing the project plan or finding methods to eliminate the risks. However, risk avoidance in construction is generally recognized to be impractical as it may lead to projects not going ahead or a contractor submitting an excessively high bid for a project (Akintoye, A. S. and MacLeod, M. J., 1997).

Risk transfer: is a risk response strategy whereby the project team shifts the impact of a threat to a third party, together with ownership of the response. It involves shifting the responsibility to respond for risk to another party who is in the better position to deal with it. Risk transfer is not meant to eliminate or reduce risk. The transfer of risk can be achieved by using the relationship between client, contractor, subcontractor and insurer. Insurance is one way of protecting against loss in the event that a risk manifests itself (Lewis, 2011).

Risk retention: is about absorbing the effect of risk. Risks that have less significant effect and are repetitive can be effectively managed through retaining the responsibility lays on the owner of the project. There are two types of risk retention, i.e. passive retention and active retention (Rahman, 2013).

Risk mitigation/control: is a risk response strategy whereby the project team acts to reduce the probability of occurrence or impact of a risk. No risk should be avoided, transferred or retained without first checking to see, if, it is possible to reduce it and then retain the residual risk.

Strategies for Positive Risks or Opportunities

Exploit: The exploit strategy may be selected for risks with positive impacts where the organization wishes to ensure that the opportunity is realized. The organization wishes to ensure that the opportunity is realized. This strategy seeks to eliminate the uncertainty associated with a particular upside risk by making the opportunity definitely happen. Examples include securing talented resources that may become available for the project.

Enhance: the enhance strategy is used to increase the probability and/or the positive impacts of an opportunity. This strategy modifies the size of an opportunity by increasing probability
and/or positive impacts, and by identifying and maximizing key drivers of these positive-impact risks. Seeking to facilitate or strengthen the cause of the opportunity, and proactively targeting and reinforcing its trigger conditions, might increase probability.

Share: Sharing a positive risk involves allocating some or all of the ownership of the opportunity to a third party who is best able to capture the opportunity for the benefit of the project. Examples include forming risk-sharing partnerships, teams, joint ventures, etc.

Risk acceptance: is a strategy used for both positive and negative impact risks. It is either not possible to eliminate that risk from a project or the cost in time or money of the response is not warranted by the importance of the risk.

5) Risk Monitoring and Controlling

According to (Callahan, K.R. & Brooks, L.M., 2004), Monitoring and controlling risks is the process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, retiring risks and/or issues, contingency modification, and evaluating risk process effectiveness throughout a project. The process that systematically tracks and evaluates the performance of risk response actions against established metrics throughout the acquisition process and provides inputs to updating risk response strategies, as appropriate. Risk monitoring and control is not a problem-solving technique but rather a proactive technique to obtain

objective information on the progress to date in reducing risks to acceptable levels (Kerzner, 2009).

2.3. Empirical review

However, the construction industry in Ethiopia is in its early growth stage, there are some studies conducted regarding risk management practices of construction projects. Different researchers using different research methodologies in different geographic locations conduct the studies and this section will contain the review of some them.

(EWELINA G. , MIKAELA R., 2011) is a research titled Risk Management Practices in a Construction Project – a case study where its findings show that the Professionals in the construction industry are using some of the techniques described in the literature concerning RM. However, it is not implemented as holistically as it should be & in the expected level of standard as the employees are not aware of risk management properly. The research generally showed that unstructured form of risk management is to some extent used in the construction sector.

A study was conducted by (Salman A. , William C. , Rizwan U., 2014) in Alabama through survey method in order to assess the Risk Management Practices in the Alabama Building Construction Industry. Findings of the study found to show that the formal risk management techniques are moderately used by medium and large size building contractors in Alabama while small contractors rarely use these techniques due to lack of knowledge and expertise. In most situations, contractors perceive risk based on their intuition, experience and judgment. It also made clear that the main barriers preventing implementation of risk management in Alabama are lack of knowledge and doubts about the suitability of risk management techniques; sophisticated nature of these techniques compared to project sizes; and human/organizational resistance.

(Frezewd, 2016) On his study, the practice of project risk management in Batu and Dukem Town water supply projects found that the risk management is not implemented properly in that the project does not have a carefully prepared plan for risk management, policy or guideline that guides the process to handle uncertainties that the projects may encounter. His findings depicted that risk identification and analysis are undergone without a plan and not recurrently. Moreover,

the findings tell us that there is monitoring and control. In general, the result shows that there is an ad-hock manner of risk management, which is very poor.

(Kalkidan M., 2017) On her study, Assessment of Project Risk Management Practices in Real Estate Projects in Addis Ababa conducted in a descriptive method found that there is a poor practice in terms of developing a policy or a guideline. Risk management is not treated as a continuous process in these projects. It is also found that there is no exclusively assigned responsible person to handle the risk management process therefore; the burden happens to lay on the project manager. The project team members do not participate in any of the risk management processes. Risks are not identified and analyzed appropriately and no risk register is prepared. Moreover, projects are missing out opportunities only focusing on identifying and mitigating negative risks and planning only for threats and disasters. Overall the risk management is being practiced very poor and a huge gap is noticed between what should be theoretically applied and what is actually being practiced.

A study (Manalebih M., 2018) conducted through a descriptive method to assess the risk management practices in World Vision Ethiopia Wash construction project in terms of the five major risk management processes: risk planning, risk identification, risk analysis, risk response, and risk monitoring and control processes. The study found that, the project has a project risk management plan which is prepared with the participation of proper stockholders though; it doesn't include environmental factors as input for the uncertainty management. The findings also accentuates that characteristics of the risk that are considered before analyzing the identified risk result is lower and it shows that risks are not characterized before analysis. Regarding the process of risk monitoring and control, it happened to be encouraging that risks are properly monitored and well controlled. However, there is no responsible person or department to manage the project risk independently. Generally, the risk management in the WASH project is practiced relatively in a better way however, it still lacks a formal structure and coherence.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1. Introduction

This section will be viewing the research design, population and sampling, sources of data, data Collection method and methods of data analysis including the data processing and data analysis methods to be used.

3.2. Research design

Research designs are plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis (Creswell, 2009). These is research is a descriptive type of research as the purpose of the study is to describe a particular phenomenon at a particular point in time which have a cross-sectional nature.

Creswell (2009), there is more insight to be gained from the combination of both qualitative and quantitative research than either form by itself. To be able to incorporate comprehensive representation, Hence, the researcher tried to use both qualitative and quantitative data analysis methods in order to have a sound and credible result.

3.3. Sampling procedure

The sampling design that was employed for this study is a non-probability sampling. A non-probability sampling provides with an information-rich case study in which it enables to explore the research question and gain theoretical insight (Saunders, Lewis &Thornhil 2009). Purposive sampling would best fit for this study, as our sample size is relatively small. Purposive / judgmental sampling is often used when working with small population and enables us to select cases that best fit to answer the research questions and meet objectives (Saunders et al., 2009). Hence, accordingly 55 respondents were chosen among 107 employees of contractors and/or sub-contractors and consultants, which is the total population.

3.4. Data collecting method

Firsthand information was collected via questioner and interview, as sources of secondary data published & unpublished articles, office documents & information form internet was used as necessary. The quantitative data collected through questionnaires was then compiled on SPSS 21 to be interpreted as to draw conclusions.

3.5. Method of data analysis

Data was analyzed in harmony with method of data collection. Therefore, data collected via questioners was analyzed by quantitative technique of analysis whereas data obtained from secondary sources of data was summarized using qualitative technique of analysis.

3.6. Ethical considerations

All participants were notified of their rights according to research ethics process. It will be made clear to the participants that their participation in this research was voluntarily and anonymous. To ensure confidentiality, the process of data gathering and processing will be anonymous. Further, the data was analyzed without identifiers. The data collected was of official nature and involve information of confidential nature; it was declare in the questionnaire that all data collected was for research purpose only. Regarding the feedback participants was informed that no data was sent individually and will be available only in the dissertation format.

3.7. Description of the study area

The study is conducted on a construction project which is led and owned by an organization called Addis Ababa Housing Construction and Development Agency. The agency is the client of the project which is surveyed. It has number of projects in the city in different places. Currently 102,468 20/80 houses are being constructed in three packages as documents show. Of the projects located in different places this research focused only on Bole Arabsa-6. Bole Arabsa-6 is a site being operated by two consultants MGM and SG each having their own specific contractors and buildings to build. MGM consultants is constructing a total of 55 building consisting of 4,260 houses which are G+4 and G+7 types. It has 23 Engineers involving in the

project. SG consultants is constructing a total of 61 buildings consisting of 3,721 houses, thus are of G+4 and G+7 type building. 27 Engineers are currently involving in the project.

CHAPTER FOUR
RESULT AND DISCUSSION

4.1. Introduction

This chapter covers the analysis and interpretation of the data collected from the questionnaire respondents and the response of interviews with different stakeholders, the project manager and construction manager in the project, Bole Arrabsa-6, the project coordinator from the client and the deputy project manager and electrical works from the consultant companies, SGM and GM. The researcher collects the data through questionnaire and semi structured interview. In order to analyze the data collected through the questionnaire SPSS 21.0 software is used and descriptive analysis is made up on the interview. Descriptive analysis of the data is presented in the forms of percentage, mean, standard deviation and for some of the data frequency. The central tendency, mean, of each factor is also calculated and interpreted based.

4.2. Response Rate and demographic Information

Primary data was collected through questionnaire and interview. The questionnaire contains 26 closed ended questions and it was given to 55 respondents from SGM and MG consultants, the contractors and from the consultant. In addition, the researcher also interviewed the project manager and construction manager in SGM and MG, from the consulting company, the deputy project manager and electrical works and from the client side the project coordinator as a means to collect primary data.

The questionnaires were distributed to 55 Engineers working in the project, Bole Arrabsa-6. 46 questionnaires were properly completed and returned which gives a response rate of 83.64%.Four questionnaires were discarded due to missing information (7.27%). The remaining 9.09% or 5 questionnaires were not returned. The questionnaires were distributed to 55 workers of almost similar field though they might have different qualifications.

The analysis and interpretation of the collected data is presented below.

Only 4.3% of the respondents were female while 95.7 % of the respondents were male, a situation testifying the findings of some researches like (Amaratunga, D., et.al, (2005)) as cited by Hadush that the construction sector is a male dominated sector. The respondents were from different levels of educational status of those 93.5% were BSC degree holders and the remaining 6.5% were postgraduates. We can say that the respondents have reasonable experience in the construction sector in that 82.6% of them have worked for more than two years of which 65.2% have experience ranging from 3 to 7 years, 17.5% worked 9 to 12 years and the remaining 17.5% have less than three years of experience.

Table 1 Descriptive statistics: Age, Gender and work experience of respondents respectively

	Frequency	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30 Years	23	50.0	50.0	50.0
	31-35 Years	20	43.5	43.5	93.5
	36-40 Years	2	4.3	4.3	97.8
	41-45 Years	1	2.2	2.2	100.0
	Total	46	100.0	100.0	
	Female	2	4.3	4.3	4.3
	Male	44	95.7	95.7	100.0
	Total	46	100.0	100.0	
	<3 Years	8	17.4	17.4	17.4
	3 - 7 Years	24	52.2	52.2	69.6
	8-12 Years	10	21.7	21.7	91.3
	13-18 Years	3	6.5	6.5	97.8
	Above 18 Years	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

Source: own survey, 2019

4.3. Results

4.3.1. Risk management practice

The second part of the questioners directly related to the team and objective of the research. The introductory questions focus on general issues regarding risk management practices of the project under study. Five point Likert scale choices were given where1represents strongly disagree, 2 =disagree, 3=neutral, 4=agree and 5=strongly agree, for the respondents to express their thoughts about the risk management practices in the project they are involved.

Using the study as a reference (Salman A. & Rizwan U., 2014) While evaluating these results, it is inferred that the average value below 3.0 indicates that the frequency of practicing these techniques is from "occasional to never" following the responses given as uncertain to strongly disagree and average value above 3.3 will be indicating that the frequency of implementing these activities is better than occasional, from usually to always.

Table 2 Descriptive statistics: General risk management practices

	N	Mean	Std. Deviation
A policy or guideline recommends how to manage unexpected uncertainties.	46	3.15	1.095
The project has a defined or standard risk management process.	46	3.04	1.173
Responsible person or department is assigned to handle risk.	46	2.87	1.240
Risk management is treated as a continuous process in the project.	46	2.83	1.235
Valid N (list wise)	46		

Source: own survey, 2019

As the table above is showing the responses collected from the respondents about the existence of policy or guideline which will direct the risk management of the project has given us a mean value of 3.15 where the standard deviation became 1.095 which could be taken as that there is uncertainty whether a policy or guideline which guides the risk management process in the project under survey exists or not in an average bases.

Therefore, from the above result we can see that the prevalence uncertainty among the staff that a policy or guideline exists however practically no policy or guideline exists.

Regarding having of a defined or standard risk management in the project they are participating, the average response we got is 3.04 implying that there still is confusion or no clarity about the presence of defined or standard risk management within the project. The responses received are with large deviation from the mean with an exact figure 1.173. A result found by (Getachew, 2017) majority of the respondents remained uncertain that there exists formal procedure/guideline of risk management in their respective companies.

Hence, it can again be observed that most of the respondents are not certain about the existence of formal procedure/guideline though practically there is no formal procedure concerning risk management.

Responses about responsible person or department assigned to handle risk scored an average value of 2.87 with 1.240 deviations of responses clearly telling that there is no responsible body specifically assigned to entertain risk that will happen to the project. (Frezewd, 2016)Also mentioned that he noticed majority of the respondents disagree to the question implying there is no specific department or person who is assigned to the projects to manage risk.

Results from interview also confirmed that there is no one person or department assigned to handle uncertainties.

Therefore, as the above results clearly show the organizational structure of the company does not have a risk management department.

The next question about general risk management practices of the project asking if risk management is treated in an iterative manner the average of the responses was found to be 2.83 with deviation of responses 1.235 plainly showing that risk management is not treated as a continuous process. As the finding by (Akintola A., et.al, 1997) risk management therefore should be a continuing activity in project development, from inception and throughout the life of the project.

In contrary to what is found from the questionnaire, results of the interview made with the senior construction manager and site manager let the researcher understand that there is nothing to call a system regarding risk management in the projects as they are not using a standard or documented risk management approaches. In addition, there is no designed policy or guideline to help the processes. As the interviewees mentioned there is an ad-hoc manner of risk management in the projects.

Table 3 Descriptive statistics: Uncertainties that occur within the project are mostly handled by

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	The consultant	16	34.8	34.8	34.8
	The client	15	32.6	32.6	67.4
	Special team for RM	8	17.4	17.4	84.8
	All participating teams	7	15.2	15.2	100.0
	Total	46	100.0	100.0	
Risk management implantation stage					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Conceptual stage	22	47.8	47.8	47.8
	Planning stage	8	17.4	17.4	65.2
	Implementation stage	16	34.8	34.8	100.0
	Total	46	100.0	100.0	

Source: own survey, 2019

The table above is depicting the responses given to the question who mostly handles uncertainties that arise to the project during implementation the frequency shows that uncertainties within the project are primarily handled by the consultant 34.8% (16), of the respondents response the client is the second frequent stakeholder involved handling risks with 32.6% (15) frequency, while the special team for risk management and all participating team members takes care of risks less frequently, 17.4% (8) and 15.2% (7) respectively. From the above figures, it can be noted that consultants are the one that mostly handles uncertainties while

client handles uncertainties sometimes however there the special team for risk management and all participating team members do not involve in the risk management.

From her key informant interview (Lidya, 2017) found that risks are generally shared between client and contractor.

The respondents stated their perceptions on, at which stage risk management is implemented. From there responses it is inferred that risk management is most frequently as 47.8% (22) implemented at the conceptual stage, it is then implemented in the project implementation stage second frequently as the figure 34.8% (16) is loudly speaking, the stage where risk implementation is performed least frequently is the planning stage where the frequency reads 17.4% (8). From the figures, it can be observed that risk management is implemented at the conceptual and implementation stages as most of the respondents about 47.8% & 34.8% respectively chose thus stages. As the research, conducted by (Frezewd, 2016) found risk management is implemented at the implementation stage of the projects.

Overall the above results are implying that the risk management practice is not performed as one of the important issues in managing the project and that it is being implemented in a very random way.

Table 4 Descriptive Statistics: risk planning

	N	Mean	Std. Deviation
There is systematic approach or careful planning done to perform risk management in the project.	46	2.43	1.377
Relevant stakeholders are involved in the planning and performing of managing risk.	46	2.96	1.173
An expert judgment or meetings are considered while planning for risks that might occur in the project.	46	2.61	1.105
Environmental factors are included as an input to plan for uncertainties.	46	3.63	.951
Team members within the project receive training or have enough knowledge about how to handle uncertainties.	46	2.96	1.173
Risk management plan is incorporated with the project plan.	46	2.63	1.123
Valid N (listwise)	46		

Source: own survey, 2019

From the previous table we can see that the central dispersion of the responses received from respondents to the question if there is a systematic approach or careful planning applied to perform risk management in the project has become 2.43 an average value manifesting that there is no or poor systematic approach or planning performed to manage risks in the project. Result found by (Frezewd, 2016)contradicted the result of this paper mentioning that there is no plan that is carefully designed on how to manage risk as most of the respondents disagreed.

Are relevant stakeholders involved in the planning performance of risk management was the next question asked, to this question the central tendency of responses collected was 2.96 giving an implication that relevant stakeholders are not involved exhaustively in the project or the planning is done by the project team. Distance of individual responses was 1.173 depicting how diversified the responses were. Unlike what has been found (Getachew, 2017) in his paper implied that it can be seen that majority of the respondents agreed that stake holders were involved in planning risk management.

To identify which techniques are most used within the project, respondents were asked if expert judgment or meetings are considered while risk planning and the answer was 2.61an average value of the responses with 1.105 deviation figuring out that both meetings are not held or apprehended that extensively useable knowledge could not be gathered from experts while planning.

However, result of the study (Frezewd, 2016) indicates that majority of the respondents agree to that meetings are held to gain / gather knowledge from experts in the area during planning in their respective companies

An average response of 3.63 with deviation 0.951 was found from the responses of the respondents on the issue of inclusion of environmental factors as an input for project plan. The mean value shows that environmental factors are given enough attention while planning the risk management. (Getachew, 2017) asserted in his study that it can be seen that majority of the respondents agreed that environmental factors were included in planning risk management.

Regarding trainings given to members within the project or the level of knowledge they have on how to handle uncertainties the responses received scored an average value of 2.96 telling that the knowledge or awareness among project team members is very little and/or there are very little or no trainings given to the staff concerning risk management. (Getachew, 2014) found that most of the consultants understand risk management trough reading and practice however insignificantly little no of clients try to understand risk management trough reading.

The average response received for the question whether risk management plan is incorporated with the project plan has become 2.63 with a standard deviation of 1.123 holding the meaning that project plan doesn't incorporate project risk plan or that very less attention is given towards incorporating risk management plan to the project plan.

Plans to manage risks are included as part of the project plan as (Frezewd, 2016). A result from the interview plainly explains that there has never been any risk plan done to control risks.

Table 5 Descriptive Statistics: Risk identification

	N	Mean	Std. Deviation
There is systematic approach or careful planning done to perform risk management in the project.	46	2.46	.959
Valid N (list wise)	46		

Source: own survey, 2019

Table 6 Descriptive Statistics: techniques used for risk identification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Document review	23	50.0	50.0	50.0
	Info Gathering	7	15.2	15.2	65.2
	Check list	8	17.4	17.4	82.6
	Expert Judgment	8	17.4	17.4	100.0
	Total	46	100.0	100.0	

Descriptive Statistics: encountered risks					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Technical	16	34.8	34.8	34.8
	Financial	15	32.6	32.6	67.4
	Human	15	32.6	32.6	100.0
	Total	46	100.0	100.0	

Source: own survey, 2019

To questions raised related to risks identification the following results were found. A mean value of 2.46 is found for the question asking if there is a systematic approach or careful planning done to perform risk identification conveying information that little or no systematic approach or planning is done to perform the risk identification process.

To the question which method is primarily used to identify risks the respondents agreed that document review is used as most frequently as 50% (23), information gathering was chosen at second place with a frequency of 15.2% (7), while the checklists and expert judgment were ranked as the lest frequently used each having a value 17.4% (8). From the analysis above it can be inferred that document review is the primarily used technique in the risk identification where expert judgment and checklist are used at the second position.

Result found by (Lidya, 2017) depicted that ranking the importance of risk based on past experience is the method primarily used to identify risks that might occur next assessment based on expert judgment and Quantitative assessment are used respectively.

The respondents gave us there thoughts about what sources of risks are encountered usually as per their responses technical risks are sources of risks that usually happen to their project with the value of frequency of 34.8% (16), the next most frequent sources of risks that usually happen are human and financial risks 32.6% (15) each.

As observed from the study conducted by (Frezewd, 2016) human related issues and financial factors are the primary and secondary sources of risks.

As perceived from the interviews in the project being assessed risks has never been identified early at the startup phase and there are no methods used to identify risks as they are only noticed after occurrence

Table 7 Descriptive Statistics: Risk analysis

	N	Mean	Std. Deviation
Characteristics of the risk are considered before analyzing the identified risk.	46	3.35	.766
There is a measurement system to analyze the risk.	46	3.00	.843
Project documents are updated after assessment of the risk that might occur.	46	3.15	.918
Valid N (listwise)	46		

Source: own survey, 2019

Related to risk analysis some questions were incorporated in the questionnaire and the first was whether risk characteristics were considered before analyzing the identified risks where the central tendency of the results happened to be 3.35 presenting that risk characteristics are considered before analyzing the identified risks.

In consideration of the result of (Frezewd, 2016) we could see that risk characteristics are considered before analyzing identified risks.

For a question if there is a measurement system to analyze risks the average result scored 3.00 with a very large gap between individual responses ranking up to 0.843 testifying that there is uncertainty whether measurement system exists or not. (Akintola A., et.al, 1997) in his study mentioned that risk catalogue has been described as a combination of threat and vulnerability which occurs when the two conditions overlap. A threat is something which has an adverse effect on the activities of an organization. Vulnerability is characterized by a physical system which, while being independent of any specific threat, allows a threat to be exploited. The impact of risk from threat catalogue and the frequency of occurrence of risk from the vulnerability catalogue determine the level of exposure to risk.

Concerning updating of project documents after assessment of risks the respondents gave results where the average value became 3.15 pointing that there uncertainty is prevalent whether documents are appropriately updated after assessments made to the risk identified or not. However, previous findings from (Frezewd, 2016) mentions that updates are made to documents after probability of occurrence is assessed.

The responses collected to identify which techniques are used to assess the probability of risk occurrence ranked ranking the importance of risks based on past experience at the first place with frequency of 34.8% (16), Quantitative assessments with 32.6% (15) at second place, Qualitative assessment based on historical data with 17.4% (8) at third place and the remaining 15.2% (7) was ranked least which is Subjective probability assessments based on expert judgment. A result demonstrating that ranking importance of risks based on experience and quantitative assessment techniques are used to the probability of risks.

Interview results speak loud that there is no risk analysis made on the ground as there are no identified risks and they have no defined measurement criterion.

Table 8 Descriptive Statistics: Risk response

	N	Mean	Std. Deviation
There is a well-developed strategy within the project to respond to risk.	46	2.98	1.183
Factors such as budget, schedule and resources are considered while responding to risk.	46	3.98	1.022
Valid N (listwise)	46		

Source: own survey, 2019

A mean value of 2.98 was found from the responses of respondents regarding the question is there a well-developed strategy to respond to risks with an implication that there is no well-developed risk response strategy within the project.

In her result (Yemaryam, 2018) found that unlike the result found here there is well-developed strategy with adequate options to handle risks that occur inside the projects.

Concerning whether the risk response takes in to account factors like finance and schedule the responses found scored 3.98 giving a clear figure that the mentioned and other factors are given enough attention in the risk response. Confirming the result found here (Frezewd, 2016) plainly described that budget, schedule and resources are considered while responding to risk.

From the interview, one of the issues grabbed was that some factors are considered while responding to risks. Of the factors budget is given the highest priority and schedule is a factor given a very less attention even in while responding to uncertainties.

Table 9 Risk mitigation strategy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Control	38	82.6	82.6	82.6
	Avoidance	8	17.4	17.4	100.0
	Total	46	100.0	100.0	

Source: own survey, 2019

From the mitigation strategies according to the respondents the control method is most used having 82.6% (38) and the next strategy used less frequently is avoidance with the remaining value of 17.4% (8). Therefore, from the above results it could be inferred that risk control is primarily used risk mitigation strategy and avoidance is the next used risk mitigation strategy. (Salman A. & Rizwan U., 2014) stated in their findings that risk reduction is the popular and most frequently practiced method among building contractors in Alabama and after risk reduction the next favored method is risk elimination. Nevertheless (Williams, C. and Heims, 1989) revealed that risk avoidance in construction is generally recognized to be impractical as it may lead to projects not going ahead or a contractor submitting an excessively high bid for a project.

Hence the project is using the afore mentioned risk mitigation strategies are a not scientific in that their implementation lacks considering risk appetite of the companies as risks should only be retained based on the risk appetite a company owns.

Table 10 Descriptive Statistics: Risk monitoring and control

	N	Mean	Std. Deviation
Based on the current result of the project are risks monitored and controlled well.	46	3.33	1.136
The Project monitor, control and review the process for risk management to ensure that it complies with standards and procedures.	46	3.15	.918
Information available or the history of the project is used to supplement to control risk.	46	3.50	1.261
Risks that occur within the project are controlled in a way that goes with the goal and objective of the project.	46	3.00	1.174
Valid N (listwise)	46		

Source: own survey, 2019

In order to assess the risk monitoring practices some questions were incorporated in the questionnaire.

The respondents gave responses with a central tendency of 3.3 revealing that there is a proper monitoring and control with regard to the current result. In contrast to the result I found (Frezewd, 2016) found that project risks that may happen are not well monitored and controlled.

To the question about Project monitor, control and review the process for risk management to ensure that it complies with standards and procedures the results found gave an average value of 3.15 with an implication that average the respondents are not clear whether project monitoring, control and review process for risk management is done in compliance with standards and procedures or not. (Frezewd, 2016) in his study found an adverse result which says that the monitoring, control and review process are not performed as to fulfill the standards and procedures.

The average value we had from the responses collected regarding information availability or history of the project being used to supplement the risk control was found to be 3.5 with giving an impression that information is available and the risk control process is supplemented by

project history. (Frezewd, 2016) found a result that aligns with result i found, confirming that past history and existing information are used as an input while controlling risk

The last question raised on the questionnaire was whether risks occurring within the project are controlled in a way that goes with the goal and objective of the project and the average result received happened to be 3.00 giving the image that the way risks are controlled is in alignment with the project goal and objective is found to be uncertain on an average bases. The result found by (Frezewd, 2016) again opposed the result I found in that it explains that the controlling mechanism that is being implemented to control risk does not comply with the objective and goal of the projects.

4.3.2. Response on interview about challenges of implementing risk management

Regarding the challenges that are encountered in implementing the risk management process practice in 20/80 condominium housing project, at Bole Arabsa site the interviewees tried to mention the major challenges critically starting from the level of knowledge, across the project participants and all stakeholders, which is a little. Insufficient attention given towards risk management. Risks are always dealt after their occurrence because there is clearly prepared risk register though; (Kerzner, 2009) tells that risk management is a proactive rather than a reactive concept.

A risk management practice which is not scientific or trying to manage risks in a very traditional and unworthy manner. Risks are always retained without knowing that they are being retained, costing the project and the country at large a lot. (Akintoye, A. S. and MacLeod, M. J., 1997) Cited that Risk retention, according to Williams and Heims, becomes the only option where risk prevention or transfer is impossible, avoidance is undesirable, possible financial loss is small, probability of occurrence is negligible and transfer is uneconomic.

Poor documentation making hard to find historic data of relatively similar previous projects and hindering the learning process. Unavailability of experts with the expected qualifications in the area. Not having a worthy risk plan or a risk plan at all. The very poor evaluation and monitoring experiences all over the project. Monitoring and evaluation can help in identifying the conditions

under which a project is likely to succeed or falter. it can serve as an early warning system for potential problems, and it can lead to ideas for potential remedial actions. As such, effectively delivered M&E results often provide the basis for improved decision making.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATION

5.1. Introduction

This chapter presents the summaries of the findings, conclusions derived from the analysis and the recommendations that are suggested that will help to improve the risk management practices of the Addis Ababa housing development and construction agency.

5.2. Summary of findings

Based on the analysis of chapter four, the following findings were established and are outlined here under: According to the response of the respondents on the general questions on project risk management practice of the projects, the analysis revealed that there is no policy or guideline that is stated for the projects, which directs uncertainty management. Standard and defined risk management process as well does not exist within the projects. According to the analyzed result, however risk management is continues process throughout the life cycle of the projects, it is not being performed as an iterative process and is usually applied at the conceptual and implementation stage of the project life cycle. From the analysis another issues grasped are that no person or department is particularly assigned to manage uncertainties within the projects that the consultant and/or the client take care of risks that may happen.

From the responses collected from respondents and the analysis made regarding the practice of project risk planning process, the next stated findings are inferred: Risk plan is not crafted appropriately designed for the projects to overcome or handle uncertain events that may arise and the risk planning process does not involve relevant stakeholders. The planning neither uses expert judgment nor meetings. The other basic things, which were supposed to be secured though found not secured, were the team members having enough knowhow about risk management or training arrangements to enhance their knowledge and the risk management plan is not incorporated within the project plan.

The findings related to risk identification process illustrated that the identification process is not planned. Document review is the principally used risk identification technique. Financial and human related issues are observed to be the major sources for risks to happen and happening in the project respectively.

The interpretation given to the responses concerning risk analysis conveys the next findings: Risk characteristics are considered before analysis is made to the identified risks, the analyzing process has its own measurement system and the project documents are updated in accordance with the result of the assessment.

From the analysis of responses of respondents about the risk response process it was found that there is no well-developed, scientific risk response technique within the project considering all the opportunities of risk response at hand however, different factors like budget, schedule and others are kept under consideration while responding to risk. The risk mitigation strategy, which is most likely used, is control or reduction method and avoidance is a strategy, which rarely used.

Findings on the monitoring and control practices throughout the project conveys that project risks are monitored and controlled not so well and the controlling mechanism is not also implemented evidently in a way that it complies with the objective and goal of the projects. Information that exists within the projects and history of the projects are used as an input to take an action to control risks.

5.3. Conclusion

The aim of this research was to examine the actual project risk management practice of 20/80 condominium housing project in Bole Arrabsa site. In order to discourse the primary aim of the research; the following key research conclusions are drawn based on the findings.

Form the findings of the questionnaire and interview it would be inferred that project risk management is not an issue, which is given enough attention in the construction sector where there are many uncertainties. The project that was surveyed is generally recording a poor performance in most and crucial parts of the management process.

However, there are better experiences performed in developing structured risk management process with supporting policies and procedures, the performance concerning planning is found to be very poor that is not performed systematically and carefully with the involvement of relevant stakeholders. The degree of involvement in risk management activities of members participating in the project is too little nevertheless the contractors handle most uncertainties.

The risk identification process in the project is not resilient enough that it primarily use document review as a risk identifying technique where there is very poor documentation and document preservation culture. Risk analysis process is one of the better-performed activities in that it recognizes the characteristics of risks prior to analysis and clearly specifies the measuring criterion for the risk analysis. However, the risk repose process is relatively weak as there is no well-crafted risk response strategy. Finally, risk mitigation and risk monitoring, control and documentation performances are wicked in the project under survey.

Treatment of risk management as a reactive procedure rather than a proactive activity is the major challenge encountered as a result of very little knowledge and awareness about risk management throughout the staff, client and other stakeholders.

5.4. Recommendation

As mentioned at the beginning of the study the researcher hereby recommends some things that she thought would be important to fill the gap between what is being practiced in the project and what is set theoretically. The recommendations jotted under also address the major challenges mentioned by the interviewees.

Since knowledge is the prime key to manage things and is unquestionably crucial for everything in the world, I would recommend the housing development and construction agency to strive more through giving formal and on job trainings to fill the knowledge and skill gap of its employees and relevant stakeholders particularly in relation to risk management. In addition, this will be helpful to make risk management culture throughout the organization. However, this should also be reinforced with a clear structure to manage uncertainties.

Designing policies or guidelines will play an irreplaceable role to manage uncertainties in smooth way. Hence, there should be a well-prepared policy or guideline to manage risks. There should also be a person or department particularly assigned to run the risk management.

Planning should be granted adequate attention since, an appropriate planning process will enable decision making related to identification, analysis, response mechanism and monitoring, control and reporting of risks throughout the project. Efficient and workable plan will smoothen all the other activities by providing information regarding goal and objectives of applying a risk management.

As unidentified risks could not have planned mitigation strategy since they are unidentified and might be hazardous to our project, therefore I recommend risk identification should be done with a very great care that it will be exhaustively and should be done with the involvement of all stakeholders. The risk register, which is the output of the risk identification process holding very detailed information about the identified risks, should be documented well.

Finally, the researcher recommends for further research to include and relate other essential issues of project management such as performance. As the scope of the study is limited only to Addis Ababa housing development and construction 80/20 condominium, Bole Arrabsa-6 project the generalization of the result is limited. Therefore, it is suggested that a wider research need is made on other project areas as well.

References

Ahmed, S. M., and Azhar, S. (2004). *Risk Management in the Florida Construction Industry*. Proceedings of the 2nd Latin American and Caribbean Conference for Engineering and Technology, Miami, Florida, June 2-4.

Akintoye, A. S. and MacLeod, M. J. (1997). Risk analysis and management in construction. *International Journal of Project Management* , 31-38.

Amaratunga, D., et.al. ((2005)). Construction Industry and WomenA Review of the Barriers. *Research Institute for the Built and Human Environment* , 559-571.

Bufaied, A. (1987). *Risks in the Construction Industry: their Causes and their Effects at the Project Level Ph.D. Thesis,.* Manchester: University of Manchester, UMIST.

Bunni, N. G. (2003). *Risk and Insurance in Construction*; London and Newyork: Spon Press.

Callahan, K.R. & Brooks, L.M. (2004). *Essentials to strategic project management.* John, Wiley &Sons, Inc.

Erme, M. W. (2006). *Shelter Development: Increasing Affordability of Housing to the Low-Income Families in Addis Ababa, Ethiopia* .

EWELINA G. , MIKAELA R. (2011). *Risk Management Practices in a Construction Project – a case study.* Göteborg, Sweden: CHALMERS UNIVERSITY OF TECHNOLOGY.

Ewelina G. and Mikaela R., . (2011). *Risk Management Practices in a Construction Project – a case study.* Sweeden, Göteborg: Chalmers University of Technology.

Ferezewd. (1111).

Frezewd, A. (2016). *practice of project risk management in Batu and Dukem town water supply projects* . Addis ababa: MSc thesis Addis Ababa University.

Getachew, Y. (2017). *Analysis of risk management practices in construction companies: focuing on yotek construction, flintstone engineering and akir construction.* Addis Ababa.

Getachew, Y. (2014). *The practice of construction risks management through insurance in the ethiopian federal road projects.* Addis Ababa.

Gliem, J. A. and Gliem, R. R. (2003). Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales. *Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education.* Columbus, OH: The Ohio State University.

Guesh, D. (2017). *The Assessment of 20/80 Condominium Housing Projects in Addis Ababa: The case of Bole and Akaky Kaliti Sub cities.* Addis Ababa.

Hillson, D. and Murray-Webster, R. (2005). *Understanding and managing risk attitude, 2nd ed.* Gower: Publishing Ltd., Burlington, VT.

Kalkidan M. (2017). *Assessment of Project Risk Management Practices in Real Estate Projects in Addis Ababa.* Adiss Ababa.

Kerzner, H. (2009). *Project Management. A Systems Approach to Planning, Scheduling and Controlling (10th ed.).* John Wiley & Sons, Inc.

Klemetti, A. (2006). *Risk Management in Construction Project Networks.* Espoo: Helsinki University of Technology Laboratory of Industrial Management Report.

Kothari, C. R. (2004). *Research Methodology, 2nd Ed.* New Delhi: New age international limited.

Lewis, J. P. (2011). *Project Planning, Scheduling and Control. (5th edn).,* . McGrawHill companies Inc.

Lidya E. (2017). *An Assessment On The Risk Management Practice Of construction Projects; Case Study Of Addis Ababa Saving Houses Development Enterpris* Addis ababa: MA project work Addis Ababa University.

Lyons, T. (2002). *Project risk management in the Queensland engineering construction industry.* Queensland University of Technology: Masters of Project Management Dissertation.

Manalebih M. (2018). *Assessing the practice of projct risk management: World vision Ethiopia Water, Sanitation & Hygine (wash) project.* Addis Ababa.

Ministry of Urban Development, H. a. (2014). *National Report on Housing & Sustainable Urban Development.*

PMI, P. M. (2009). *Practice Standard for Project Risk Management.* United Sates of America: Project Management Institute.

PMI, P. M. (2009). *Practice Standard for Project Risk Management.* United Sates of America: Project Manegement Institute.

Rahman, C. S. (2013). The Identification and Management of Major Risks in the Malaysian Construction Industry.

Royer. (2000). Risk Management: The Undiscovered Dimension of Project Management. *PM Network , 14*, 31-40.

Salman A. & Rizwan U. (2014). An assessmnet of risk managemnt practices in Alabama Building Construction Industry. *ResearchGate* .

Salman A. , William C. , Rizwan U. (2014). *An Assessment of Risk Management Practices in the.* Auburn, Alabama: ResearchGate.

Sanvido, V. G. (1992). Critical Success Factors for Construction Project. *Journal of Construction Engineering and Management* , 94-111.

Shen Jian-fei, Yi jing, Suanqiao . (2014). *Risk Management of Real Estate's Development and Construction Projects.* Beijing, P.R.China: School of Continuing Education North China Electric Power University.

UN-Habitat. (2008). *Ethiopia Urban Profile.*

UN-Habitat. (2012). *report on slums in developing countries.*

Williams, C A and Heims, . (1989). *RM Risk Management and Insurance.* New York.

Yimam, A. (2013). *Project Management Maturity in the construction industry of developing countries* . College Park.: the Faculty of the Graduate School of the University of Maryland.

Yemaryam M. (2018). *Assessment of project risk management practice in Akaki-ii, Debrezeit-iii, Dukem-ii, Mojo-ii and Ginchi-ii power transmission project, (ADDMG-1)*: Addis ababa: MA project work Addis Ababa University.

Appendix

Addis Ababa University College of Business and Economics School of Commerce

Masters of Art in Project Management

Dear Participants!

I am Fertuna Ferede; a MA student in Project Management at Addis Ababa University School of Commerce. As part of my MA thesis work, I am undertaking Assessment of Project Risk management Practice at Addis Ababa Housing & development agency. I kindly request you to participate in this research study by completing the attached questionnaire. In order to ensure that all information will remain confidential please do not include your name anywhere in the questionnaire. I also sincerely request you to respond to the questions as honestly as possible and return the completed questionnaires. Knowing that your time is precious please, take few minutes of your time to complete the questionnaire.

In case if you need any explanation here is my number 0921430728 or via edenferede@gmail.com.Thank you in advance for your cooperation.

Questionnaire

- Part I includes demographic of general information, part II includes close-ended questions while, part III includes open ended question where it allows you to elaborate the practice in your own words.
- Please attempt to answer all the questions.

Part I: General Information

Respond to the questions by ticking on the box only once that you prefer best

1. Age 20-30years ☐40 -50year ☐50-60years ☐ Above 60years50years ☐

2. Sex Female ☐ Male ☐

3. Level of Education: Diploma ☐ Degree ☐ Postgraduate ☐

4. Years of work experience:

Below 3 years ☐ 3-7 years ☐ 8-12 years ☐ 13-18 years ☐ Above years 13☐

Part II: Please indicate your opinion by marking a circle on the appropriate number for the five point scale questions and circle the letter of your choice for the multiple choice questions that best describes how you perceive the project applies project risk management where: Strongly Disagree = 1, Disagree = 2, Uncertain = 3, Agree = 4 and Strongly Agree = 5.

GENERAL QUSTIONS ABOUT PROJECT RISK MANAGEMENT

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
1	There is a policy or guideline that recommends how to manage unexpected uncertainties.					
2	The project has a defined or standard risk management process.					
3	Responsible person or department is assigned to handle risk.					
4	Risk management is treated as a continuous process in the project.					

5. Uncertainties that occur within the project are mostly handled by:

A. the project manager

B. the consultant

C. the client

D. a specialized risk management team

E. all teams participating in the project

6. Risk management is implemented at the

A. Conceptual stage of the project

B. Planning stage of the project

C. Implementation stage of the project

D. Closure stage of the project

RISK PLANNING

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
7	There is systematic approach or careful planning done to perform risk management in the project.					
8	Relevant stakeholders are involved in the planning and performing of managing risk.					
9	An expert judgment or meetings are considered while planning for risks that might occur in the project.					
10	Environmental factors are included as an input to plan for uncertainties.					
11	Team members within the project receive training or have enough knowledge about how to handle uncertainties.					
12	Risk management plan is incorporated with the project plan.					

RISK IDENTIFICATION

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
13	There is systematic approach or careful planning done to perform risk management in the project.					

14. The following method is primarily used to identify risks within the project:

A. Expert Judgment

B. Checklists

E .Assumption analysis

F. Document Review

C. Document Review

D. Information gathering

G. Other, please specify

15. Sources of risk that the project usually encounters:

A. Technical

B. Financial

C. Human

D. Other, please specify

RISK ANALYSIS

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
16	Characteristics of the risk are considered before analyzing the identified risk.					
17	There is a measurement system to analyze the risk.					
18	Project documents are updated after assessment of the risk that might occur.					

19. Which of the following techniques are used to assess the probability of risk occurrence in the project?

A. Quantitative assessments

B. Subjective probability assessments based on expert judgment

C. Ranking the importance of risks based on past experience

D. Qualitative assessment based on historical data

RISK RESPONSE

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
20	There is a well-developed strategy within the project to respond to risk.					
21	Factors such as budget, schedule and resources are considered while responding to risk.					

22. The risk mitigation strategy that is usually used in the project:

A. Control/reduction
B. avoidance
C. Transfer
D. Acceptance
E. Other, please specify

RISK MONITOR AND CONTROL

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
23	Based on the current result of the project are risks monitored and controlled well.					
24	The Project monitor, control and review the process for risk management to ensure that it complies with standards and procedures.					
25	Information available or the history of the project is used to supplement to control risk.					
26	Risks that occur within the project are controlled in a way that goes with the goal and objective of the project.					

INTERVIEW GUIDE FOR THE PROJECT MANAGER

1) Can you please tell me about risk management system in the project? Is there a standard risk management process, which is being followed with in the projects?
2) Is there a standardized or formal documented process on how to manage uncertainties within the project? What is the current practice of risk management within the project?
3) Are team members within the project aware on how to manage risk in a way that doesn‘t affect the objective or goal of the project?
4) Is there a special department or assigned person to handle uncertainties that occur within the life cycle of the project? At which stage of the project are risks managed in the projects?
5) Is planning done carefully on how to manage risk at your project? If yes, how do you plan and who is involved in planning process?
6) Are risks with a probability of happening identified early at startup phase? And what methods are used to identify them?
7) Are risks analyzed to assess their probability of occurrence and level of impact?
8) While taking action or responding to uncertain events within the project what factors are kept in consideration? Are factors such as schedule, budget and objective of the project considered?
9) What challenges until now has the project faced due to unmanaged risk?
10) Do you think managing risk and project success are related? If yes, how?