ADDIS ABABA UNIVERSITYCOLLEGE

OF BUSINESS

AND ECONOMICS SCHOOL OF COMMERCE

An Assessment on the Risk Management Practice Of construction Projects: Case Study of Defense house construction Enterprise.

By: Chelkeba Degaga

A project work submitted to Addis Ababa University College of Business and Economics School of Commerce in partial fulfillment of the requirements for the Degree of Masters of Arts in project management

June, 2020

Addis Ababa, Ethiopia

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Advisor: Adane Atara (PhD)

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Statement of Declaration

I, the undersigned, declare that this project work is my work and that all sources Of materials that are used for this study have been dully acknowledged.

Name: Chelkeba Degaga

Signature _____

Date _____

Letter of Certification

This is to certify that Chelkeba Degaga has carried out this research on the topic "An Assessment on the risk management practice of construction projects; A case study of Defense house construction Enterprise" under my supervision. This work is original in the nature and suitable for submission in partial fulfillment of the requirement for the award of Masters of Arts Degree in Project Management and the student has my permission to present it for assessment.

Advisor: Adane Atara (PhD)

Sign_____

Date._____

Addis Ababa University

College of Business and Economics

Department of Project Management Approval

This is to certify that this project work prepared by Chelkeba Degaga An Assessment on the Risk Management Practice Of construction Projects: A Case Study of Defense house construction Enterprise.Which is submitted in partial fulfillment of the requirements for the Degree of Master s 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:

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Advisor

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Internal Examiner

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Chair of Department or Graduate Programs Coordinator

Abstract

The performance of construction projects is considerably affected by project risks in terms of cost, time and quality. Risks within the housing industry aren't limited to construction projects as it is largely presumed. However, Defense construction companies aren't observed trying to cope up with them. The objective of the study to assess the risk management practice of Defense housing project in Shogole site. The study was 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 83 employees working as the contractor and consultant in the companies being involved in the project, questionnaires were distributed to 38 engineers working in different positions and interview was made with the 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 20. Data were summarized using tables and percentages. 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 threat management and no enough attention is given to risk getting 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 Defense housing project.

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

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Acronyms

PMBOK	Project Management Book of Knowledge
RM	Risk Management
RMP	Risk Management Process

CHAPTER ONE

INTRODUCTION

1.1 Back ground of the study

As considered by The Project Management Institute, risk is an unsure occasion or situation that, should it happen, will affect the accomplishment of the task's destinations. Each project has risk. A considerable lot of the present projects are inherently more complicated than those of yesterday's regarding their structure, innovation and asset requests, their money related and authoritative plans. Present day project are additionally acted in a continually evolving condition Which brought about trouble of foreseeing the future (Wiley & Sons, 2008).

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 et al.2011).

One idea which is generally utilized inside the field of risk the board is known as the risk the management procedure (RMP) and comprises of four fundamental advances: distinguishing proof, evaluation, making a move and checking the risk (Cooper et al., 2005).

Some projects perform many of the risk management activities at the early stage of the project life cycle. Although, new risks may become known as the project undertaking advances through its life cycle and recently recognized risk may drop out. Managing risk could be a tough task but an essential one. According to PMBOK, lack of proper risk management results in underperformance which is the opposite of any project's objective.

Construction projects can be flighty. Overseeing risk in construction projects has been perceived as a significant procedure in order to achieve project objectives in terms of time, cost, quality, safety and environmental sustainability.

This study will be done on a major construction project undertaken by the Ministry of National Defense. Defense house construction enterprise responsible for the construction of Army Hospitals, Depot, Camps, access roads and other infrastructure activities owned by the Ministry of National Defense. Henceforth it establishment, the enterprise has mainly been undertaking various infrastructural projects to satisfy of national defense infrastructural needs and work in the most remote and difficult areas of the company. In parallel, it has also been engaged in the construction of mega road, dams, irrigation infrastructures and buildings projects that have been undertaking in different part of the country.

Managing risk is an essential activity for every project's success. Especially in such kinds of large and country wide projects. Therefore, assessing the risk management practice of Defense house construction enterprise is of great importance. From the different projects undertaken by the construction company for this study the researcher have chosen the apartment housing project at shogole site.

1.2. Problem statement

Construction project are consistently one of a kind and risks raise from some of the various sources (Oyegoke & Pheng 2006). Construction projects involve multiple feedback processes. A great deal of members, people and associations are effectively engaged with construction project (Sterman et al 2004).

Large construction projects are exposed to uncertain environment due to such factors as arranging, plan and construction multifaceted nature, nearness of different premium gatherings (proprietor, advisors, temporary workers, providers, and so on.), assets (labor, materials, gear, and assets) accessibility, ecological variables, the monetary and world of politics and legitimate guidelines (Nerija & Audrius 2012) .

Risk is related to any project in any case the business and subsequently risk administration ought to bear some significance with any task supervisor. Risks vary between projects because of the way that each task is novel, particularly in the construction business (Gould & Joyce, 2002). Be that as it may, there are as yet numerous professionals that have not understood the significance of incorporating hazard the board during the time spent conveying the venture (Smith et al.,

2006). Despite the fact that there is an attention to risks and their results, a few associations don't move toward them with built up RM techniques.

Risks and uncertainties involved in construction projects, cause cost overrun, schedule delay and lack of quality during the progression of the projects and at their end. (Aibinu & Odenyinka, 2006) investigated and assessed the causes of delays in building projects in Nigeria. The authors pointed the poor risk the executives as one of the chief defer factors and reasoned that activities and inactions of construction venture members add to in general undertaking delays.

It’s evidential and many researchers have proved that poor risk management affects projects cost, schedule and quality aspect and also many significant but unnoticed areas of project. Some risks even threaten the completion of the project.

There are several methods of project risk management in common use. It is important to be clear about what you want from risk management and how it fits into your organization’s other processes and tailor your approach to suit. (Grey, 1999).

Using an effective and suitable risk management method is essential in an organization. There are many risk management options, so picking the right one may be difficult. The best option is ensuring that your company complies with the most recent and suitable one (Wanson, 2016). There are numerous approaches companies use today to manage risks. These approaches vary in terms of scope and complexity. The appropriate practice is determined by the organization’s industry, culture, resources available, regulatory environment, current risks faced, and the nature of the enterprise. (Redy, 2015).

Although managing risks from early stage of projects is important, it is equally important to manage risks throughout a project lifecycle. Risks arise at different stage of a project and pre identified high impacts risks might not be that of a risk going through the project life cycle. And risks that are thought to have minor impact might become more risky throughout the project life cycle. Some risks might even go insignificant and no more an issue. The environment continuously changes and through the project life cycle many things change that cause for project risks to also change. Therefore in managing risk, it is highly important to monitor and manage risks throughout a project life cycle.

Hillson (2009) state that, starting a project without clear goals is like going on a road trip without finalizing a destination. Any enterprise will have no idea where they are going and how to get there. And as a result, construction enterprise will end up wasting time, gas, and efforts. Just like this, starting a project with poorly defined goals will waste a lot of time, money, resources, and efforts.

Unrealistic deadlines are common and one of the biggest project management problems. On the one hand, clients want their projects to be delivered as quickly as possible, and in that hurry, they give an unrealistic or unachievable deadline. And clients also want their projects to be developed as efficiently as possible and without any bugs. Now, a successful project manager knows that asking the development team to meet an unrealistic deadline will only affect their productivity and morale (PMI, 2009).

As a project manager, any one need to emphasize a lot to ensure effective communication, whether you're seeking information, giving instructions, or asking questions. Implies, communication skill is one of the most useful assets anybody can have. In fact, the lack of proper communication or miscommunication is one of the most underrated project management problems that could really affect the successful delivery of a project. According to a survey, more than 57 percent of projects fail due to poor communication (Rahman, 2013).

Scope changes, also known as scope creep, is a problem that sneaks up all of a sudden and affects your project timeline. In simple words, scope creep is about a client making changes in the project scope during the development process, which ultimately requires the development team to make a lot of changes that demand more effort, time, and money. Most clients want their mid-way scope changes to be done for the same price discussed at the beginning (Hillson et al 2005). And as a result, scope changes put the project managers in a difficult spot, which ultimately leads to project failure.

According to (Callahan & Brooks, 2004), Assumptions are "a factor in the planning process that is considered to be true, real, or certain, without proof or demonstration" according to the Project Management Body of Knowledge. Assumptions may be a source of risks. Be sure to perform an assumption analysis periodically to validate assumptions.

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.

Poor risk management has been put to be the major reasons why many projects fail by several researchers. Hence, this study takes the concept of risk management and assess its application on construction projects focusing on gaps of its application on a Defense house construction enterprise in a descriptive way.

1.3. Objective of the study

1.3.1. General objective

The general objective of the study is to assess project risk management practice of the Defense house construction project, at Shogole site.

1.3.2. Specific objective

- Determine if the enterprise has risk management practice & established risk management system.
- Determine if risks are identified and managed throughout the project lifecycle.
- To identify challenges in implementation of risk management on Defense house construction project, at Shogole site.

1.4. Research questions

1. What is the kind of the risk management system used in the enterprise?
2. What is the enterprise's practice in managing risks throughout the projects life cycle?
3. What are the challenges encountered in implementing the risk management process practice in Defense house construction project, at Shogole site?

1.5. Significance of the study

The Ethiopian government is striving hard to alleviate housing problems of military campus. The Defense command has also taken significant role in the process of reducing housing problem of the army force. To achieve this goal and see the soldier 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 enterprise. 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 shogole housing construction project and the challenges being faced in the process of implementing the project. The study is limited to the assessing project risk management and challenges of risk management in shogole apartment housing project. The researcher focused on shogole site. The main reason for selecting this site is the availability of information and limited time for the research. In addition, researcher can find both finished and in progress construction. Moreover, the result of this study can be projected to any governmental housing projects.

Conceptually this study only focused on three basic research question that aimed to detect the relevant knowledge areas which is project risk management practices it in most cases. It could applied in project risk management of Defense housing project and 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. 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

REVIEW OF RELATED LITERATURE

2.1. Theoretical review

2.2.1 Definition

The PMBOK Guide 4th Ed. defines a project risk as an uncertain event or condition that, if it occurs, features a positive or negative effect on at least one project objective. risk can be managed, minimized, shared, transferred, or accepted but It cannot be ignored (Jardin ,2017) and (Ana ,2012) also defined risk as an uncertain but potential element that always appears in the technical, human, social and political events, reflecting changes in the distribution of possible outcomes and subjective probability values and objectives, with possible damaging and irreversible effects.

2.2.2 Risk identification

Identifying risks is the first and perhaps the most important step in the risk management process. If there is a failure to identify any particular risk, then the other steps in the risk management cannot be implemented for that risk. All of the success of any risk management tool, method or process you use centers on effective risk identification. Understanding the risk is part of the identification process. A risk poorly identified means the project manager will struggle or fail to communicate this risk to high level stakeholders or team members. They will not understand the magnitude or an aspect of the risk. (Brown, 2016)

Sometimes lack of knowledge of the risks will not affect the project that much. Therefore, the project manager and stakeholders will think as if the risk identification and understanding part is a waste of time. But mostly that has not been the case projects suffer from lack of understanding of risks. Risks and other threats can be hard to eliminate, but when they have been identified, it is simpler to take activities and have authority over them. On the off chance that the reasons for the

risk have been distinguished and dispensed before any issues happen, the risk the management will be more effective (PMI, 2004)

The purpose of risk management is to identify potential problems before they occur so that risk handling activities may be planned and invoked as needed across the life of the product or project to mitigate adverse impacts on achieving objectives (Ana, 2012).

Risks are associated with each project and ought to be recognized so as to maintain a strategic distance from negative effects on the general execution. Numerous issues which are looked in later periods of the PLC result from unmanaged risk from the prior stage (Chapman and Ward, 2003). This also indicates that risks need to be identified earlier in the project.

Effective risk management includes early and aggressive risk identification through the collaboration and involvement of relevant stakeholders. Strong leadership across all relevant stakeholders is needed to establish an environment for the free and open disclosure and discussion of risk.

The earlier that risk management was used in a project, the more successful it was. It is essential that the risks of a project be assessed at the project brief stage. Risks identified here will not only help the production of the necessary project products, but will increase the chance of overall project success. A significant risk that is not identified and mitigated will become a real problem at some point during the project life cycle (Tinnirello, 2000).

Ana D. (2012) identified two distinct phases of risk identification;

- Initial risk identification (for an organization which has not previously identified its risks in a structured way, or for a new organization, or perhaps for a new project or activity within an organization);
- On-going risk identification (which is necessary to identify new risks which did not previously arise, changes in existing risks, or risks which did exist ceasing to be relevant to the organization).

Kenneth F., Lloyd A. & Michael A. (2003) also suggested two possible approaches for identifying risks (1) to identify the root causes of risk. that is, identify the undesirable events or

things that can go wrong and then identify the potential impacts on the project of each such event—and (2) to identify all the essential functions that the project must perform or goals that it must reach to be considered successful and then identify all the possible modes by which these functions might fail to perform. The authors added that both approaches can work, but they also pointed that the project team may find it easier to identify all the factors that are critical to success, and then work backward to identify the things that can go wrong with each one.

In order to find every single potential risk which may affect a particular task, various strategies can be applied. It is critical to utilize a technique that the project group is generally acquainted with and the undertaking will profit by. The point is to feature the expected issues, all together for the undertaking group to know about them. Authors describe many creative alternative methods (PMI, 2004).

Ropel (2011) mentioned on her study mentioned the claim by Winch (2002) that the initial phase in the RMP is normally casual and can be acted in different manners, contingent upon the association and the project group. It implies that the distinguishing proof of risk depends generally on past experience that should be used in upcoming projects.

Guomin (2007) listed number of researches done in the field of risk management for construction projects, a significant outcome of which is the identification of risks that may influence the construction project delivery. Chen et al. (2004) proposed 15 risks concerned with project cost and divided them into three groups: resources factors, management factors and parent factors. Through a case study on the West Rail Project of Hong Kong, Chen found that "price escalation of material" pertaining to resource factors, "inaccurate cost budget" and "supplier or subcontractors‟ default" pertaining to management factors, and "excessive interface on project management" pertaining to parent factors are the most significant risks in this particular project.

Summarizing other researchers‟ work, Shen (1997) identified eight major risks accounting for project delay and ranked them based on a questionnaire survey with industry practitioners. Shen also proposed risk management actions to cope with these risks and validated their effectiveness through individual interview surveys. Tam et al. (2004) conducted a survey to examine the elements of poor construction safety management in China and as a result, identified the main

factors affecting safety performance including “poor safety awareness of top management”, “lack of training”, “poor safety awareness of project managers”, “reluctance to input resources to safety” and “reckless operation”.

Gajewska & Ropel (2011) identified that past experience and conversations were the most usually utilized procedures to distinguish expected risk. Actually, no time in the project was saved for RM and respondents announced that potential risk were dealt with at the hour of their event. All together words, the individuals from the task group were not recognizing risk in an organized manner. They accepted that their time was utilized all the more effectively when they chipped away at the real project as opposed to looking for issues. Just to a little degree were chances in the task recognized by understanding. Besides, various risk which are trademark for a development project can be assembled as an agenda and be utilized in future tasks. Their other finding was that conversation alongside conceptualizing and utilizing past understanding, was utilized by the undertaking group.

Furthermore they identified that there is a separation between how risk are overseen by people and in a group. People and their associations regularly use agendas and different manuals while bunches use conversation as the most widely recognized strategy to distinguish risk and issues.

2.2.2.1. Methods of risk identification

Many organizations do follow risk management but hardly ever do we get to see an organization following defined techniques to identify risks (Ana, 2012). There are many techniques to identify risks of which few common methods that are identified through research review are listed below.

Brainstorming: this is a creative process that takes place among project team members after objectives are clearly understood. When the objective is clearly understood team will collaborate well and lists of risks can be generated. In the session, risks that are known unknowns may emerge, and perhaps even some risks that were previously unknown unknowns may become known.

Experiential Knowledge: is the collection of information that a person has obtained through their experience. Caution must be used when using any knowledge based information to ensure it is relevant and applicable to the current situation

Surveys: are a technique where lists of questions are developed to seek out risk in a particular area. A limitation of this method is that people inherently don't like to complete surveys and may not provide accurate information.

Checklists: contains lists of risks, risks or control failures that have been developed usually from experience, either as a result of a previous risk assessment or as a result of past failures or incidents.

Interviews: are an effective way to identify risk areas. Group interviews can assist in identifying the baseline of risk on a project. The interview process is essentially a questioning process.

Delphi Technique: It's a type of interview the interviews are with subject matter experts).participants comments are anonymous. It's used when there may be conflicts. It is Slow and hard-working.

2.2.2.2. Risk identification gaps

Focusing on the wrong areas where risks are not usually observed and ignoring project areas where risks are mostly involved exposes the project to impacts by unidentified major risks. Such kinds mistakes result in skipping areas that could be too risky and that could lead to total project failure and spending too much time analysing minor risk. Mohammed and Chioma (2007) also analyzed a case where risky project areas were ignored and too much focus was made on project area where there is little risk.

There are many possible risks which could lead to the disappointment of the construction project, and through the undertaking, it is imperative to realize what risk factors are acting at the same time. As expressed by Raz (2002), too many task risks as bothersome occasions may cause development project delays, unnecessary spending, unacceptable undertaking results or even absolute disappointment.

2.3. Risk impact assessment and prioritization

Risk evaluation is the manner by which projects understand how huge each risk is to the accomplishment of their general objectives. To achieve this, undertakings require a risk evaluation process that is down to earth, maintainable, and straightforward. The procedure must

continue in an organized and taught design. It must be accurately measured to the undertaking's size, unpredictability, and geographic reach.

Risk evaluation follows occasion recognizable proof and goes before chance reaction. Its motivation is to survey how large the risk are, both separately and all things considered, so as to concentrate on the most significant risk and openings, and to lay the preparation for chance reaction. Risk evaluation is tied in with estimating and organizing risk so chance levels are overseen inside characterized resistance edges without being over controlled or doing without attractive chances.

Create appraisal rules. The principal action inside the risk appraisal process is to build up a typical arrangement of evaluation rules to be conveyed across specialty units, corporate capacities, and huge capital tasks. Risk and openings are ordinarily surveyed as far as effect and probability. Numerous endeavors perceive the utility of assessing risk along extra measurements, for example, helplessness and speed of beginning.

Customary risk examination characterizes chance as a component of probability and effect. To be sure, these are significant measures. Be that as it may, far-fetched occasions happen very regularly, and numerous reasonable occasions don't happen. More terrible, impossible occasions frequently happen with amazing velocity. Probability and effect alone don't paint the entire picture.

To address addresses like how quickly could the risk emerge, how quick would you be able to react or recuperate, and how much vacation you could endure, you have to measure weakness and speed of beginning. By checking that you are so helpless against an occasion, you build up an image of your needs. By checking how rapidly it could occur, you comprehend the requirement for dexterity and fast adjustment.

Speed of beginning alludes to the time it takes for a risk occasion to show itself, or as such, the time that slips by between the event of an occasion and where the organization first feels its belongings. Knowing the speed of beginning is valuable when creating risk reaction plans Helplessness alludes to the vulnerability of the substance to a risk occasion as far as rules identified with the element's readiness, nimbleness, and flexibility. Helplessness is identified

with effect and probability. The more helpless the element is to the risk, the higher the effect will be should the occasion happen. On the off chance that risk reactions incorporating controls are not set up and working as planned, at that point the probability of an occasion increments. Evaluating powerlessness permits substances to check how well they're overseeing risk (Curtis, 2012).

Curtis (2012) illustrated an example for impact scale assigning 1 to 5. Naming each impact scale starting from 1, incidental, minor, moderate, major and extreme. He illustrated what each of the impacts could cause to an organization. Extreme impacts of risks could damage the financial ability of the organization that senior managers might be forced to leave the organization. Would be too late to take corrective actions for such kind of risks and leaders might face litigation. At major impact risks corrective action would be possible but a huge project need to be designed to correct the consequence. Still at this stage some senior managers might leave as they find the projects or the organization's state hopeless. At a moderate stage the financial loss and the employee turnover rate will be decrease but still high. But still employee morale might be affected. At this stage also immediate corrective action need to be taken. At a minor and incidental impact level the financial and other effects will be lower and easier to manage.

Risk appraisal is frequently proceeded as a two-phase process. An underlying screening of the risk and openings is performed utilizing subjective methods followed by a progressively quantitative treatment of the most significant risk and openings loaning themselves to measurement (not all risk are seriously quantifiable). Subjective appraisal comprises of evaluating each risk and opportunity as indicated by engaging scales as portrayed in the past area. Quantitative examination requires numerical qualities for both effect and probability utilizing information from an assortment of sources.

The nature of the examination relies upon the exactness and fulfillment of the numerical qualities and the legitimacy of the models utilized. Model suspicions and vulnerability ought to be unmistakably conveyed and assessed utilizing methods, for example, affectability investigation (MITRE systems engineers (SEs), 2017). As Gajewska & Ropel (2011) found to oversee and break down the expected risk, the most broadly utilized device was conversation. The risk were fundamentally overseen inside the entertainer's association concerning just the extent of worked

appointed, afterwards oversaw and talked with different individuals from the project group. Inside the project, there had been not many gatherings composed where risk issues were raised. The object was to counsel the issues with specialists from the field wherein the issue was distinguished. Systemizing and mapping were those lone strategies of dealing with risk utilized at those gatherings. Besides, interviews uncovered that respondents were utilizing an assortment of strategies to organize previously recognized risk. The most widely recognized route was to set rules so as to rank the most basic risks. The sort of rules utilized relied upon the calling of the on-screen character. In view of the made example, every single potential risk were then recorded and taken care of. A case of the request acquired from organizing risk was the economy related issues which were positioned higher in the chain of importance than the time related issues.

The other method to organize risks inside the undertaking was a conversation which includes multiple performers. Most respondents proclaimed that they use understanding from past tasks to encourage discussion. In addition, such talk was utilized as a device to alarm different members about likely risk and by examining organizes these which had the greatest effect on the task.

Lyons and Skitmore (2004) found that respondents were not familiar with any method used to analyze potential risks. Overall not many practitioners in the construction industry who work with residential projects use these structured methods. They found that intuition, judgment and experience are the tools most often used in risk analysis while structured methods like Monte Carlo or risk impact assessment are used only to some small extent. One of the reasons for not using structured methods according to respondents was limited budget. Moreover. The subjective methodology is the most widely recognized kind of strategy to break down risk. Simultaneously, it is the most effortless device to survey the risk, since it just incorporates the likelihood and effect appraisal. There is no need of doing entangled counts which require for example PC programming. The quantitative techniques are considerably more asset expending and require gifted faculty and technical equipment.

2.4. Risk action plan

A risk activity plan is the game-plan which an organization concurs upon to assist them with addressing possible risk creating a risk action plan comes at the middle of the risk management

process, between evaluation of risks and before the monitoring process. In order to develop an appropriate risk action plan, risks must first be identified and evaluated. A plan is created to ensure that the right actions are carried out in a timely manner. A plan also provides a go-to guide, in case the “unexpected” happens. A risk action plan will provide you with strategies which are appropriate dependent on the levels of risk which your organization faces. When developing a risk action plan, those involved with creating the strategies must carefully consider whether the costs incurred in preventing the risk from occurring would be less than the costs incurred if it did occur (Forostenko, 2014).

2.5. Risk response

There are a number of possible responses to risks and as risks can be threats or opportunities there are four risk response methods. Avoid, transfer, reduce and accept (PRINCE2 2009 Ed). Using the acceptance strategy means that the severity of the risk is lower than our risk tolerance level. Many of these risks cost less to fix when they occur than it would cost to investigate and plan for them (Adeak, 2010).

When risks go above the risk tolerance maximum and something had to be done about them, mitigation strategy will be used. Mitigation is a strategy where some work is done on unacceptable risks to reduce either their probability or their impact to a point where their severity falls below the maximum risk tolerance level using the risk mitigation strategy involves taking some money out of the contingency budget that was the expected value of the risk before mitigation (Adeak, 2010).

Gajewska & Ropel (2011) concluded from the interview they conducted on a certain construction project, that the actors in the risk management process have no information about a reaction. Just hardly any respondents furnished responses which could be deciphered as moving risk and by this, alleviating the issue. Nonetheless, conversation and agendas were the fundamental devices to help the activities. In this they reasoned that there is additionally absence of information inside this zone. In Lyon's and Skitmore's (2004) study, a significant number of the respondents concurred that all (development) risk are sensible and hence decrease is the best other option.

2.6. Risk register

The purpose of a risk register is to record the details of all risks that have been identified along with their analysis and plans for how those risks will be treated. It is the responsibility of the project manager to ensure that the risk register is updated whenever necessary (Chandana, 2013).

Although there are no standards set to what a risk register components should be like, PMBOK4th Ed. made recommendations for risk register components (Chandana, 2013).

2.6.1. The Importance of a Risk Register

Risk management is critical to the success of any project and must be developed during the planning stages of the project management process. The risk register or risk log becomes essential as it records identified risks, their severity, and the actions steps to be taken. . The register provides a framework in which problems that threaten the delivery of the anticipated benefits are captured.

Actions are then instigated to reduce the probability and the potential impact of specific risks. The project manager must seek input from team members as well as stakeholders and possibly even end users. They may flag risks you haven't identified and give other options for risk mitigation. (Linda, 2014).

2.7. The different methods of risk management

There are several methods of project risk management in common use. It is important for the project manager, consultants, risk manager or anyone that is responsible for risk management to be clear about what they want from the risk management and whether it will suit the (Grey, 2007).

Grey (2007) has categorized methods of managing risks into six. Informal direct assessment (subjective judgment by professionals), Check list (list of risks or risky projects), Risk Indicator scales (scoring), Structured brainstorming and evaluation (which is a way of making the professionals that are involved in the risk identification more focused), probability-impact calculations and probabilistic modeling of costs, schedules and cash flows (a way of realistically measuring the outcomes of the risks).

Guy and Preston (2004) from their experience suggested five steps of managing risk. They recommend for risk management to be based on facts. Covering the reality and working as if the risks don't exist is not a way they recommend. They adopted a model that is used to manage risks based on facts that is called standard risk model. The five steps they mentioned are; identify risks, analyze risks, prioritize risks, create action plans and monitor progress.

Medica (2005) identified seven crucial steps to effective risk management. Embed risk management as an integral part of the project, identify risk, Assign ownership, estimate or prioritize risk, analyze the risk, manage the risk, create a risk register.

Jutte (2015) gave ten golden rules for managing risks after fifteen years of experience in projects. He named the steps to risk management as rules to risk management. Most of these rules are same as the steps suggested by other authors with a little additional points. The rules are, make risk management part of your project, Classify risks timely, impart about risk, think about the two risk and openings, explain proprietorship issues, organize risk and investigate risk. Plan and Implement risk response, register project risks and track risks and associated tasks. Kielmas (2017) mention one more risk management method that is rarely mentioned by other authors. Kielmas noted risk transfer as an additional point to the usual steps to manage risks. She mentioned six steps. Identifying risks, analyze risks, prioritize risks, create action plans, risk transfer and monitor progress.

Different authors suggested different methods of managing risk. Grey (2007) suggested a much different and detailed risk management method by splitting the risk identification step into two. He putted it as two steps Informal direct assessment (subjective judgment by professionals), Check list (list of risks or risky projects). He also added two more steps that are not mentioned often by other authors. The steps are structured brainstorming and evaluation and probabilistic modeling of costs, schedules and cash flows (a way of realistically measuring the outcomes of the risks. Although all of the steps he mentioned are important for risk management it doesn't include the most common steps such as monitoring risk management progress and risk register.

There are seven steps that are commonly suggested by all of the authors. Those are, identify risks, analyze risk, prioritize risks, create action plan, implement risk response, risk register and monitor progress.

Lyons and Skitmore (2004) found in their study that many companies in the construction industry tend to adapt risk management to only some extent. Organizations within the construction industry do not work with risk management in such an organized way, which implies that there are some different methods of overseeing risk when it happens.

Klemetti (2006) found that most respondents were not familiar neither with the concept of risk management nor any methods of risk management. Risk processes and theoretical models were totally unknown. However, on Lyons and Skitmore's study (2004) respondents declared that they could start implementing methods, if only they had more information about them and a guide how to use them.

2.8. Life cycle risk management

The utilization of risk the management from the beginning periods of a project, where significant choices, for example, decision of arrangement and choice of development techniques can be affected, is essential. (Eskesen et al. 2004)

As much research suggested, addressing project risks earlier rather than later in the project life cycle can minimize the negative consequence brought by the risks. Although it is essential to identify risks earlier it is also important to identify possible occurrence of risks in each stage and making appropriate actions to cope with them (Ward and Chapman, 1995; Smith, 2003).

More effective management of risks would be possible if these risks are managed from the perspective of a project life cycle. Many risks may arise in more than one phase of a construction project and hence they need to be considered in more than one phase.

Mohammed and Chioma (2007) analyzed another project where lack of risk management throughout the execution of a project resulted in project failure. Although there was some form of risk management process undertaken during the course of executing the project, it was not carried out continuously throughout the project lifecycle. This led to the failure to properly

mitigate the risks. It is therefore important to undertake the risk management process from inception to completion in any given project because of the frequently changing nature of projects. Some researchers investigated risk management for construction projects in the context of a particular project phase, such as conceptual/feasibility phase (Uher and Toakley, 1999), design phase (Chapman, 2001), construction phase (Abdou, 1996), Rather than from the perspective of a project life cycle (Patrick, 2007)

Smith et al. (2006) in his study on construction project, found that initially risk were somewhat wide, for example, the risk of misconception customer's prerequisites, not picking the correct experts or not accomplishing a decent conclusive outcome. The further in the PLC, the more explicit the scope of the risk became, because of increasingly itemized arranging and configuration process. Subsequently in the following stage, arranging and structure, respondents recognized lack in assets, issues with plan or modest arrangements as those fundamental risk. Looking further on the longest stage, project activity, without a doubt, exceptionally trademark risk, for example, delays in the development calendar or dampness were distinguished. Smith et al. (2006) proposes that the idea of risk changes with the project progress, from an expansive to a smaller scope of issues. Moreover, the creator suggests that the kind of risk is firmly connected with the sort of action embraced in a specific stage. Gajewska & Ropel (2011) also identified in their research that the type of risks identified differs significantly over the various stages of the PLC.

2.9. Owners role in risk management

Kenneth et al. (2003) argued that managing risk is one of an owner’s most important functions in making any major project successful. They stated that from the initial stage of the project the owner is responsible for all of the project risks, and make the decision whether to execute the project or not. (Of course, the owner may not have a completely risk-free strategy, because not executing the project may entail risks to the successful implementation of the owner’s mission or business plan.). They added owner has the ultimate responsibility for identifying, analyzing, mitigating, and controlling project risks, including acceptance of the project risks, or modification, or termination of the project. All of which are project risk management activities.

This is true whether the project execution is managed directly by the owner or by contractors under the owner's supervision.

Furthermore, they argued since the owner organization will be responsible for many risks arising from different sources it can delegate responsibilities such as Identification and reduction of risks to contractors and consultants. Nonetheless, Ensuring that adequate and timely risk identification is performed is the responsibility of the owner, as the owner is the first participant in the project. Contractors and consultants may play major roles in identifying, analyzing, mitigating, and controlling project risks, but project risk management is not a function that the owner can completely delegate to contractors or to consultant.

2.10. Importance of risk management

The PMBOK Guide 4th Ed. recognizes nine knowledge areas typical of almost all projects. Risk management is one of the nine knowledge areas. Applying standards of risk the management encourages the quality improvement and improves cost estimation by recognizing and relieving expected risk before a task starts Risk management puts processes in place to ensure management receives organized risk information early enough to apply restorative activities that will permit reasonable timetable and quotes and guarantee fruitful fulfillment of the project (Tinnirello, 2000). Risk the board standards increment group association by giving an instrument to the detailing of likely issues and expanding the group's stake in the general achievement of the task. The inserting of risk is a drawn out exercise to guarantee that chance thought is at the core of the dynamic procedure (Hodge, 2002). Inability to acknowledge risk issues may offer ascent to genuine results (Fraser and Henry, 2007).

Mobey and Parker, (2002) recommended that, to build the odds of a proposed project succeeding, it is vital for the association to have a comprehension of expected risk, to deliberately and quantitatively evaluate these risk, foreseeing potential circumstances and end results, and afterward pick suitable strategies for managing them. To guarantee that any potential risk are overseen viably, the risk procedure should be expressly incorporated with the dynamic procedure.

Mohammed and Chioma (2007) concluded in their analysis that managing risks with understanding of the identified risks and assigning ownerships to project stakeholders and the project team, directly influences the success of project. Assigning ownerships for risks is important. And a department or a person should be hold accountable for managing risks. So tracing back responsibilities for risk management will not be difficult. (Chandana, 2013).

Risk management is probably the most difficult aspect of project management. Despite its difficulty risk management process must be taken by the project manager. Project director must have the option to perceive and recognize the underlying drivers of risk and to follow these causes through the task to their outcomes. Moreover, chance administration in the development project the management setting is a far reaching and methodical method of distinguishing, breaking down and reacting to risk to accomplish the task destinations (PMI, 2007).

Albeit the present associations value the advantages of overseeing risk in development projects, formal risk examination and the management strategies are once in a while utilized because of absence of information and to questions on the appropriateness of these methods for development projects.

2.11. Impacts of risk management failure

Ignorance of identified risks by the project managers is one of the factors why many projects are damaged by risk consequences. Consultants sometimes identify risks and provide mitigations for them but the attitude of project managers to manage those identified risks lead to huge amounts of cost overruns and delays. Kishk and Ukag (2012) have analyzed a particular project that this situation has been evidenced with huge cost overrun and schedule delay. The project manager did not adhere to the risk report submitted nor did he have a visible risk management plan of his own.

Cost of risk is a concept many construction companies have never thought about despite the fact that it is one of the largest expense items (Cavignac, 2009).Risk and vulnerabilities, engaged with development projects, cause cost invade, plan deferral and absence of value during the movement of the undertakings and at their end (Wysock, 2009). As expressed by (Balo and Price, 2001) poor cost execution of development projects is by all accounts the standard as

opposed to the special case, and the two customers and contractual workers endure huge monetary misfortunes because of cost overwhelms.

Simon (2002) mentioned three cases that were investigated by UK government's National Audit Office. One was erection of British library building project where a more than three times of the original budget was spent to complete the project. The second case was when a hospital redevelopment project was undertaken. The project doubled its original budget. The house of parliament was the third case that was investigated which was completed with a cost two times more than the original budget. The NAO claimed poor risk management is the reason behind all the three cases. Unrealistic estimation together with problem of risk identification resulted the cost overruns. They recommended that proper risk analysis should be done that could lead to realistic estimations.

Aibinu and Odenyinka (2006) investigated and assessed the causes of delays in building projects in Nigeria. The authors pointed the poor risk the board as one of the chief postpone factors and inferred that activities and inactions of development project members add to by and large task delays.

Different researchers looked at different aspects of risk management on construction projects. This research will find out the common kinds of risks in the construction industry, identify the intensity of their impacts, asses the current practice of risk management in the industry and recommend ways of improvements.

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 & Mikaela 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, William & Rizwan 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, 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 arranging, risk documentation, risk examination, risk reaction, and risk observing and control forms. 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. Research design

This research to examine the current risk management practice of construction projects the study applied descriptive design. Descriptive studies are aimed at finding out "what is". It involves gathering data that describe events (Glass & Hopkins, 1984). This design will chose because this study aims to identify and describe the risk management practice of Defense house construction project enterprise.

3.2. Data collection method and instruments

The questionnaire will be developed following the research questions. Part of the interview questions will be adopted and a bit modified in a way that it fits the organization under the study. Interviews will be conducted to get detail and supporting information in addition to the questionnaire responses. Firsthand information will collected via questioner and interview, as sources of secondary data published & unpublished articles, office documents& information form internet will be used as necessary.

Survey method was used and the questionnaires are distribute to 38 participants. The interview question are prepared for senior managers that are 3 in number.

3.3. Sampling procedure

The sampling design that will employed for this study is a non-probability sampling. A nonprobability 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 38 respondents were chosen among 83 employees of contractors and/or sub-contractors and consultants, which is the total population.

3.4. Validity and reliability

Validity explains how well the collected data covers the particular area of investigation (Ghauri and Gronhaug, 2005). Validity basically means “measure what's intended to be measured” (Field, 2005). The main types of validity namely; face validity, content validity, construct validity, criterion validity and reliability are discussed. Questionnaire and interview questions are prepared in a way that is closely related to research question and appropriate and careful data collection method will be used.

Unwavering quality concerns the degree to which an estimation of a marvel gives stable and comprise result (Carmines and Zeller, 1979). Reliability is also concerned with repeatability. For example, a scale or test is claimed to be reliable if repeat measurement made by it under constant conditions will give an equivalent result (Moser and Kalton, 1989).

Testing for reliability is important as it refers to the consistency across the parts of a measuring instrument (Huck, 2007). A scale is claimed to possess high internal consistency reliability if the things of a scale “hang together” and measure an equivalent construct (Huck, 2007, Robinson, 2009). The most commonly used internal consistency measure is the Cronbach Alpha coefficient. It is viewed because the most appropriate measure of reliability when making use of Likert scales (Whitley, 2002, Robinson, 2009). Therefore, the Likert questionnaire will develop following research questions and the interview questions was adopted and modified to fit the purpose of the study. No absolute rules exist for internal consistencies, however most agree on a minimum internal consistency coefficient of .70 (Whitley, 2002, Robinson, 2009).

Therefore, as it can be referred from the table below, the reliability of the Likert scale Questionnaire was tested for 28 variables using cronbach's alpha and it resulted on average **0.826**. (4.2 with N 6 = .**872**, 4.3 with N 6 = .**886**, 4.4 with N 7 = .**689**, 4.5 with N 3 = .**941**, 4.6 with N 2 = .**695**, and 4.7 with N 4 = .**897**).

Reliability Statistics

Cronbach's Alpha	Number of items N
0.826	28

3.5. Ethical issues

Informed consent is that the major ethical issue in conducting research. It implies an individual purposely, deliberately and wisely, and during a reasonable and show way, gives his assent. Therefore, respondents are treated with at most respect. Questionnaires were distributed and interviews were made based on complete willingness of respondents. Confidentiality means that individuals are free to give and withhold as much information as they wish to the person they choose. The researcher was keep to maintain confidentiality that goes beyond ordinary loyalty/ respondents are free from any risks. And finally the purpose of the study was clearly communicated to respondents.

3.6 Data analysis method

The data is analyzed by descriptive analysis using SPSS software. The data collected from the questionnaires is measured by ordinal scale and analyzed quantitatively and is illustrated using percentages/ tables. Data obtained from interviews and open ended questions is analyzed qualitatively and is used to support the quantitative data and to get more insight about the data from the questionnaire. Applying the above method will helpful to assess the risk management practice of construction projects, in the specific case of the organization under Defense house construction project Enterprise.

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, Shogole site, and the project coordinator from the client and the deputy project manager and electrical works from the consultant companies. The researcher collects the data through questionnaire and semi structured interview. In order to analyze the data collected through the questionnaire SPSS 20 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 analysis and interpretation of the collected data is presented below.

Table 4.1 Descriptive statistics: **Basic information of the respondents** (Age, Gender and work experience) of respondents respectively

Valid	Age	Frequency	Percent	Valid percent	Cumulative percent
	20-30 years	13	39.39	39.39	39.39
	31-40 years	13	39.39	39.39	78.78
	41-50 years	7	21.21	21.21	100
	Total	**33**	**100**	**100**	
	Female	4	12.12	12.12	12.12
	Male	29	87.87	87.87	**100**
	Total	**33**	**100**	**100**	
	Experience				

	<3 years	3	9.09	9.09	9.09
	3-7years	20	60.60	60.60	69.69
	8-12years	10	30.30	30.30	**100**
	Total	**33**	100	**100**	

Source: own survey, 2020

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 where 1 represents strongly disagree, 2 =disagree, 3=uncertain, 4=agree and 5=strongly agree, for the respondents to express their thoughts about the risk management practices in the project they are involved.

Table 4.2 Descriptive statistics: **General risk management practices**

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
1	There is a policy or guideline that recommends how to manage unexpected uncertainties.	0%	54.5%	36.4%	9.1%	0%
2	The project has a defined or standard risk management process.	0%	75.8%	9.1%	15.2 %	0%
3	Responsible person or department is assigned to handle risk.	0%	78.8%	21.2%	0%	0%
4	Risk management is treated as a continuous process in the project	0%	12.1%	30.3%	57.6 %	0%
5	Identified risks are documented to be used for future projects	0%	36.4%	18.2%	45.5 %	0%
6	Risk management is implemented at the implementation stage of the project	0%	9.1%	36.4%	54.5 %	0%

Source: own survey, 2020

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 almost an absence of 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 dominant response we got is 75.8% disagree implying that there still is no presence of defined or standard risk management within the project. The responses received are clearly show us the problems of formal risk management techniques. 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 were 78.8% disagree 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 dominant responses was found to be 57.6% agree plainly showing that risk management is 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 other hand, 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.

The question who mostly handles uncertainties that arise to the project during implementation shows that uncertainties within the project are primarily handled by the consultant and the client is the second frequent stakeholder involved handling risks, while the special team for risk management and all participating team members takes care of risks less frequently. From the above responses, 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.

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 4.3 Descriptive Statistics: **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.	0%	51.5%	36.4%	12.1%	0%
8	Relevant stakeholders are involved in the planning and performing of managing risk.	0%	51.5%	48.5%	0%	0%
9	An expert judgment or meetings are considered while planning for risks that might occur in the project.	0%	33.3%	48.5%	18.2%	0%
10	Environmental factors are included as an input to plan for uncertainties.	0%	9.1%	48.5%	42.4%	0%
11	Team members within the project receive training or have enough knowledge about how to handle uncertainties.	0%	66.4%	33.3%	0%	0%
12	Risk management plan is incorporated with the project plan.	0%	42.4%	39.4%	18.2%	0%

Source: own survey, 2020

From the above table we can see that the majority of the respondents were disagree (51.5%) to the question if there is a systematic approach or careful planning applied to perform risk management in the project. This imply that there is no or poor systematic approach or planning performed to manage risks in the project. Result found by (Frezewd, 2016) aligned to 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 majorities of responses collected was 51.5% disagree giving an implication that relevant stakeholders are not involved exhaustively in the project or the planning is done by the project team. 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 33.3% disagree and only 18.2% were agree 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.

A majority response of 48.5% uncertain and 42.4% 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 66.4% disagree 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 42.4% disagree 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 4.4 Descriptive Statistics: **Risk identification**

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
13	Risks are identified at initial stage of the project or early in the project.	0%	54.5%	36.4%	9.1%	0%
14	There is lack of professionals to identify risks early.	0%	9.1%	54.5%	36.4%	0%
15	We use a structured and formal risk identification method.	0%	54.5%	36.4%	6.1%	0%
16	The factors causing the risks have been identified in order to eliminate the risks from occurring.	0%	24.2%	48.5%	27.3%	0%
17	The risks are identified when their effects are seen.	0%	18.2%	24.2%	57.6%	0%
18	We have lost money .time, quality etc. Because we didn't asses impact of identified risks.	0%	9.1%	21.2%	66.7%	3%
19	we try to identify and reduce risks in our everyday work	0%	18.2%	39.4%	42.4%	0%

Source: own survey, 2020

As it can be referred from above table, 9.1%% of the respondents agree, 36.4% are neutral and 54.5% disagree, that they don't identify risks at the initial stage or early in the project. Overall, this shows that risks are not identified at the initial stage of the project.

As we can say that the majority of the projects identified risks not from their initial stage large sum also responded that they fail to identify some risks early in the projects and face bad consequences. This is because as per the data from the interview, despite Stakeholder's effort to identify risks early some high impact unidentified risks were experienced frequently. This shows that proper identification method was not employed. It's also the case that risk department or risk manager that is dedicated for risk management is creating problem and is increasing the occurrence of unidentified risks. The respondents mentioned that these unidentified risks had a severe impact. It had all financial, schedule and quality impacts.

Not few respondents also responded that they identify the risks as they occur. This was mainly, as per the respondents, because there is lack of risk management understanding or absence of risk management expert in the enterprise and also project manager's negligence to incorporate detail risk aspect in the plan. Furthermore, there is also lack of awareness on the importance of proper risk management. 36.4% agree and 54.5% neutral, 9.1% disagree that they manage risks as their effect is seen.

There are several formal risk identification methods mentioned in the theory part of this study. Majority of the respondents responded that they don't employ these formal identification methods rather they mentioned they mostly use weekly performance review meetings to collect different suggestions from employees about risks. And also they use their experience to identify risks but are not aware of the different scientific risk identification methods. Therefore, 6.1% agree, 36.4% Neutral and 54.5% disagree that they use formal risk identification method. Most of the respondents that responded neutral mentioned that they responded neutral because they didn't understand what the risk identification techniques are. Therefore their responses can be summed up with those that responded they don't have formal risk identification method.

Identifying factors that are causing the risks is one step of eliminating risk occurrence and documenting these factors will minimize time and cost spent in factors identification for future projects. The majority of the respondents also responded that they document the risk causing factors. Additionally they mentioned even though there is no separate document to register the factors, they are found in weekly, monthly and quarterly reports. 27.3% agree, 48.5% neutral and 24.2% disagree that they register the factors.

The other thing mentioned in the literature review section as an impact assessment criteria was analyzing the time gap between the risk happening and the organization seeing the effect. This is done to determine exactly the damage created by existing but unfelt risks. Such analysis requires deep understanding of risks and their impacts. And the organization under study has no professionals with such understanding. Although the respondents admitted the activity is not done with required detail, some said that from their experience they identify such gaps. The rest of the respondents say that they don't have knowledge of such concept. Thus, 57.6% of respondents agree, 24.2% are neutral and 18.2% disagree that they analyze the time gap between the risk happening and the organization seeing the effect.

Interview response also show insufficient attention given towards risk management. Risks are always dealt after their occurrence because there is clearly prepared risk register though.

Concerning lack of impact assessment 66.7% of the respondents agree, 21.2% are neutral and 9.1% disagree that they faced financial, schedule and quality impacts as a result of their risk assessment method. This shows that more than 80% of the respondents agree that their impact assessment method is costing the projects. This also indicates that, even though the project managers and consultants believe their experience is helping them a lot, their lack of in-depth risk management understanding has still created a gap.

Respondents were asked if they try to identify and reduce risk in their everyday work. 42.4% agree, 39.4% are neutral and 18.2% disagree. There is some degree of risk management understanding developed in the enterprise as a result of conducting risk management trainings three times and consulting with high scholars from Defense university at head office level. Employees have a general but not deep understanding of risk issue. They try to raise risks they face in weekly meetings. Therefore they somehow perform their daily activities being risk conscious. But there is no deep understanding of from where risks could arise what is the signs, how it can be solved fast etc... There are gaps created as a result of not having a dedicated and professional risk manager solely responsible for risk management.

Table 4.5 Descriptive Statistics: **Risk analysis**

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
20	Characteristics of the risk are considered before analyzing the identified risk.	0%	42.4%	6.1%	51.5%	0%
21	There is a measurement system to analyze the risk.	0%	48.5%	36.4%	15.2%	0%
22	Project documents are updated after assessment of the risk that might occur	0%	21.2%	42.4%	36.4%	0%

Source: own survey, 2020

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 51.5% of the respondents agree, 6.1% uncertain and 42.4% disagree 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 15.2% agree, 36.4% uncertain and 48.5% disagree testifying that there is absence/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 36.4% agree, 42.4% uncertain and 21.2% disagree pointing that there uncertainty is

prevalent whether documents are appropriately updated after assessments made to the risk identified or not.

Response on interview about 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.However, previous findings from (Frezewd, 2016) mentions that updates are made to documents after probability of occurrence is assessed.

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. 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, quantitative assessments at second place, qualitative assessment based on historical data at third place and the remaining 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.

Table 4.6 Descriptive Statistics: **Risk response**

S/N	Questions	Strongly Disagree	Disagree	Uncertain	Agree	Strongly agree
23	There is a well-developed strategy within the project to respond to risk.	0%	60.6%	33.3%	6.1%	0%
24	Factors such as budget, schedule and resources are considered while responding to risk.	0%	9.1%	36.4%	54.5%	0%

Source: own survey, 2020

The majorities respondents said that 60.6% disagree, 33.3% uncertain and 6.1% agree 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 or there is confusion(unclear) about the existence of formal strategies in response to risk.

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 54.5% agree, 36.4% uncertain and 9.1% disagree 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 4.7 Descriptive Statistics: **Risk monitoring and control**

S/N	Questions	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
25	Based on the current result of the project are risks monitored and controlled well.	0%	57.6%	27.3%	15.2%	0%
26	The Project monitor, control and review the process for risk management to ensure that it complies with standards and procedures.	0%	42.4%	39.4%	18.2%	0%
27	Information available or the history of the project is used to supplement to control risk.	0%	9.1%	36.4%	54.5%	0%
28	Risks that occur within the project are controlled in a way that goes with the goal and objective of the project.	0%	0%	39.4%	60.6%	0%

Source: own survey, 2020

In order to assess the risk monitoring practices some questions were incorporated in the questionnaire. The respondents gave responses with a 57.6% disagree, 27.3% uncertain and 15.2% agree revealing that there is no proper monitoring and control with regard to the current result. It support the result the researcher 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 42.4% disagree, 39.4% uncertain and 18.2% agree with an implication that the majority of respondents were disagree and approximately the same proportions of respondents are not clear whether project monitoring, control and review process for risk management is done in compliance with standards and procedures or not.

From response on interview 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 failure. 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 idea for improved deciding.

The average value researcher had from the responses collected regarding information availability or history of the project being used to supplement the risk control was found to be 54.5% agree, 36.4% uncertain and 9.1% disagree 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 researcher 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 60.6% agree and 39.4% disagree giving the image that the way risks are controlled is in alignment with the project goal and objective is found to be support that it goes with the goal of the project on. The result found by (Frezewd, 2016) again opposed the result

researcher 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.

Table 4.8 Descriptive statistics**: Risk management implementation stage**

	N	Mean	Std. Deviation
Conceptual stage	33	3.00	.750
Planning stage	33	2.27	.452
Implementation stage	33	4.15	.508
Valid N (list wise)	33		

Source: own survey, 2020

The respondents stated their perceptions on, at which stage risk management is implemented. From their responses it is inferred that risk management is most frequently as the average response researcher got is 4.15 with .508 deviation implying that risk implemented at the project implementation stage, it is then implemented in the conceptual stage second frequently as the average response researcher got is 3.04 with .750 deviation implying that there still is confusion or no clarity whether it applied at this stage. And the stage where risk implementation is performed least frequently is the planning stage an average value of 2.27 with .450 deviations of responses clearly telling that risk management is implemented at the planning.

From the figures, it can be observed that risk management is implemented at the project implementation and conceptual stages as average of the respondents about 4.15 & 3.00 show us respectively chose thus stages. As the research, conducted by (Frezewd, 2016) aligns with result researcher 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.

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 Defense housing project in Shogole site. In order to discourse the primary aim of the research; the following key research conclusions are drawn based on the findings. 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. 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, the researcher 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 of project management such as performance. As the scope of the study is limited only to Defense housing construction, Shogole site 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.

Reference

Ana D. (2012) Modern Methods of Risk Identification in Risk Management. Junior PhD., University of Targoviste, Romania.

Aibinu and Odenyinka, (2006) causes of delays in building projects

Anthony M. (2001), A systematic approach to risk management for construction, Structural survey, vol. 19, no. 5, pp. 245-252. Available: http://hdl.handle.net/10536/DRO/DU:30037100

A Guide To Project Management Body Of Knowledge Body Of Knowledge (PMBOK® Guide) 4th Ed.

A Guide by The Association For Project Management, (2000). project risk analysis and management, The University of Birmingham.

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

Brown J. (2017) Why is Risk Identification so Important in Project Management?

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

Chandana, (2013). Risk register - An important component of overall risk management framework,

Chapman, C. and Ward, S., (2003). Project risk management: Process, techniques and insights. 2nd Edition. Chichester: John Wiley and Sons.

David H. (2010). Developing effective risk responses, manager of consultancy, project management professional services Ltd. Philadelphia, Pennsylvania, USA.

Ewelina Gajewska Mikaela Repel, (2011) Risk Management Practices in a Construction Project. Department of Civil and Environmental Engineering, Chalmers University of Technology. Göteborg, Sweden.

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 onyotek 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.

Guy M. Merritt Preston G. Smith, (2004). Techniques for managing project risk,

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

Jardin S. (2007) managing risks in construction project; How to achieve a successful outcome.

John Wiley & Sons, 2008 Project Risk Management: Processes, Techniques and Insights, 2nd Edition

JutteB. , (2017). Golden Rules of Project Risk Management-

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

Kishk M. and Ukag C., (2012) The Impact Of Effective Risk Management On Project Success. The Scott Sutherland School of Architecture and the Built Environment, the Robert Gordon University, Garthdee Road, Aberdeen AB10 7QB, UK.

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

Larry Taylor, (2011). Risk Culture: From Theory to Evolving Practice

Linda R, (2014). Importance of risk register.

PMI, (2015). Practice Standard Project Risk Management. Available: www.pmi.org.

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

PRINCE2, (2009). Latest edition. Managing Successful projects. TSO, London

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

Smith. N.J., Merna, T. and Jobbling P., (2006). Managing Risk in Construction Projects. 2nd

edition Oxford: Blackwell Publishing

Stuart C., (2009). Developing and Populating a Risk Register Best Practice Guidance.

Appendix I

Part I: General Information

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

1. Age 20-30 years ☐, 31 -40 year ☐, 41-50 years ☐, 51 – 60 years ☐ above 60 years

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 ☐, 13-17 years ☐,18 years and above ☐

Appendix II

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	Identified risks are documented to be used for future projects					
6	Risk management is implemented at the implementation 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	Risks are identified at initial stage of the project or early in the project.					
14	There is lack of professionals to identify risks early					
15	We use a structured and formal risk identification method.					
16	The factors causing the risks have been identified in order to eliminate the risks from occurring.					
17	The risks are identified when their effects are seen.					
18	We have lost money .time, quality etc. Because we didn't asses impact of identified risks.					
19	we try to identify and reduce risks in our everyday work					

RISK ANALYSIS

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

RISK RESPONSE

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

RISK MONITOR AND CONTROL

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

APPENDIX III

PART II: 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. Do you have established risk management system?
4. Do you manage risks proactively? Are improvements are made before problems arise?
5. 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?
6. 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?
7. 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?
8. Are risks with a probability of happening identified early at startup phase? And what methods are used to identify them?
9. Are risks analyzed to assess their probability of occurrence and level of impact?
10. 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?
11. Do Employees have enough training in risk management and understand the basics of risk management?
12. What challenges until now has the project faced due to unmanaged risk?
13. How do you think your current risk management process affected the projects? Is risk management monitored and reported as part of your normal management reporting system?
14. Do you think managing risk and project success are related? If yes, how?
15. What are the main areas of risk management that you need to develop?