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Department of Project Management

**The Assessment of Project Risk Management Practices in
Development Bank of Ethiopia financed Projects; the Case of
Manufacturing Projects Administered at Head Office**

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DECLARATION

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This research is my original work and has not been present for MA degree programs in any other university.

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This research has submitted for review with our approval as university advisor.

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ABSTRACT

Risk management is a known concept these days in manufacturing industry. Project risk management is considered as one of the most significant and basic factors in the ten knowledge areas of project management. Manufacturing projects financed by DBE, confronted several risks that may confine their prosperity because of the explanation that, these projects has especially huge risks because of the fluctuating trends of worldwide business.

Consequently, this study planned for surveying the practice of project risk management on DBE financed manufacturing projects by assessing the project risk management process such as Risk Management Planning, Risk Identification, Analysis, Response and Monitoring.

To conduct a study, the descriptive research approach adopted, and a stratified random sampling technique was chose since it is especially applicable where data is required legitimately from the marvel under scrutiny and where time and assets are restricted. To fulfill the objectives of the study, questionnaire were develop and distributed to 135 respondents of which 106 questionnaires collected from the manufacturing industry project managers, team managers and project contact officers in the DBE. All the legitimate surveys were investigated utilizing SPSS v20 adopting the 5-Point Likert Scale. Secondary data likewise gathered by means of literature reviews of print and website articles, books and published documents.

In light of the analysis, the outcomes showed inadequate experience and practice of project risk management process in the manufacturing projects. The execution and utilization of remarkable project risk management has not watched and an incredible consideration not given. Subsequently, the study suggested that every concerned parties like project owners, project managers, chiefs, project participants, and experts should comprehend the significance of project risk management for the thriving of manufacturing projects and should utilize legitimate risk management process and methods in the manufacturing industries.

Keywords; Definition of Risk, Risk Management, Project Management, Manufacturing Projects, Risk Planning, Risk Identification, Risk Analysis, Risk Response, Risk Monitoring

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ACRONYM AND ABBREVIATION

APM	Association for Project Management
BSI	British Standard Institution
DBE	Development Bank of Ethiopia
EMV	Earned Value Analysis
GDP	Growth Domestic Product
GTP	Growth and Transformation Plan
IT	Information Technology
IRM	Institute of Risk Management
NPL	Non- Performing Loan
NBE	National Bank of Ethiopia
OGC	Office of Government Commerce
PMI	Project Management Institute
PM	Project Management
PMBOK	Project Management Body of Knowledge
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
RM	Risk Management
RBS	Risk Breakdown structure
WBS	Work Breakdown Structure
SWOT	Strength, Weakness, Opportunity and Threat
RIPRAN	Risk Project Analysis
SPSS	Statistical Package for Social Scientists

CHAPTER ONE

INTRODUCTION

This chapter introduces the background part of this research, statement of the problem, research objectives, research questions, purpose of the study, scope and limitation of the research and structure of the study.

1.1. Background of the study

Risk management is a known concept these days in manufacturing industry. Lately, serious study has been led on the field of undertaking project risk management (RM). Project RM is viewed as one of the most significant and basic factors in the ten knowledge areas of project management recorded in the PMBOK Guide (Project Management Institute, 2016).

Risk management is a procedure that whose application will realize an all out decrease of expenses in the long haul and thus right decision-making by the manager. Risk management implies a movement of strategies, which are required for the unmistakable verification, assessment, and response opposite the project's risk with a particular ultimate objective to help the effects of positive events and limit the results of horrible scenes. This can influence the time, cost, quality, advantage and execution of the project.

As per Voetsch et al., (2004), there is critical connection between the risk managing approach of a business' management and the project's success. In the advanced and quickly changing business world, industries have wide access to assets and will in general look for the least expensive and most productive arrangement. According to APM (2006), including manufacturing all projects are intrinsically hazardous in light of the fact that they are unique, obliged, complex or unpredictable, in view of suspicions and performed by individuals. Accordingly, huge numbers of the undertakings are difficult to execute and each task is impacted by uncertainties. So as to accomplish the venture goals it is critical to limit mistakes and make a premise with all around molded choices. To achieve this, project management requires a well based risk management process, which can be used to minimize or optimize a risk that is any uncertainties it is important that knowledge and information is shared within the organization making risk management a cross- functional discipline.

Ethiopia is one of the biggest least developed nations (LDCs) in Sub-Saharan Africa, and its economy generally relies upon downpour took care of agribusiness, while manufacturing and fabricating represents just 5 % of GDP. (Shiferaw, Productive Capacity and Economic Growth in

Ethiopia, April 2017). Therefore, proper risk management on these manufacturing industries will contribute higher to the achievement of success.

In line with this, Development Bank of Ethiopia (DBE); is one of the state-owned financial institutions engaged in providing short, medium and long term credits for investment projects in the Government priority areas; of which sectors the manufacturing industries are one of the dominant sector which has been supported by Project financing.

In spite of the fact that it is accepted that risk management is one of the basic needs in project management, in this regard, it is perceived that little has been finished that is why Ibbs and Kwak (2000) articulated the significance of risk management mainly on sectors of manufacturing, telecommunications, information technology and construction engineering.

According to PMBOK® (Project Management Institute 2008), project risk management can be defined as the systematic process of identifying, analyzing, and responding to project risk'. It is executed by completing the following steps: risk management planning → risk identification → qualitative/quantitative risk analysis → risk response → risk monitoring and control. In short, project risk management is the systematic process of identifying, analyzing and responding to project risk.

Risk management is explained as the performance of activities designed to minimize the negative impact (cost) of uncertainty (risk) regarding possible losses. Risk management also described as a systematic process for the identification and evaluation of pure loss exposure faced by an organization or an individual, and for the selection and implementation of the most appropriate techniques for treating such exposure.

1.2. Statement of the Problem

Manufacturing projects financed by DBE, confronted a few difficulties and vulnerabilities (Risks) that may confine their prosperity because of the explanation that, these projects has especially huge risks because of the fluctuating trends of worldwide business. Risks are the potential outcomes that occasions will happen and antagonistically influence the accomplishment of goals. According to the annual report of the Bank (2019), some of the manufacturing projects have reportedly ineffective owing to several risk exposures including technical, financial, socio-political, and environmental problems which have led to immense cost overruns and delays. To minimize such adversities, project RM has been identified as a necessary strategy and is important because being successfully in order to identify and manage risks are vital to project success (PMI, 2004; Hillson, 2004)

Project managers need to manage risks properly in order to deliver projects successfully. Successful project delivery means completing projects on time, within budget and within quality and safety expectations. (El-Sayegh, 2014)

However, projects do not succeed when the stakeholders are incompetent in terms of RM practices. Manufacturing projects financed by Development Bank of Ethiopia are reported to be experiencing inadequate experience of proper risk management practices, poor risk management culture and appetite, shortages of competent project management professionals and project risk managers (Annual Risk Management Report of the Bank, June 2011 E.C).

According to the five-year strategic reform plan of the Bank (September 2019), the current level of NPLs of the Bank in terms of magnitude and ratio is significantly higher than what is deemed to be normal for Development Banks (maximum 15%). Non-Performing Loan (NPLs) has surged to Birr 15.4 Billion, i.e., 39.4% of the total outstanding loans. Here, manufacturing industries like Textile & garment and leather & leather products subsectors, which together account for 27% of total loans, turned out to be most troubling projects of the Bank greatly contributed to loan deterioration.

Risk or Hazard is the likelihood of an occasion and its results. Risk management is the act of utilizing procedures, techniques and instruments for dealing with these risks. It centers on distinguishing what could turn out badly, assessing which uncertainties ought to be managed and executing techniques to manage those risks. Projects that have identified the risks will be more ready and have a more practical method of managing them.

Risk management is the highest ranked factor for project failure (G.P.Sudhakar, 2016), that is why an organization, in order to be successful, should be committed to address risk management

proactively and consistently throughout the project rather than reactively. A conscious choice should be made at all levels of the organization to actively identify and pursue effective risk management during the life of the project. Moving forward on a project without a proactive focus on risk management is likely to lead to more problems arising from unmanaged threats (PMI, 2013).

The absence of joined risk investigation or risk analysis and management has results to most manufacturing projects neglecting to anticipate pained undertakings and make genuine the three factors of a task; time, cost and scope. Risk Management practices are increasingly essential, as they can give a deliberate procedure that plans to recognize and oversee chance so as to act on the off chance that it emerges, adding to characterize diverse undertaking goals, improve venture control, increment the odds of task achievement, improve correspondence between project members, encourage dynamic and organize activities.

Opposed to the significance of risk management to the successful achievement of projects, what occurs if risk management has overlooked? Projects might be vulnerable to expanded costs, loss or decrease of benefit, damage to the brand/notoriety, and in the most exceedingly awful: removal of the business or indebtedness.

This is therefore; as inadequate project risk management activity has been one of the key factors of project failure, the problem statement for this research investigation is that in manufacturing projects financed by Development Bank of Ethiopia. These projects are failing to implement risk management practices that employ contemporary methods and techniques that are necessary to assure project success.

1.3. Research Questions

The survey attempts to resolve the research problem through representing the accompanying fundamental research questions regarding the practice of project risk management in the manufacturing industries financed by DBE;

- How the manufacturing projects financed by DBE, exercise proper risk management planning?
- How manufacturing projects financed by DBE identified the potential risks?
- What has been their process of analyzing project risks?
- How these manufacturing projects can respond to project risks?
- How they practice the risk monitoring and control system?

1.4. Objective of the Study

The purpose of this research work has both general and specific objectives;

▪ General objective

The general objective of this project thesis is to assess project risk management practice in the case of manufacturing projects financed by DBE.

▪ Specific objectives

For manufacturing projects financed by DBE, the study addresses the following specific objective

- ✓ To assess the practice of risk management planning during the risk management process
- ✓ To assess the effectiveness of risk identification during the risk management process
- ✓ To assess risk analysis and the techniques and tools used for risk analysis
- ✓ To assess the strength of risk response and mitigation mechanisms undertaken
- ✓ To assess overall effectiveness in risk monitoring and control

1.5. Purpose of the Study

In Ethiopia, where the degree of economy found at the base stage, has required the commitment of manufacturing projects in huge. In any case, because of a few unmistakable natures of the project like huge money related prerequisites, various project participants, expanded incubation stages (between origination -plan -execution and operation), convoluted acquirement techniques, and dynamic association structures; uncertainties and vulnerabilities are not curious. Along these lines, as risks cannot be disposed of, it could be extremely critical evaluating, distinguishing, examining the potential dangers and utilizing compelling project risk procedures over the span of the task.

Subsequently, the centrality of the study can be to empower the practice of effective risk management related with manufacturing projects that will empower to;

- Ensure project accomplishment by characterizing the potential risks in order to deal with and plan moderation measures
- Support the project partners (contractual worker, project manager, customer and consultant) by limiting the chance expense and time invades as well as conflicts and disputes
- Enhance the manufacturing sector by improving benefits, venture income, security record, business progression and decrease possibilities

- Help the public and economies accomplish perceptive and productive ventures, which will make new business openings and create more for individuals, speculators and government.
- Lastly, discoveries or findings from the study will empower intrigued speculators to know about the risks and vulnerabilities and urge them to take an interest more on this segment.

1.6. Scope and Limitation of the Study

This project work is restricted to chosen manufacturing projects financed by Development Bank of Ethiopia, which administered at Head office level. The method of reasoning behind this is leading an exploration up on the entirety of the DBE financing projects will be time taking and monetarily compelling.

Regarding to the limitation, though, the outbreak of Corona Virus (Covid-19) pandemic makes difficult for the researcher to collect primary data and secondary data extensively, the researcher has attempt to make light of the challenge through electronically devices and online download literatures and published books.

1.7. Organization of the paper

The reminder of the thesis is sorted out as follows. Chapter 2 reviews theoretical literatures relating to project, risk or uncertainty, manufacturing project risk, risk management, Project risk management process and related issues through looking into related writings. Moreover, it encompasses the empirical and conceptual framework parts. Research Methods and Methodology managed in chapter three. In addition, chapter four considered the data presentation analysis and discussion of the data. Finally, the last part presents conclusion based on the analysis and on which some possible recommendations and future research recommendations are determined.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theoretical Background

According to Torraco 2011, theories are figured to clarify, foresee, and get wonders and, mostly, to challenge and broaden existing information, inside the restrictions of the basic active uncertainties. A hypothesis comprises of ideas, along with their definitions, and existing hypothesis/speculations that are utilized for the specific study. The theoretical review will look to set up a portion of the speculations that are ascribed by different scientists, creators and researchers, which are pertinent to this study.

2.1.1. Concepts and Definition of terms

2.1.1.1. Project

The phrase project is regularly used, inappropriately, nowadays by various individuals so as to communicate attempt, an endeavor or business. Project is a distinctive course of action consisting of a sequence of synchronized and controlled activities with start and end period of time, conducted to attain the aim. It meets the specific requirements, including the restrictions of time, cost and resources. It follows from this definition that the project can be understood as a process by which individual activities are implemented in successive steps. (Honziroková, 2017)

Project management is served by various expert bodies that every last one of them has built up its own meaning of a project. Portions of these definitions are

According to Project Management Institute (PMI); a Guide to the Project Management Body of Knowledge (PMBOK Guide), project is a temporary endeavor undertaken to create a unique product, service or result.

By the definition of Association for Project Management (APM), it is defined as a unique transient endeavor undertaken to achieve a desired outcome.

Another organization, Office of Government Commerce (OGC) defined a project as a temporary organization that is created for delivering one or more business outputs according to a specified business case.

Moreover, according to the definition of British Standard Institution (BSI), a project is clearly explained as a unique process, consisting of a set of coordinating and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraints of time, cost and resources.

2.1.1.2. Risk

The term risk is defined in PMBOK, from Project Management Institute, as an unsure occasion or condition that, if happens, has a positive or negative impact on project's objectives.

In spite of the fact that, PMBOK characterized risk as vulnerability, there are contrasts among risks and uncertainties. A risk speaks to an occasion or condition for which the likelihood of event is known, the 'known questions', defenseless to examination. Furthermore, uncertainty or vulnerability is an occasion for which the likelihood isn't known, being the 'obscure questions', not susceptible to analysis.

As (Sundee Samson, 2009)) said risk and uncertainty are the two most widely used concepts in the literature covering risk management field. Although these terms are closely related, a number of authors differentiate between them. There are several definitions regarding uncertainty in the bibliography, some of which should be mention. First, (Knight, 1921) addressed that “uncertainty reflects randomness with unknown probabilities”. Another definition for uncertainty is that is a situation where it is not possible to attach a probability of occurrence to an event (Ahmed et al., 2007).

2.1.1.3. Risk management

According to a Guide to the Project Management Body of Knowledge (PMBOK Guide); 4th ed. 2008; “Risk management is a continuous, repeating a set of interrelated activities that aim to control the potential risks. It includes maximizing the results of positive events and decreasing the negative results of these risks. The purpose of risk management is to avoid problems or negative occurrence, avoid crisis management and prevent problems.”

RM, which is sometimes referred to as “uncertainty management”, can be generally defined as being a systematic process that a company follows in order to reduce the likelihood of unexpected events occurring, in order to maximize profit. Many authors defined risk management as uncertainty management in the literature as risk itself an uncertain thing. The most two popular definitions of RM are published by PMI and APM:

“It is the systematic process of identifying, analyzing, responding and controlling of project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives”. (PMI, 2016)

“A process whereby decisions are made to accept known or assessed risks and/or the implementation of actions to reduce the consequences or probability of occurrence”. (APM, 2012)

Although both organizations similarly define RM, the major difference between these definitions concerns PMI's consideration of risk as sometimes being positive. Positive "risk" may also be referred to as "opportunity" in a RM plan. Though many authors have previously described risk only being negative, in which where different measures are initiated in RM plans in order to reduce the probability and impact of negative events, some see certain types of risk as potential opportunities. According to Jaafari (2001) & Perminova et al. (2007), positive risks, although causing uncertainty, can also maximize success or profit, and should therefore be considered in RM strategies, alongside negative risk (Ward & Chapman, 2003).

From several definitions found in the literature concerning risk management, we could say that the main concept is the same, and better described as a systematic process that aims to identify and manage risk. In order to act on its appearance by implementing systems and procedures to identify, analyze, evaluate and address the risks inherent to any project (Raz & Michael, 2001; Marcelino-Sádaba et al., 2014).

2.1.1.4. Manufacturing Projects

Manufacturing projects are projects, which are engaged on the making of goods by hand, or by machine that upon completion the business sells to a customer. Items used in manufacture may be raw materials or component parts of a larger product. The manufacturing usually happens on a large-scale production line of machinery and skilled labor.

2.1.2. Life Cycle of a Project

A succession of individual project phases formed the cycle of the project, which logically follow each other and should not overlap in time. In other words, phases of the project represent "a group of logically related activities in terms of project management". (PMI, A guide to the project management body of knowledge (PMBOK Guide), 2008) Each phase has its objectives (outputs) and the intended time range. For marking the achievement of sub-goal or another phase are used the milestones. Milestones do not have duration value. At this moment occurs to check whether in a given phase were reached the outputs of or not.

The project life cycle encompasses; pre-project study– this phase precedes the decision on the implementation of the project, project definition -this phase involves the process of making outputs of pre-project studies more accurate, planning , implementation and finally completion and handover of the project.

2.1.3. Types of Projects

There are three major types of projects (Duncan, 2010); new product development projects-the justification for these projects is to develop something that will be sold: they are undertaken to solve someone else's problem. The other one is Project-is-the-product projects; these projects undertaken to provide support to someone else's project. The product of the project is the work of the project. Most consulting (including construction) projects fall into this category, as do non-profit fund-raisers. The third type of project is infrastructure projects, the justification for these projects is to fix a problem that prevents the organization from doing something as well as it could (this includes creating the capacity to do something it cannot). The product of the project is infrastructure: the ability to do something. Most internal projects fall into this category: IT, organizational development, strategic planning, etc. From a financial perspective, it is often hard to justify these projects since they deliver no direct benefits.

2.1.5. Classification and Types of Risks

Risks are mainly identified as internal risks, external risks and project specific risks (Miller 2000).

Internal risks

Those risks that directly relate to the project and fall under the project management team's control are termed internal (El-Sayegh, 2008). These risks are again divided according to the specific originator such as the designer, contractor, owner, suppliers and subcontractors

Owner risks - studies have identified various ways in which the project owner can become another source of risk. This includes delaying payments to contractors, imposing an unreasonably tight schedule, making design changes, intervening in the project, delaying contractors' access to the site, not defining the scope of the project, suddenly going bankrupt or breaching the terms of the contract (Remington & Pollack, 2007).

Designer risks - The main problem here is usually impractical designs that are difficult to implement, but risks can also arise if the drawings are poorly executed or the specifications are incomplete or inaccurate.

Contractor risks -Contractors become risk sources by producing poor quality work or low productivity, by demonstrating incompetence, by being involved in accidents at the construction site or by being unable to deal with unexpected technical challenges. They can also pose a risk if they have too few staff, if the key staff leaves in the course of a project, or if they become engaged in disputes with sub-contractors (Zaneldin, 2006).

Sub-contractor risks -As indicated above, sub-contractors are an additional source of risk. If they fail to deliver the work as agreed with the contractor, this can result in breach of contract. Where sub-contractors are not qualified for the job, this can lead to poor performance (Zaneldin, 2006).

Supplier risks -Suppliers can cause risks in construction projects by failing to deliver materials on time or by delivering poor quality materials (Miller, 2000).

External risks

Internal control systems have no influence on external risks, which may be caused by social, natural, economic, political and cultural factors. Research has associated each of these categories with various risk events.

Political and government risks-Political risks include war threats and political instability. Changes in regulatory guidelines and rules may also affect the project. Other risks are posed by workers' dissatisfaction or even industrial action, which can interrupt project activities and negatively influence the project's objectives. Studies have also identified delays in permit approvals and corruption among officials as possible sources of risk affecting manufacturing projects (Knecht, 2002).

Social and cultural risks- Social and cultural factors which have their origins in the external environment may nevertheless create conflict within the project; for example, cross-cultural differences, substance abuse and criminal act (Demkin & American Institute of Architects, 2008).

Economic factors - Miller (2000) found that sudden changes in prices and inflation were the most significant economic risk factors for local and international companies in his study. Other economic factors, which can pose risks to construction projects, are shortages, whether of equipment, work force or materials, and currency fluctuations (Miller, 2000).

Natural factors -Natural risks may include unpredicted inclement weather and unforeseen site conditions (Loo, Abdul-Rahman & Wang, 2013).

Other factors- El-Sayegh (2008) identifies another category of external risks that he refers to as "others". Into this miscellaneous category, he places events such as difficulty in claiming insurance, local protectionism, unfair tendering practices and delays in resolving litigation and contractual issues.

Project-Specific Risk Factors

A very critical risk factor is the client's problems. We separate this category in two sub categories: i) problems with cash flow and ii) excessive demands from the client. Concerning the first option, it is the most critical factor for this category of risks. Always, there is the danger of a sudden bankruptcy from the client, so the project should be stopped at the moment. Also, the

client may delay to pay, resulting to have serious delays in the schedule of the project. Clients, often impose tight time schedules which are impractical to achieve. Moreover, they try to rush the projects for obvious time and cost reasons.

A project may face different challenges and uncertainties in the planning, build-up and even post-completion phases. According to the literature, most of the risk that a project faces arises from uncertainty. Ward and Chapman (2003) identified five types of risk sources that cause uncertainty: (1) variability associated with estimates; (2) uncertainty about the basis of estimates; (3) uncertainty about design and logistics; (4) uncertainty about objectives and priorities; and (5) uncertainty about fundamental relations between project parties (Ward and Chapman. 2003).

Jafaari (2001) identified several risk categories that a project may encounter: political, promotion, technical, market, financing, operating, schedule, environmental, cost and organizational risks. Rolstadas et al. (2011) added a new category to this list called contextual risk, which refers to external factors that can influence project performance and lead to negative impacts.

Meanwhile, Artto et al. (2011) divided complex project risks into four types:

Pure risk- unfavorable events such as, fire or other accidents, which cannot be predicted in advance. Although there is a low probability of pure risk occurring, it can cause significant damage to a project. The liability of such types of events lies with the insurance company, thus it is also known as insurable risk.

Financial Risk: these are risks relating to a project's financial activities, including funding of the project. This might also have a major impact on the project's success, as it includes exposure to currency fluctuation, liquidity and operative cash flow.

Area-Specific Risk: these risks occur due to specific geographical, cultural, political, national and environmental issues. Sudden natural calamities or political instability of that specific location can have major impacts on the project and

Business Risk: all other risks aside from those mentioned above. They can arise from small activities that may superficially seem negligible, but may end up affecting the activities of the whole project. Business risks may occur at any time during the project and influence its outcome.

Krane et al. (2010) divided risk categories into operational, short term strategic and long term strategic risk. Operational risk can have an instant impact on the project, whilst strategic risk has an impact on the project's short or long-term objectives.

Fontaine (2015) divided the risks faced during projects into project risks and technical risks. Project risks can arise during the project building or implementing steps and have impact on the project, whereas technical risks occur during the post-completion phase of the project.

According to a website of PM (2017), project risks are mainly categorized as costs, schedule and performance risk. There are also other form of risks, such as governance, strategic, operational, market, legal and external hazard risks, which ultimately impact on the aforementioned cost, schedule and performance of the project. Aside from project risk, there can be also project deferral risk, which is associated with failure to complete the project and can also be caused by the aforementioned sources.

At the literature, there has been extensive research on the classification of project risks. A general classification may use physical, social and economic sources. However, an in-depth investigation may need classification that can cover all types of risk in more detail. Therefore, the sources of risk can be represented depending on the environment in which they arise as follows (Williams et al., 1998): physical environment; social environment; political environment; operational environment; economic environment; legal environment; cognitive environment

Physical environment- The physical environment is an important source of risk. Natural disasters like earthquakes, storms, flooding, landslides, etc. lead to serious losses. The environmental influence on the people and people's influences on the environment are important aspects of this source of risk.

Social environment -The changes in people's values, human behavior and state of social structures are another source of risk. Civil unrest, social riots and strikes are events underlining the importance of the social environment as a source of risk. The difference in social values and culture creates a high level of uncertainty. At the same time the changes of culture create opportunities.

Political environment -The political environment is an important source of risk in all countries. The ruling party can affect organizations in different ways, for example by cutting aid to some industry branches or protecting some branch or region, by implementing strict rules about the environment, etc. The political environment is a more complex and important source of risk in an international aspect.

Operational environment -Operational activities of the organization create risk and uncertainty. For example, damage in installation or production processes might result in physical injuries of workers. Unfavorable working conditions can threaten both the physical and mental health of the workers. The formal procedures of hiring or firing employees may generate a legal problem. The manufacturing processes may produce harm to the environment. In this case the organization is a source of risk. The international business can suffer from risks in the transport system.

Economic environment -The economic environment usually is hardly influenced by the political environment in a single country, but the globalization of the market creates a market that is

greater than a single market and needs to be considered separately. Although a particular activity of the government can affect the international capital market, the control of the market is impossible for a single government. Examples of sources of risk generated from the economic environment are, in a global aspect, economic recession and depression, and at a local level, interest rate, credit policy, etc.

Legal environment -The legal environment creates risk and uncertainty in business. The legal system creates risk by disparity of current or new laws to the environment. In the international domain, complexity increases because of the variation of legal standards in different countries and can lead to conflict among the partners.

Cognitive environment -The risk managers' ability to reveal, understand and assess risk is not perfect. The difference between perception and reality for different people is an important source of risk for an organization. The cognitive environment is a big challenge to the risk manager. The questions of how to assess the effect of the uncertainty on the organization and how to understand whether the perception of risk is real are considered.

Another way to classify risks in project, with an utterly different purpose though, is to distinguish them to known and unknown risks. Known risks are those that have been identified and analyzed, making it possible to plan responses to those risks. For known risks that cannot be managed proactively, the best way to deal with them is to assign a contingency reserve on the project budget. Unknown risks are those that cannot be identified and managed proactively and therefore should be assigned a management reserve for them (PMI, 2013).

Several studies have used a risk breakdown structure (RBS) to organize the various categories of risks. Risk sources can be financial, strategic or operational (Xenidis & Angelides, 2005) and can lead to higher than predicted expenses in procuring materials, or lower than expected sales after the project completion, or poor accounting during the project management phases. Examples of financial risk sources include government and commercial factors, while strategic risks can arise because of inadequate staff training or IT, or poor marketing; and problems with production, security and maintenance are all sources of operational risk. Health and safety regulations and environmental concerns can pose an additional compliance risk.

2.1.6. Risk management in project

Risk management is the way toward distinguishing, evaluating and controlling threats to an organization's capital and income. These threats, or risks, could originate from a wide assortment of sources, including money related vulnerability, lawful liabilities, vital administration mistakes, mishaps and catastrophic events.

“The world is in state of invariable revolutionized and survival relies on the capability to adapt to changes. Unluckily, several project managers have not yet realized that there is a need to include project risk as a key process. It is a well known fact that managing risk has two major objectives: to keep away from the downside risks and to take advantage of opportunities.” (Alashawal, A. M., Rahman, H. A. & Beksin, A. M)

Others define RM as the minimizing of negative occurrence of risk which causes loss to the organization. Stranks (1994) describes RM in terms of identification, evaluation and control of exposure to each risk that hinders project success. He formulated four basic principles of RM: (1) minimization of negative impacts of risk in a business; (2) recognition, evaluation and economic control of risks that hinder business success and profit; (3) determination of the most relevant way to tackle major and minor risks to a company’s profit; and (4) a procedure for adapting to the impacts of progress.

Risk is present in every aspect of our lives and quite naturally covers all aspects of organizational activities and it is included in all management levels. Nowadays, risk management has become a main part of the organization’s activities and its main target is to help all other management activities to reach the organization’s aims directly and efficiently (Tchankova, 2002). It is considered as an integral part of project management, a key process where most of project managers know that is essential for good project management (Serpella et al., 2014). According to the authors, risk management cannot be perceived as a tool to predict the future, since that is rather impossible. Instead, they describe it as a tool to facilitate the project in order to make better decisions.

A continuous process depends directly on the changes of the internal and external environment of the organization and includes the following main steps:

1) Risk planning; 2) Risk identification; 3) risk analysis (qualitative and quantitative); 4) risk response, and 5) risk control. In general, we could say that the process of risk management in projects is a rational chain of practices by which decision agents plan, execute actions and control the results in order to keep the implementation of the project under certain conditions (time, cost and quality parameters) (Rodrigues da Silva & Crispim, 2014).

Risk management is the highest ranked factor for project failure (Whittaker, 1999; Kutsch, 2008), that’s why an organization, in order to be successful, should be committed to address risk management proactively and consistently throughout the project rather than reactively. A conscious choice should be made at all levels of the organization to actively identify and pursue effective risk management during the life of the project. Moving forward on a project without a

proactive focus on risk management is likely to lead to more problems arising from unmanaged threats (PMI, 2013).

During the project lifecycle, it is regular for project managers to discover assessable dangers and vulnerabilities that cannot be evaluated. Thus, they felt the need to improve project risk management practices by embracing more extensive points of view in what concerns overseeing vulnerability, for example, giving more consideration to absence of information that may bring uncertainty.

Risk management ensures that for all intents and purposes all issues are discovered early enough so that there is an incredible chance to recover from them without missing schedules or overspending the spending plan. Leung, Chua and Tummala contend that proper risk management approaches can give supportive information into the venture and give more information to improve the nature and nature of speculation choices. Elkington and Smallman guarantee venture hazard the board is essential for the endeavor's thriving.

An importance of a project risk management methodology consistently engages qualitative and quantitative assessment, response planning and monitoring, which grant to extend the probability and impact of events that may appear as open entryways for the endeavor and decreasing the probability and impact of the ones that may cause negative effects on the endeavor objectives.

2.1.7. Risk Management in DBE

Risk-taking is an inherent element of banking and, indeed, profits are in part the reward for successful risk taking. On the other hand, excessive and poorly managed risk can lead to losses and thus endanger the sustainability of the Bank. Risk in a banking organization refers to the possibility that the outcome of an action or event could bring adverse impacts on the institution's capital, earnings or its viability. Such outcomes could either result in direct loss of earnings and erosion of capital or may result in imposition of constraints on the bank's ability to meet its business objectives and to execute its strategies successfully. It is expected to ensure that the risks the bank is taking are warranted. Risks are considered warranted when they are understandable, measurable, controllable and within the bank's capacity to readily withstand adverse results. Sound risk management systems enable the bank to take risks knowingly, reduce risks where appropriate and strive to prepare for a future, which by its nature cannot be predicted with absolute certainty (Risk management guideline of DBE).

Banks must have comprehensive risk management process (including board and senior management oversight) to identify, evaluate, monitor and control or mitigate all material risks and to assess their overall capital adequacy in relation to their risk profile. Whilst the types and degree of risks, an organization may be exposed depend upon a number of factors such as its size, complexity, business activities, volume etc, this section covers the most common risks DBE faces, namely: Credit Risk, Liquidity Risk, Interest Rate Risk, Foreign Exchange Rate Risk, Operational Risk and Strategic Risk.

Banks require having a sound risk management program in order to manage risks properly. A sound risk management program involves the application of four basic elements: Appropriate board and executive management oversight, adequate risk management policies and procedures; Appropriate risk measurement, monitoring and control functions; and Comprehensive internal controls and independent audits

“Mission of the Bank” defined Development Bank of Ethiopia is a specialized financial institution established to promote the national development agenda through development finance and close technical support to viable projects from the priority areas of the government by mobilizing fund from domestic and foreign sources while ensuring its sustainability.

The Bank’s risk management shall include objectives like; ensure that the Bank’s business decisions are in line with the overall strategic objectives of the Bank, ensure that risk taking is explicit, clear and the expected payoffs reasonably compensate for the risks taken; and ensure that the Bank’s overall activities are consistent with its risk appetite. Furthermore, provide an appropriate risk management framework, improve informed decision making through availing bank-wide risk assessment information/report in a timely and comprehensive manner, promote efficient allocation of capital or ensure sufficient capital as a buffer is available to take risk; and enhance asset quality of the Bank.

The scope of the activities of Risk Management by the Bank shall primarily include risk types of credit risk, liquidity risk, interest rate risk, foreign exchange rate risk, operational risk and strategic risk.

2.1.9. Project Risk Management Process

The management of risk in projects is currently one of the main topics of interest for researchers and practitioners working in the area of project management. Risk management has been designated as one of the eight main areas of the Project Management Body of Knowledge (PMBOK) by the Project Management Institute, which is the largest professional organization dedicated to the project management field.

Furthermore, most training programs for project managers include a course on risk management. Within the currently accepted view of project management as a life cycle process, project risk management is also seen as a process that accompanies the project from its definition through its planning, execution and control phases up to its completion and closure (Raz & Michael, 2001). As we mentioned before, project risk management includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project. The main objectives of project risk management are to increase the likelihood and impact of positive events, and decrease the likelihood and impact of negative events in the project.

A. Plan Risk Management

A very important aspect of the risk management process is planning. Risk planning is the detailed formulation of actions in a project for the management of risk. Planning begins by developing and documenting a risk management strategy. Early efforts establish the purpose and objective, assign responsibilities for specific areas, identify additional technical expertise needed, describe the assessment process and areas to consider, define a risk rating approach, delineate procedures for consideration of handling options, establish monitoring metrics and define the reporting, documentation and communication needs. The key benefit of this process is it ensures that the degree, type, and visibility of risk management are commensurate with both the risks and the importance of the project to the organization.

The planning of risk is iterative and includes the entire risk management process, with activities to assess (identify and analyze), handle and monitor. The result is the risk management plan. Tools and techniques that are used in this process, in order to develop the risk management plan, are analytical techniques, expert judgment (experts could be senior management, project stakeholders, subject matter experts, industry groups and consultants and others) as well as meetings of the project team. It is important to say that careful and explicit planning enhances the probability of success for other risk management processes.

The risk management plan is the road map that tells the government and/or the contractor team how to get from where the project is today to where the project manager wants it to be in the future. The key to writing a good risk management plan is to provide the necessary information so the project the project team knows the objectives and the goals of the risk management process. Another aspect of risk planning is ensuring that risk management plan includes adequate attention to project opportunities. The uncertainty inherent in projects means that some things may go better than expected. Considering project options that represent better opportunities can be at least as important to managing project risk as managing potential threats.

B. Risk identification

Risk identification is arguably the most important phase of the risk process, since any risk not explicitly identified has been taken unconsciously and unexpectedly. It is therefore important that risk identification receives proper attention (Hilson, 2000). It develops the basis for the next steps, analysis and control of risk management, and ensures risk management effectiveness. If risk managers do not succeed in identifying all possible losses or gains that challenge the organization, then these non-identified risks will become non-manageable. The organization will not account for them and will not take any actions related to them and the consequences could be unanticipated. The inability to identify possible gaining risks is as inappropriate as non-identified risks related to the loss. Missing a good positive possibility that an organization seeks is a problem equal to bearing losses.

Identification of risks represents the most important and the most time-consuming phase. The aim of identification is to find substantive (relevant) risk with the help of selected methods and record it in the register of risks. Next, you need to specify the owner of the risk (PMI, PMBOK guide, 2008)

Risk and severity differ according to the stage at which the project is located. At the beginning of the project there are many new risks, a threat is no longer at the end of the project. The risk is lower. (Smejkal et.al, 2010) There are typical risks for every phase of the project. When we are planning we should observe particular risks associated with poorly formulated objectives of the project (specified source of risk is unclear), on a contractual basis, an incomplete plan, or a set of communication rules in project team and stakeholders.

In the implementation of the subject problems occur more in personal security, with suppliers or to cash-flow problems. In the last phase of the project may appear the risks associated with accepting the project outputs, or their lack of quality. In General, the most frequently occurring risks in the project due to changes in the project (mainly due to changes of the range), due to poor communication and due to changes in external conditions (external risks and limitations of the project) [PMI, PMBOK guide,2008]

Risk identification has to be considered in a broader context. The attention of managers should not be concentrated only on what can be insured or mitigated. Risk identification should start with the basic questions (Tchankova, 2002): How can the organizational resources be threatened? What adverse effect can prevent the organization from achieving its goals? Moreover, what favorable possibility can be revealed?

Participants in risk identification activities may include the following: project manager, project team members, risk management team (if assigned), customers, subject matter experts from

outside the project team, end users, other project managers, stakeholders, and risk management experts. While these personnel are often key participants for risk identification, all project personnel should be encouraged to identify potential risks.

Risk identification is a continuous process. It is wrong to believe that risk identification is a one-off activity, which is carried out when the organization is established, and the current risks are identified. In today's dynamic economic environment such a point of view is completely wrong. Changes in the environment require continuous attention for identification of new risks. The organizational changes are due to orientation to new activities, introduction of new products, giving up old products, corporate changes as merges with other companies, etc. The environmental changes are due to the macroeconomic frame, changes in the political situation, and changes in civil life, etc. A basic aim of risk managers is to be informed about these changes, to be able to interpret them in accordance with their influence on the organization's resources. Continuous detection of new risks is part of risk identification.

The idea of integrating the new risk into the risk identification process highlights the opinion that the attempt of the organization systematically to identify all risks, present and future, is in the organization's best interests.

There are many alternative techniques available to assist in identifying risks, including brainstorming/workshops, SWOT analysis, assumptions analysis, prompt lists and checklists, Delphi technique, nominal group technique, document analysis, interviews, and diagramming techniques (Hilson, 2000). Some of these will be discussed below.

Brainstorming -The goal of brainstorming is to obtain a comprehensive list of project risks. The brainstorming process, borrowed from business management and not specifically created for risk management, involves redefining the problem, generating ideas, finding possible solutions, developing selected feasible solutions and conducting evaluation (Chapman, 1998). Originated by Osborn in the early 1950s, brainstorming was proposed as a problem solving method which would produce a much larger quantity of ideas in less time than existing group problem solving techniques (Mehdizadeh, 2012).

SWOT Analysis -This technique examines the project from each of the strengths, weaknesses, opportunities, and threats (SWOT) perspectives to increase the breadth of identified risks by including internally generated risks. The technique starts with identification of strengths and weaknesses of the organization, focusing on either the project, organization, or the business area in general. SWOT analysis then identifies any opportunities for the project that arise from organizational strengths, and any threats arising from organizational weaknesses. The analysis

also examines the degree to which organizational strengths offset threats, as well as identifying opportunities that may serve to overcome weaknesses.

Checklists -Checklists are a trivial method of risk identification where pre-determined crucial points are examined for symptoms of potential risk situation. These are simple to use and usually evolve over time through contributions from various functional experts and collective experiences (Chapman & Ward, 2003)

Delphi Technique -The Delphi technique is a method for the systematic collection and collation of judgments from isolated anonymous respondents (mainly project risk experts) on a particular topic, through a set of carefully designed sequential questionnaires interspersed with summarized information and feedback of opinions, derived from earlier responses (Chapman, 1998).

Cause and Effect Diagrams -A cause and effect diagram or a fish bone diagram is a graphical representation of root causes of quality problems, where major causes of the ultimate problem are grouped and broken down into detailed sources. Though, cause and effect diagrams are easy to use, they do not provide a foundation for further analysis such as relative importance of individual causes of a problem. Hence, cause and effect diagrams are used for deterministic problems in a very specific domain. (Ahmed et al., 2007)

Assumptions Analysis -Every project and its plan is conceived and developed based on a set of hypotheses, scenarios, or assumptions. Assumptions analysis explores the validity of assumptions as they apply to the project. It identifies risks to the project from inaccuracy, instability, inconsistency, or incompleteness of assumptions.

The primary output from identify risks process is a concentrated table of the categorized risks known as Risk Register. Risk register is the document where all the defined risks are recorded during the risk identification process that gets even more detailed as we move on the next stages of risk analysis and risk responses. It needs to be updated and monitored on a regular basis in order for the information to be provided well-organized and the analysis, how to deal with it and the risk status could be defined

C. Risk Analysis

After identifying the risks, the next stage in the process of risk management approaches to their analysis and evaluation. The aim of this phase is to evaluate and determine the impact and probability of risk situations and prioritize risks according to their severity. The choice of method depends on availability of resources (money and time), and information for analysis, size and the complexity of the project and the purpose of analysis.

Risk analysis methods -To qualify a risk we can use division, in which we use probability and expected value of risk. It is just simpler method for rapid classification. Other options are statistical simulation methods that can evaluate the overall project risk. These include Monte Carlo method, which respects difficult links between a large numbers of often interrelated risks. It generates forecasts through repeated simulations (Chapman et.al, 2007).

A similar principle is founded in sensitivity analysis, which is used to determine the impacts if the percentage any of the assumptions is changed. Generally we may use a scoring method, a map of risks (a view of risks in the chart) or matrix diagram (tabular view). All these qualitative methods are based on expert evaluation.

A map of risks shows risks in the dot pot. Using indifference curves, it is possible to divide them according to their degree of criticality on a regular, serious and critical.

Risk matrix is similar projection in the diagram, where the most serious risks are in the right top corner. We may select either verbal or numerical rating scale.

Scoring method utilizes expert estimates. Each participant of the assessment provides an estimate. The estimate is settled with the aid of a ten point scale. Each participant set the points independently of others. The score is calculated as arithmetic average of all estimates. Risks can then be visualized using a risk map.

Another method is RIPRAN. (Lacko et.al, 2016)It is written to the table that contains the threat, scenario, probability and impact (can be evaluated both numerically and verbally), risk value, proposed measures including cost and owner of risk. Measures are recalculated after implementation. The probability and size and impact determined new risk value.

The analysis is followed by a risk assessment, which means comparing the analysis results with predetermined criteria. Than we adopt the decisions to accept risks based on an assessment of their acceptability and the decision how to treat them as well. Special attention will be paid to significant risks, those which have a greater probability of the worst impacts on project objectives.

Effective risk analysis requires target thinking and contribution from those generally acquainted with the territory influenced by the conceivable risk. Analysis is commonly a two stage approach: qualitative and quantitative.

Qualitative analysis- Qualitative methods for risk assessment are based on descriptive scales, and are used for describing the likelihood and impact of a risk. These relatively simple techniques apply when quick assessment is required. The main aim is to prioritize potential threats in order to identify those of greatest impact on the project. During the phases of the project, risks may change, and thus continuous risk assessment helps to establish actual risk status.

A typical qualitative risk assessment usually includes the following issues (Pipattanapiwong, 2004): A brief description of the risk; The stages of the project when risk may occur; The elements of the project that could be affected; the factors that influence risk to occur; The relationship with other risks; The likelihood of risk occurring; And How risk could affect the project.

The direct judgment, ranking options, comparing options and descriptive analysis are also considered as qualitative risk measurement. The main methods for risk qualitative assessment are briefly discussed below.

Risk Probability and Impact Assessment -Qualitative risk assessment based on categorization of both probability and impact provides greater insight into the absolute risk severity (Kendrick, 2009). The risk impact assessment investigates the potential effect on a project objective such as schedule, cost, quality, or performance, including both negative effects for threats and positive effects for opportunities.

Quantitative Risk Analysis- A quantitative risk analysis is a further analysis of the highest priority risks during which a numerical or quantitative rating is assigned in order to develop a probabilistic analysis of the project.

A quantitative analysis quantifies the possible outcomes for the project and assesses the probability of achieving specific project objectives; provides a quantitative approach to making decisions when there is uncertainty and creates realistic and achievable cost, schedule or scope targets

In order to conduct a quantitative risk analysis, you will need high-quality data, a well-developed project model, and a prioritized list of project risks (usually from performing a qualitative risk analysis). Some of the quantitative risk analysis methods include but are not limited to:

Three Point Estimate – a technique that uses the optimistic, most likely and pessimistic values to determine the best estimate.

Decision Tree Analysis – a diagram that shows the implications of choosing one or other alternatives.

Expected Monetary Value (EMV) – a method used to establish the contingency reserves for a project budget and schedule.

Monte Carlo Analysis – a technique that uses optimistic, most likely, and pessimistic estimates to determine the total project cost and project completion dates.

Sensitivity Analysis – a technique used to determine which risks have the greatest impact on a project.

Fault Tree Analysis (FMEA) – the analysis of a structured diagram which identifies elements that can cause system failure.

Quantitative methods are based on a mathematical calculation of the probability of occurrence and the impact to risk events. For qualitative methods the severity of the impact and probability of risk events is determined on the set verbal scale. Or we can use a point scale. These methods are simpler. They are used primarily to compare the severity individual risks. But these methods do not work with financial impact of risks comparing with the quantitative methods. Quantitative methods are more accurate. However they are time consuming and needs more information as well.

D. Risk Response

According to PMBOK guide, 2008; risk response is another critical phase of a project risk management. After analyzing and evaluating the materiality of risks comes the response risk planning whose purpose is to reduce risks. If possible, it is preferable to prevent risk with a prevention measures before the risk occurs. And before arises a need to eliminate its negative consequences.

Generally, there are two approaches to reduce the risk: offensive - which was aimed at weakening the causes of risk pursue and defensive - which focuses on the reduction of adverse consequences. When we choose the right strategy, there plays a variety of factors the role – the most decisive are: size project, time and financial demands solutions. It is also useful to base on the map of risks and location according to their impact on the project and the probability of occurrence.

There are many possible strategies how to reduce risks (Joblings et.al, 2007):

Risk monitoring - monitoring is used for a risks with low probability and moderate impact. Risk factors are monitored and if become to increase the significance of any of them, it is necessary to plan the response to potential risk.

Risk avoiding - this reaction is used for significant risks. It is based on the elimination of the causes of the risks so that the risk should not occur. We can avoid the risk of finding other solutions or redefining goals, changing technology or find new supplier, or a detailed definition of the scope to avoid later adjustments and subsequent cost increases.

Risk mitigation - this strategy can be aimed at either the reduction of the impact of risk on project, or the likelihood of its occurrence (but not eliminate the risk entirely). An example may be to increase product quality, involvement experienced workers to process, ongoing periodic checks or a backup making.

Risk Acceptance - adoption strategy is used for non-serious risks and the risks that we are unable to influence or their treatment would be too expensive. Risk accepting can take two forms - passive and active. Active acceptance requires the preparation of plans. But they may be used only if the risk occurs. Passive means only passive acceptance of the consequences of risk. For these cases we can create reserves.

Risk transfer - Risk transfer means transferring the responsibility for the consequences threats to a third party. This defensive character solution is applied mainly to solve financial risks with high-impact and low probability to occur. The risk is not eliminated, but its solution is transferred to another entity. However, we have to expect other costs (third party does not take the risk on themselves without payment). This solution often appears in the form of insurance, where the risks and consequences are covered by insurance or in the form of leases. The leasing company is responsible for the risks associated with the ownership of property. It is possible to transfer the risk to the supplier (in the form of agreed fixed prices).

E. Risk monitoring and controlling

The likelihood and severity of risks may change in time of the project. Therefore we need to pursue the monitoring of risks and operative management. Risks must be continuously reassessed. This happens regularly or periodically as needed. If there is a new or secondary risk in time, we repeat the process of identification, quantification and planning. If there is remission of threats, not current risk can be overlooked (Smejkal et. al, 2010).

This phase also includes evaluation of the effectiveness of risk management. For example, whether there is a selection of appropriate strategies in response to the risk. Whether the strategy was effective and what the problem is so managed to avoid. It is also necessary to evaluate the effectiveness of prevention. For future projects should be retained documentation of obtained knowledge and knowledge from previous projects, so it is possible to trace the risks that have been identified and how they was managed and with what result. This approach can greatly facilitate the work with the risks to the future.

2.1.10. Influence of Effective Risk Management

Risk management can stay away from unanticipated debacles. What is more, keep away from spend more, not just money related, assets also. Nonetheless, it must have the option to oversee risks adequately. I do not get its meaning. Regularly it would take out all dangers lopsidedly costly, which is not alluring. Cost of risk management ought not to surpass misfortunes brought about by an exclusion of any risk. What's more, an expense of risk management must be remembered for a spending plan of a task. Moreover, when you work with dangers it is

consistently important to consider the kind of undertaking, consequently a measure of consumed reserves, and think about another specific circumstance, because each task is exceptional, and chance administration is expected to adjust to him. In a task, we should attempt to proactive hazard the executives, which comprises of instant systems with a character of preventive measures. Something contrary to receptive administration is that just reacts to not chance anymore (Honziroková, 2017)

2.1.11. Shortcomings of a Risk Management

The greatest shortcomings in risk management process for projects, (Honziroková, 2017) ;

The first one is a lack of data for risk identification. This is described by undefined scope of the project, WBS, timetable and budget. The other one is insufficient concretization of risk; it is a vague verbal description (example; the phrase "poor communication "), unspecified risks. The other third shortcoming current list of risks - risk management is therefore only a one-off affair on beginning of the project.

Skipping across important areas of risk in the identification, subjectivity of a risk assessment, using only one method for the quantification of risk as risks should be identified as many as possible with the use of several methods combination and incorrectly proposed measures - those are selected without discretion, without comparison with other possibilities are among the shortcomings of risks management.

2.2. Empirical literature review

This section presents the empirical literature review. It covers a review based on observations, induction, deduction, testing and evaluation of research work by other researchers and authors in the field under study. Risk identification, risk assessment and risk monitoring guided the review for this study.

❖ Risk Identification

Risk identification imperative for viable risk management among money related foundations particularly business banks in Kenya. To oversee acknowledge hazard related for propelling credit viably, business banking the executives need to recognize dangers confronting the bank. The significant thing during risk identification is not to miss any dangers out. Various strategies can be utilized in risk identification. The initial phase in sorting out the execution of the risk management work is to set up the critical perception territories inside and outside the organization (Kromschroder and Luck, 2008). Then, the departments and the employees must be assigned with responsibilities to identify specific risks. For instance, interest rate risks or foreign exchange risks are the main domain of the financial department. In relation to commercial banks' practice of risk management, Al-Tamimi (2002) found that the United Arab Emirates commercial banks were mainly facing credit risk. The study also found that inspection by branch managers and financial statement analysis are the main methods used in risk identification. The main techniques used in risk management are establishing standards, credit score, credit worthiness analysis, risk rating and collateral.

The ongoing examination by Al-Tamimi and Al-Mazrooei (2007) was directed on banks' risk management of United Arab Emirates national and remote banks. Their discoveries uncover that the three most significant sorts of dangers experienced by United Arab Emirates business banks are outside trade hazard, trailed by credit chance, at that point working danger. Risk Identification is emphatically huge to impact chance administration rehearses. On account of banks, contemplates made particularly on risk identification and risk alleviation incorporates crafted by Haron and Hin Hock (2007) on market and credit risk, and Haron (2007) explicitly on operational hazard. Haron and Hin Hock (2007) clarify the intrinsic hazard; credit and market chance exposures in Banks. Additionally, they outline the idea of dislodged business hazard that is significant in Banks. They infer that specific dangers might be considered as being inalienable in the activities of traditional banks. In spite of the fact that the risk exposures of Banks vary and might be mind boggling than regular budgetary establishment, the standards of credit and market chance administration are pertinent to both. Moreover, the International Financial Standards

Board's guidelines on capital ampleness and risk management core values mark the initial phases in a progressing procedure of creating prudential measures and filling administrative holes in the field of fund.

❖ Risk Assessment

There are numerous reasonable investigations made on risk analysis and assessment by reference to estimation and moderation of risk. Practically speaking, it is helpful to characterize the various dangers as per the measure of harm they potentially cause. This characterization empowers the administration to isolate dangers that are undermining the presence of the company from those which can cause slight harms. Every now and again, there is a backwards connection between the normal measure of misfortune and its comparing probability. That is, dangers that will make a high harm partnership, similar to tremors or fire, happen only from time to time, while dangers that happen day by day, similar to loan fee dangers or remote trade dangers, regularly cause just generally minor misfortunes, in spite of the fact that these dangers can occasionally hurt the companies seriously.

The experimental discoveries by AlTamimi and Al-Mazrooei (2007) featured that UAE banks are proficient in examining and surveying danger and there is a noteworthy diverse between UAE national and remote banks in the act of hazard investigation and evaluation. Moreover, the discoveries show that chance examination and evaluation are affecting risk management rehearses. The measures are utilized for risk control purposes, yet in addition for execution estimations and evaluating.

With regards to banking, barely any theoretical investigations (Sundararajan, 2007) examine the hazard estimation perspectives especially on the exceptional hazard. Despite the report title, Risk: Analysis, Perception and Management, the working definitions utilized by the Royal Society Study Group (1992) do exclude the term chance investigation. As indicated by the examination gathering, hazard estimation involves distinguishing proof of the results and estimation of both the extent of the outcomes and the likelihood of those results. The expansion of risk assessment finishes the procedure of hazard appraisal. English Standard 4778 considers hazard appraisal to allude to examination of inborn dangers and their hugeness in a proper setting. It consequently appears to be conceivable at this phase to reason that risk evaluation and risk analysis are equal terms.

Risk Analysis currently goes past assessment to incorporate a portion of the dynamic procedures of risk management. Conceptualizing is the principle instinctive strategy, including a gathering creating thoughts all things considered with a way of thinking of no one isn't right - how about we get the thoughts on the board. Albeit snappy and straightforward, it comes up short on the far-reaching approaches of the more complex strategies. An extensive hazard estimation and relief strategies for different risk emerging from financing exercises and from the idea of benefit and misfortune partaking in the wellspring of assets particularly venture account holders are clarified by Sundararajan (2007). He reasons that the utilization of current ways to deal with risk estimation, especially for credit and in general financial dangers is significant for banks. Additionally, he recommends that the need to receive new estimation approaches is especially basic for banks in light of the pretend, the remarkable blend of dangers in fund contracts.

❖ Risk Monitoring

The primary capacity of the risk manager is to screen; measure and control credit risk. The Risk Manager's obligation incorporates identification of potential occasions or future changes that could negatively affect the establishment's credit portfolio and the bank's capacity to withstand the changes. The territories to inspect fundamentally are; financial or industry changes, market chance occasions and liquidity conditions. Effective risk management requires an announcing and survey structure to guarantee that dangers are viably recognized and evaluated and that suitable controls and reactions are set up (Institute of Risk Management-IRM, The Association of Insurance and Risk Manager-AIRMIC and The Public Risk Management Association ALARM; 2002). Risks monitoring can be utilized to ensure that risk administration rehearses are in line and legitimate risk observing additionally encourages bank the executives to find botch at beginning time (AlTamimi and Al-Mazrooei, 2007).

Monitoring is the last step in the corporate risk management process (Pausenberger and Nassauer, 2002). According to Parrenas, (2005), the shareholders of the institutions can use their rights to demand information in order to judge the efficiency of the risk management system. The director's report enables the shareholders to assess the status of the corporation knowledgeably and thoroughly. Khan and Ahmad (2001) conducted a survey of risk management practices and found that on average the lowest percentage is on the measuring, mitigating and monitoring risk that is 69% score when compared to risk management policies and procedures, which accounts 82.4%, and internal control of banks that is 76%.

Al-Tamimi and Al-Mazrooei (2007) found that there is critical contrast between UAE national and outside banks in risk observing and controlling. Additionally, the UAE business banks have a proficient risk observing and controlling framework and it has positive effect on risk administration practices. Effective monitoring and management of exposures is fundamental for banks to decrease its misfortunes on income, dissolvability and contributors' discounts in the event of indebtedness (Van Gestel and Baesens, 2010). Banks likewise needs to deliberately screen chance emerging from expand bank items according to the controllers prerequisites (Hull, 2012). Nonetheless, it is mistake to accept that gathering administrative necessities is the sole for building up a sound, logical hazard the board framework. Directors need solid hazard measures to guide funding to exercises and gauge the size of potential misfortunes to remain inside cutoff points forced by accessible capital, lenders and controllers (Pyle, 2007). They need instruments to screen positions and make motivators to be judicious in facing challenge. Therefore, chance administration is the procedure by which directors fulfill these requirements by distinguishing key dangers, acquiring steady, justifiable, operational hazard measures, choosing which dangers should be oversee and by which techniques, and building up methodology to screen the subsequent hazard position (Pyle, 2007). The territory of loan cost hazard is the second region of significant concern and on-going danger checking and the executives. Nevertheless, the convention has been for the financial business to veer to some degree from different pieces of the money related part in their treatment of loan fee hazard. Most business banks make an understood differentiation between their exchanging movement and their accounting report loan fee introduction. Venture banks largely have seen loan cost hazard as an exemplary piece of market chance, and have created expound exchanging hazard the board frameworks to gauge and screen presentation. For enormous business Banks and European-type widespread banks that have a functioning exchanging business, such frameworks have become a necessary piece of the foundation. Nevertheless, indeed, these exchanging risks the board frameworks shift considerably from bank to bank and for the most part are less genuine than envisioned. In numerous organizations, extravagant worth in danger models, are ready for action. By and by, in a lot more cases, they are still in the usage stage. Meanwhile, basic specially appointed cutoff points and close checking substitute for expound ongoing frameworks. While this might be very acceptable for establishments that have small exchanging movement and work essentially in the interest of customers, the nonappearance of sufficient exchanging frameworks somewhere else in the business is somewhat troubling.

2.3. Conceptual Framework

The effective Risk management performance result of project cost, project time and project scope as well as project output delivery of the manufacturing projects are influenced by proper practice and application of the project risk management processes.

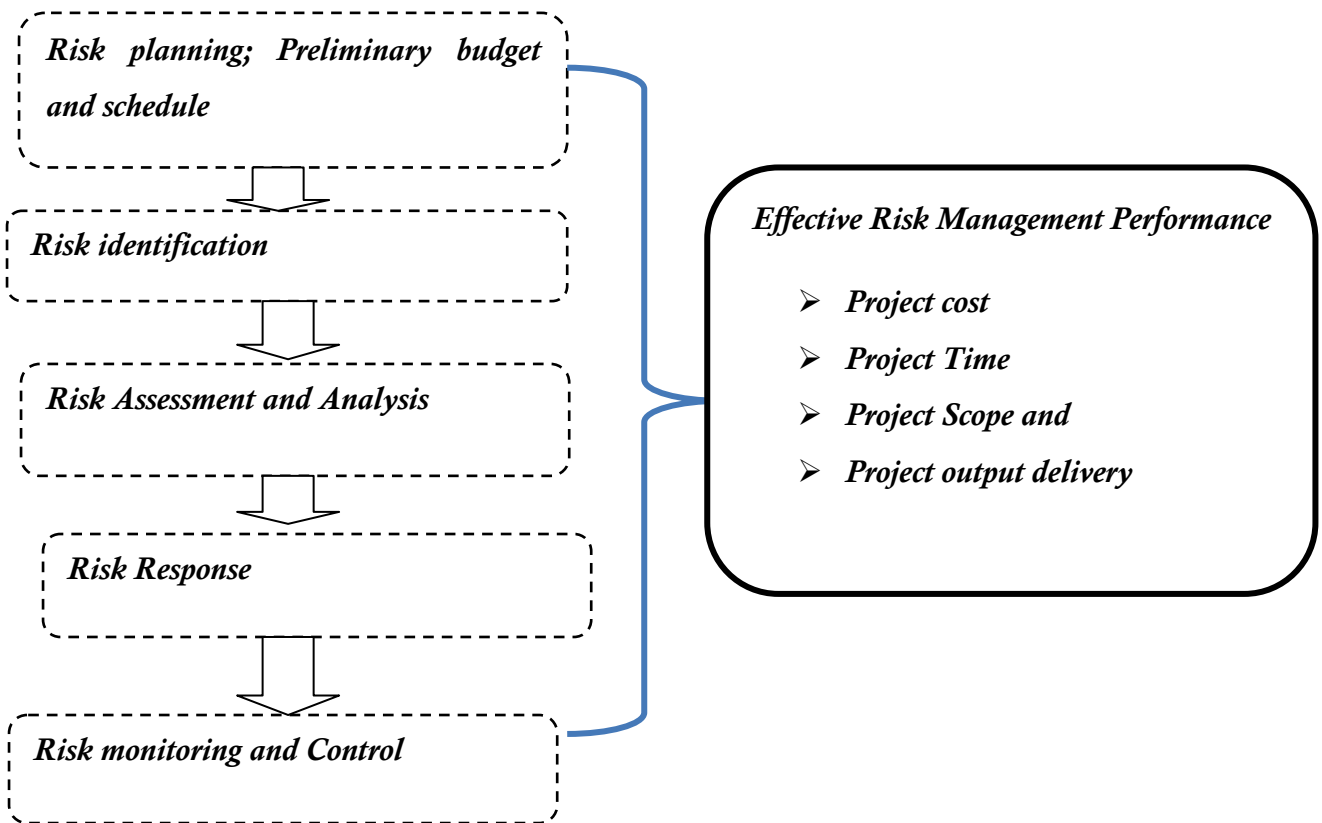


Figure 2. 1: Conceptual Framework of Risk Management

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This part outlines the methodology to be adopted by the researcher in completing the project work study. The area presents the population to be contemplated, the methods to be used to sample it, the instruments utilized in information assortment and techniques that were utilized in data analysis, which added to meet the destinations of the research.

3.2. Research approach

In this study, the researcher employed both qualitative and quantitative ways of research approaches. According to Leedy and Ormrod (2010: 136-137), qualitative strategies can help the researcher to gain new insights about the phenomenon, develop new theories about the phenomenon and discover the challenges within the phenomenon under investigation. Along with these challenges this study process entails descriptions of RM concepts, and verification and evaluation of risk-related elements. Yin (2011: 6-8) points out that qualitative research represents the views and perspectives of people, while offering an attractive and fruitful means of conducting a research. Based on the exploratory research questions adopted, it was decided that an inductive approach would be appropriate for gaining an understanding of complex RM issues and the drawing of conclusions about the studied project patterns. Therefore, knowledge accumulation with respect to RM requires greater exploration of ideas across different studies (Creswell, 2007: 40; Leedy & Ormrod, 2010: 33; Yin, 2011: 297).

3.3. Research Design

The study adopted descriptive research design. According to Helen L. Dulock, (1993), Research design is a blueprint or plan specifically treated to answer the research questions and to control variance. It is additionally seen as the general procedure picked to successfully address the exploration issue. Descriptive study portrays the presented circumstances and stances through observation and interpretation techniques (Chandran, (2004).

Descriptive research design is perhaps the best technique for leading exploration in human settings since it depicts precisely current realities through information assortment for testing theory or addressing inquiries to finish up the investigation through utilization of enlightening and inferential measurements, therefore this structure is regarded the best plan to satisfy the goal of this study. Descriptive research design is particularly relevant where information is required

directly from the phenomenon under investigation and where time and resources are limited. (Carmel Bradshaw, 2017). The researcher therefore employed descriptive research design to show the project risk management practices of manufacturing projects financed by DBE.

3.4. Population and sampling design

3.5.1. Sampling design

The study employed the probability sampling design of stratified random sampling.

❖ **Study area**-Although DBE has financed several manufacturing projects on several districts and branches found in every corner of the nation, due to limitation in time and financial resources, ultimately the study is carry out on the manufacturing projects financed by DBE, which are administered at Head office level only. This is because time and financial constraint has been encounter as a restraining factor to carry out the instruments on all manufacturing projects administered at Head office, Districts and Branches. In addition to these constraints, the head office selected because they have large numbers of clients and the project's capacities high related with their loan facility.

❖ **Target Population:** Refers to the set of people or entities to which findings are to be generalized (Crooks, 2003). For assessing the practice of risk management on manufacturing projects financed by DBE, actually, there are around 120 active implementation and operational manufacturing projects, which are administer at head office.

Therefore, the population of the study constitutes concerned 6 directorate offices, 16 team managers, and (16*4) 64 project contact officers and 120 project managers of the above active manufacturing projects. As a result, the total targeted population of the study is 206.

3.5.2. Sample Size

Though the result will be more accurate when taking all the population, however due to several factors such as time, cost and energy, census for all projects was not possible. Therefore, sampling technique has employed to select the sample population. Accordingly, the researcher employed Yamane's Formula of Sample size determination.

$n = N/1+N (e^2)$; *e*- plus or minus of 5% precision, 95% confidence level and $p=0.5$, *N*= total population (206) and *n*= sample size

Based on this formula the sampling size comes 135 and the researcher distributed equivalent number of questionnaire more importantly for the project managers, team managers, and project contact officers.

3.5. Sampling Technique

The researcher employed stratified random sampling method. Because stratified random sampling is a method of sampling, which is when a researcher selects a small group as a sample size for study. This subset represents the larger population. Organizing a population into groups with similar characteristics helps researchers save time and money when the population being studied is too large to analyze on an individual basis. Stratified random sampling helps by allowing researchers to organize the groups based on similar characteristics whereby a random sample is then taken from each stratum or group. Stratified random sampling divides a population into subgroups. Random samples are taken in the same proportion to the population from each of the groups or strata. The members in each stratum (singular for strata) formed have similar attributes and characteristics. (Nicholas, May 2020). Since each stratum is more homogenous than the whole population, it will be possible to get more precise estimates of each stratum and by estimating more accurately each of the component parts; a better estimate of the whole will be obtained from each stratum randomly. The strata are (1) Project managers of manufacturing projects (2) Team managers of the Bank loaning unit and (3) credit officials in the Bank loaning unit

As a vital piece of the research design and according to the exploration procedure of survey, the researcher creates questionnaire to gather the information from the respondents and subsequently the surveys were gather after a sum of 135 respondents are disseminated. The analysis, results and discussion make its base on 79% of reaction rate or 106 surveys are totally fill and gathered.

3.6. Data source and collection instruments

The study was done utilizing both primary and secondary data. Primary data is the data acquired from the project managers, Team managers and project loan-controlling officers and gathered utilizing semi- structured questionnaires.

According to (Makori, 2018), a self-administered questionnaire is the only ways to elicit self-report on people's opinion, attitudes, beliefs and values. The questionnaire contains both closed-ended and a few open ended questions. These kinds of inquiries were joined by a rundown of potential choices from which respondents were required to choose the appropriate response that best portrays their circumstance. The primary preferred position of close-ended questions is that

they are simpler to examine since they are in a prompt usable structure, they are anything but difficult to regulate because everything is trailed by an elective answers and furthermore they are prudent to use as far as efficient.

The questionnaires were overseen using drop and pick method. The overviews were used in light of the fact that they grant the respondents to give their responses in a free space and help the analyst gather information that would not have been given out had interviews been used.

Also, the respondents are mentioned to assess the project risk management practices and process on a five point Likert scale as (1) Strongly Disagree, (2) Disagree, (3) Neutral , (4) Agree And (5) Strongly Agree.

On the other hand, secondary data source acquired from past-distributed academic articles and unpublished archives, yearly reports just as other online sources are utilized to accumulate more data.

3.7. Data Analysis

Information or data is gathered, analyzed and checked for culmination and lucidity. The information gathered from the respondents is dissected quantitatively. Numerical information has gathered from the questionnaire, coded, entered and dissected utilizing descriptive statistics, which is helped by Statistical Package for Social Scientists (SPSS) application. Frequency tables with varying rates and percentages are utilized to introduce the findings and tables of mean and standard deviation, which are acquired from SPSS so as to speak to the discoveries.

Besides, to examine practice and process of project risk management in the case of manufacturing projects financed by DBE Likert-type scale going from strongly disagree =1, disagree=2, neutral=3, agree=4 and strongly disagree=5 were utilized. Basically, Likert scales are frequently called summative scales. In an ordinal scale, reactions can be appraise or positioned, however the separation between reactions is not quantifiable. Likert scaling is a bipolar scaling strategy, estimating either positive or negative reaction to an announcement.

What's more and important, to make simple understanding for the level of respondents' conclusion and understanding for every announcement, the results of the mean value are summarized in to measurement of '*Better practiced*' and '*Less practiced*' to show the project risk management practice of projects financed by DBE. 'Less practiced' which is inclusive of the remaining three scales (strongly disagree, disagree and neutral) assigned by mean values of less than three (inclusive). While, 'Better practiced' contains mean value greater than three (mostly strongly agree, agree) exclusive of 3.

3.8. Reliability and Validity

While building up the poll or questionnaire, two conditions are thought of; validity and reliability. Unwavering quality or reliability is the degree to which similar answers can be gotten utilizing similar instruments more than one time as indicated by Babbie, E. R. (2010). Bryman & Bell 2011 allude to reliability is "the consistency of a proportion of an idea". It is one of the significant variables while thinking about whether a measure is solid and stable over time. There should have the option to create similar outcomes, utilizing similar research techniques under comparable conditions after some time. It centers on the solidness of measure extra time; in this way the outcomes from that measure will have little variety (Bryman& Bell, 2011).

Cronbach's alpha coefficient is utilized in the exploration to research the reliability or unwavering quality of the surveys. All variables were sensibly solid as the Cronbach's Alpha's coefficients were over the edge estimation of 0.70. Hence, as per Cronbach's Alpha's coefficients measure, a 0.944 Cronbach's Alpha coefficient is acquired in the examination of the questionnaire and data reliability is good.

3.9. Ethical consideration

Values like non-plagiarizing of works, informed consent and right to privacy, protection from harm, adherence to copyright rules, acknowledgement of sources through citations and references, and originality of the research are considered by the researcher. The motivation behind the study that is consumption for academic purpose only plainly presented by the researcher on the developed questionnaire and mentioned the respondents to take an interest in the investigation on a deliberate premise.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1. Introduction

In this chapter, the researcher sorted out, aggregated the information to prepare for analysis, and reached applicable inferences. The analyst broke down the information corresponding to the objectives expressed underneath on the manufacturing projects financed by DBE

- ✓ Asses risk identification effectiveness during the risk planning process
- ✓ Evaluate the techniques and tools used for risk analysis
- ✓ Assess the strength of risk response and mitigation mechanisms undertaken
- ✓ Assess overall effectiveness in risk monitoring and control

4.2. Response Rate

As a rule, an aggregate of 135 questionnaires were dispersed project managers of the manufacturing projects, team managers, and project contact officer of DBE. Of the all out surveys, 106 polls are gathered which accounts 79 % of the all out respondents.

Table 4.1 Summary of Response Rate

Category	Frequency	Percentage
Response	106	79%
Non Returned	29	21%
Total	135	100%

4.3. Demographic information of respondents

4.3.1. Age of Respondents

Data with respect to the age synthesis of the respondents is additionally broke down. In this investigation, three age arrangements in extend is utilized; below 30, somewhere in the range of 30 and 45 and more than 45 years old. The outline is specifying on table 2 underneath.

Table 4. 2: Summary of Age Classification

Age	Frequency	Percent	Valid percent
Below 30	26	24.5%	24.5
Between 30-45	57	53.8%	53.8
Above 45	23	21.7%	21.7
Total	106	100.0%	100.0

According to its portrayed in Table 4.2, the age of respondents beneath 30 and between 31 to 45 speaks to 24.5.% and 53.8% separately while the staying 21.7% of the respondents are over the age of 45.

4.3.2. Gender of the Respondents

In this examination, of the complete respondents that the surveys are gathered, 84.9 % are men while the rest 15.1% are females.

Table 4. 3: Summary of Gender

Description	Frequency	Percent	Valid Percent
Male	90	84.9%	84.9
Female	16	15.1%	15.1
Total	106	100.0%	100.0

4.3.3. Educational Background

With respect to educational qualification of the respondents, the information delineates that the dominant parts of respondents are Bachelor degree holders which accounts 55.7% of the respondents while the rest 44.3 % of the respondents are Masters Degree holders. The outline is appeared underneath in Table 4.4.

Table 4. 4: Summary of Educational Background of Respondents

Qualification	Frequency	Percent	Valid Percent
Bachelor Degree	59	55.7	55.7
Masters Degree	47	44.3	44.3
Total	106	100.0	100.0

4.3.4. Working Position Profile of the Respondents

With respect to the working situation of the respondents, it constitutes team managers, project managers and project contact officers that are the main concerned gatherings straightforwardly included on the risk management aspects of the project. As show in the table 4.5, of the all out respondents, project managers and team managers took 45.3%, where as task contact officials (experts) spread 54.7% rate. Obviously a large portion of the respondents are project contact officers and the rest of the portions of the respondents are on the situation of administrative level both at a project level and Bank level. This could be credited to the way that the greater part of the projects from the inception stage up to conclusion go through them and they have more

presentation to the status of undertakings than some other staffs situated in the directorates of the Bank.

Table 4. 5: Profile of Respondents

Position	Frequency	Percent	Valid percent
Professionals	58	54.7	54.7
Managers	48	45.3	45.3
Total	106	100.0	100.0

4.3.5. Working Experience of the Respondents

Table 4. 6: working experience

Position	Frequency	Percent	Valid percent
Below 2 years	5	4.7	4.7
3-5 years	24	22.6	22.6
6-10 years	44	41.5	41.5
More than 10 years	33	31.1	31.1
Total	106	100.0	100.0

Table 4.6 depicted the working experience of the respondents of the study. Experience below 2 years accounted only 4.7%, 3-5 years took 22.6% and it is clear that the working experience of most of the respondents are above 6-10 years (41.5%) and above 10 years (31.1%). This means, the greater share of the respondents has adequate experience and knowhow about the project management aspects.

4.4. Project Risk Management Processes and Practices

This piece of investigation gives the detail result about the project risk management procedure and practices of the manufacturing projects financed by Development Bank of Ethiopia dependent on the respondents' data and analysis.

In this area, the inquiries raised for the respondents contain two types of inquiries. The first is questions that need a Five point Likert scale. The reactions were estimated by a Five point Likert scale; 1= Strongly disagree, 2= Disagree, 3=Neutral 4=Agree and 5= strongly agree.

Therefore, to analyze the weigh and inclination of the respondents opinion about the practice of Project risk management of projects financed by DBE the mean and grand mean scales are summarized in to measurement of '*Better practiced*' and '*Less practiced*'. '*Less practiced*' which is inclusive of the remaining three scales (strongly disagree, disagree and neutral) assigned by mean values of less than three (inclusive). While, '*Better practiced*' contains mean value greater than three (strongly agree, agree) exclusive of 3.

The outcome were introduced by the descriptive, and, the other is yes(1) or no(2) questions and their outcome introduced through frequencies.

On the other hand, the lists of inputs, tools and techniques for risk management planning, identification, analysis, response and control derived from a guide to Project Management Body of Knowledge (PMBOK guide).

4.4. 1. Assessment of the general Project risk management practice

The respondents were asked to give their opinion on the general issues that will imply the practices of project risk management in the manufacturing projects financed by DBE.

Table 4. 7: Project risk management practice

Project risk management practice	N	Mean	Std. Deviation
There has been a defined risk management plan for the project	106	2.73	1.22
The necessary resources and costs are evaluated which are required for the project risk management processes and was included in the project budget	106	2.62	1.28
Risk management activities were clearly defined and included in the schedule of the project.	106	2.85	1.08
There is documented risk register system	106	2.42	1.02
The project has group of specialists with applicable involvement with in project risk management	106	2.98	1.07
Risks were identified during work breakdown structure	106	3.03	1.08
There is an approach and system that direct the undertaking group to experience risk management process	106	3.64	0.85
Grand mean		2.90	

In light of the above table 4.7, it is clear that on elements such as; risks were identified during work breakdown structure and there is an approach and system that direct the undertaking group to experience risk management process their mean values are 3.03 and 3.64 respectively. Whereas, for all remaining elements like there has been a defined risk management plan for the project, risk management activities were clearly defined and included in the schedule of the project, there is documented risk register system, and the project has group of specialists with applicable involvement with in project risk management; the mean values are below three i.e. 2.73, 2.62, 2.85 and 2.98 respectively.

4.4.2. Assessment of Risk management Planning practice

The respondents were asked to give their opinion on the planning aspect practices of project risk management in the manufacturing projects financed by DBE.

Table 4. 8: Risk planning phase

Planning	N	Mean	Std. Deviation
Arranging meetings were hold to build up the risk management plan	106	3.01	1.11
There were a participation of all key stakeholders and then risk management plan has obtained agreement and support from them	106	2.67	1.22
The risk ensures that the degree, type, and visibility of risk management that commensurate with the project plan	106	2.93	1.14
The risk management methodology including the tools and data sources that are used in the risk management process were established	106	2.84	1.04
Grand mean		2.86	

Based on the above table, it inferred that most of the elements describing the characteristics of the planning process of project risk management except the first element that is arranging meetings were hold to build up the risk management plan, its mean value is 3.01 other elements mean value was below 3.00.

Elements including there were a participation of all key stakeholders, the risk ensures that the degree, type, and visibility of risk management that commensurate with the project plan, and the risk management methodology that are used in the risk management process were established took a mean value of 2.67,2.93 and 2.84.

4.4.2.1. Risk planning inputs

The respondents were asked to give their opinion on the inputs used for planning aspect that is practiced by project risk management in the manufacturing projects financed by DBE.

Table 4. 9: Inputs of Risk Management Planning

Risk planning inputs	Response type	frequency	Percent	Valid percent
Risk Breakdown structure	yes	51	48.1	48.1
	No	55	51.9	51.9
	Total	106	100.0	100.0
Template for the organization's risk	yes	47	44.3	44.3

management plan	No	59	55.7	55.7
	Total	106	100.0	100.0
Stakeholder register	yes	33	31.1	39.6
	No	73	68.9	60.4
	Total	106	100.0	100.0
Stakeholder risk tolerance	yes	18	17.0	17.0
	No	88	83.0	83.0
	Total	106	100.0	100.0
Project charter	yes	38	35.8	35.8
	No	68	64.2	64.2
	Total	106	100.0	100.0
Organization's risk management policies	yes	41	38.7	38.7
	No	65	61.3	61.3
	Total	106	100.0	100.0
Work breakdown structure	yes	46	43.4	43.4
	No	60	56.6	56.6
	Total	106	100.0	100.0

Based on a guide to project management body of knowledge, as presented on table 4.9, around seven inputs are listed which are used for risk management planning activity.

Therefore, from the above table it is implicated that of those inputs of risk planning most of the respondents' best alter of risk management planning input includes Risk Breakdown structure, Template for the organization's risk management plan, and Work Breakdown Structure. They took 48.1%, 44.3% and 43.4% respectively. On the other hand, stakeholder register and Stakeholder risk tolerance is the list preferred input of risk management planning according to the respondents' response that is only 31.1 % and 17%.

4.4.2.2. Risk Planning Tools and Techniques

The respondents were asked to give their opinion on the tools and techniques used for planning aspect that is practiced by project risk management in the manufacturing projects financed by DBE.

Table 4. 10: Tools and Techniques of Risk planning

Risk planning tools and techniques	Response type	frequency	Percent	Valid percent
Analytical technique	yes	58	54.7	54.7
	No	48	45.3	45.3
	Total	106	100.0	100.0

Expert judgment	yes	73	68.9	68.9
	No	33	31.1	31.1
	Total	106	100.0	100.0
Planning meetings	yes	65	61.3	61.3
	No	41	38.7	38.7
	Total	106	100.0	100.0

From table 4.10 information, it inferred that both of the tools and techniques were mostly use by the manufacturing projects financed by DBE as a tool and technique to conduct risk planning. However, comparatively expert judgment is the most preferred tools it accounts 68.9%, followed by planning meetings and analytical technique as they took 61.3% and 54.7% respectively.

4.4.3. Assessment of Risk identification practice

The respondents were asked to give their opinion on the risk identification practices in the manufacturing projects financed by DBE.

Table 4. 11: Risk identification

Risk identification characteristics	N	Mean	Std. Deviation
The project risks were identified based on established risk identification process for projects by experts	106	3.02	1.26
Risks are identified throughout the project lifecycle	106	3.23	1.24
The project team is involved in the risk identification process	106	3.15	1.07
All key project participants involved in risk identification	106	2.89	1.12
A clear description of the risks within the cause and effects are understood and documented	106	2.97	.96
Risk register is prepared and used for risk identification process in the project	106	2.76	1.15
Scope statement, milestones, WBS and deliverables of the project are used to identify risks.	106	2.76	1.18
Grand mean		2.96	

The results shown in table 4.11 revealed that, only for the first three elements such as; the project risks were identified based on established risk identification process for projects by experts, risks are identified throughout the project lifecycle, and the project team is involved in the risk identification process the mean value is greater than three. This is 3.02, 3.23 and 3.15 respectively. While, for other remaining characters their mean value is less than three. This includes; all key project participants involved in risk identification, documentation of a clear

description of the risks within the cause and effects and preparation and usage of risk register for risk identification process, Scope statement, milestones, WBS and deliverables of the project are used to identify risks, their mean value is 2.89, 2.97, 2.76, and 2.76 respectively. The overall grand mean value of 2.96 shows a less practice of proper risk identification process in the risk management of DBE financed projects.

4.4.3.1. Risk Identification Inputs

The respondents were asked to give their opinion on the inputs used for identification of risk that is practiced in the manufacturing projects financed by DBE.

Table 4. 12: Inputs used for risk identification

Risk planning inputs	Response type	frequency	Percent	Valid percent
Risk management plan	yes	73	68.9	68.9
	No	33	31.1	31.1
	Total	106	100.0	100.0
Product description	yes	42	39.6	39.6
	No	64	60.4	60.4
	Total	106	100.0	100.0
Project planning outputs	yes	34	32.1	32.1
	No	72	67.9	67.9
	Total	106	100.0	100.0
Project Historical information	yes	62	58.5	58.5
	No	44	41.5	41.5
	Total	106	100.0	100.0
Enterprise environmental factors	yes	48	45.3	45.3
	No	58	54.7	54.7
	Total	106	100.0	100.0
Risk categories	yes	52	49.1	49.1
	No	54	50.9	50.9
	Total	106	100.0	100.0

A guide to project management body of knowledge listed the above parameters treated as an input for risk identification activity. Therefore, from the above table 4.12 it is clearly demonstrated that though all the mentioned inputs of risk identification are used by manufacturing projects, most of

the respondents' utmost preference includes Risk management plan(68.9%), Project Historical information(58%), and Risk categories (49.1%), followed by Enterprise environmental factors(45.3%), Product description(39.6%) and Project planning outputs(32.1%).

4.4.3.2. Risk identification tools and techniques

The respondents were asked to give their opinion on the tools and techniques used for risk identification that is practiced by project risk management in the manufacturing projects financed by DBE.

Table 4. 13: Tools and Techniques of risk identification

Risk identification tools and techniques	Response Type	Frequency	Percent	Valid Percent
Documentation reviews	yes	69	65.1	65.1
	No	37	34.9	34.9
	Total	106	100.0	100.0
Checklist analysis	yes	65	61.3	61.3
	No	41	38.7	38.7
	Total	106	100.0	100.0
SWOT Analysis	yes	77	72.6	72.6
	No	29	27.4	27.4
	Total	106	100.0	100.0
Diagramming analysis	yes	24	22.6	22.6
	No	82	77.4	77.4
	Total	106	100.0	100.0
Information gathering techniques	yes	59	55.7	55.7
	No	47	44.3	44.3
	Total	106	100.0	100.0
Assumptions analysis	yes	54	50.9	50.9
	No	52	49.1	49.1
	Total	106	100.0	100.0

From the data demonstrated in table 4.13 based on the response of the respondents, it is easy to understand that all the tools and techniques employed by the manufacturing projects. However, by taking in to account the importance, simplicity, applicability and advantages of each tools the

degree of practice different from one project to another. As a result, among these tools and techniques of risk identification SWOT analysis, documentation review, checklist analysis, and information gathering comes in to front by taking 72.6%, 65.1%, 61.3% and 55.7% respectively. Whereas, others like assumption analysis, and diagramming analysis take the next place with a share of 50.9% and 22.6% respectively.

4.4.3.3. Risk category

The respondents were asked to give their opinion on the risk categories that manufacturing projects financed by DBE are faced.

Table 4. 14: Project Risk categories

Risk categories of a project	Response type	Frequency	Percent	Valid percent
Internal risk	yes	53	50.0	50.0
	No	53	50.0	50.0
	Total	106	100.0	100.0
External risk	yes	65	61.3	61.3
	No	41	38.7	38.7
	Total	106	100.0	100.0
Project specific risk	yes	68	64.2	64.2
	No	38	35.8	35.8
	Total	106	100.0	100.0

In the above table 4.14, among the risk categories only the three basic general risk categories given consideration for the risk category analysis that most of the manufacturing projects are facing and practiced. As a result, from the above table it is clearly figure out that all the three risk categories are identified and affected the project implementation and operation of the manufacturing projects. Because, based on the respondents' opinion, project specific risks (64.2%) are mostly dominated risks followed by external risks (61.3%) and internal risks (50%).

4.4.4. Assessment of Risk Analysis practice

4.4.4.1. Qualitative Risk Analysis

The respondents were asked to give their opinion on the qualitative risk analysis practices in the manufacturing projects financed by DBE.

Table 4. 15: Qualitative risk analysis

Qualitative risk analysis characteristics	N	Mean	Std. Deviation
The project has been gone through established qualitative risk assessment	106	2.97	1.04
The project had risk matrix that defines probability of list of risks identified and their impact	106	2.87	1.16

Assumptions made for during the analysis of identified risks was clearly stated	106	2.76	1.13
The Assessment of risk was done by factual information and data	106	2.73	1.18
Project documents were updated after risks were analyzed qualitatively	106	2.58	1.13
Grand mean		2.78	

As pointed out from table 4.15 all elements that characterize the qualitative risk analysis their individual and grand mean value is less than three.

These elements are; the project has been gone through established qualitative risk assessment (mean value of 2.97), the project had risk matrix that defines probability of list of risks identified and their impact (mean value of 2.87), assumptions made for during the analysis of identified risks was clearly stated (mean value of 2.76). Others are the assessment of risk was done by information or data (mean value of 2.73) and project documents were updated after risks were analyzed qualitatively (mean value of 2.58). This shows the less practice of the qualitative risk analysis process of risk management.

4.4.4.1.1. Inputs of Qualitative Risk Analysis

The respondents were asked to give their opinion on the inputs used for qualitative risk analysis that is practiced in the manufacturing projects financed by DBE.

Table 4. 16: Inputs used for qualitative risk analysis

Qualitative risk analysis inputs	Response type	Frequency	Percent	Valid percent
Risk management plan	Yes	72	67.9	67.9
	No	34	32.1	32.1
	Total	106	100.0	100.0
Identified risks	Yes	57	53.8	53.8
	No	49	46.2	46.2
	Total	106	100.0	100.0
Project status	Yes	46	43.4	43.4
	No	60	56.6	56.6
	Total	106	100.0	100.0
Risk register	Yes	36	34.0	34.0
	No	70	66.0	66.0
	Total	106	100.0	100.0

Project type	Yes	41	38.7	38.7
	No	65	61.3	61.3
	Total	106	100.0	100.0
Data precision	Yes	16	15.1	15.1
	No	90	84.9	84.9
	Total	106	100.0	100.0
Scales of probability and impact	Yes	52	49.1	49.1
	No	54	50.9	50.9
	Total	106	100.0	100.0
Assumptions	Yes	38	35.8	35.8
	No	68	64.2	64.2
	Total	106	100.0	100.0

Based on the project management body of knowledge, some parameters listed in table 4.16 treated as an input for qualitative analysis. Therefore, from the above table it is implicated that though all the mentioned inputs of qualitative risk analysis are used by manufacturing projects; most of the respondents' utmost preference was risk management plan, identified risks and scales of probability and impact. They took a rate of 67.9%, 53.8%, and 49.1% followed by project status, project type, assumptions and data precision contains 43.4%, 38.7%, 35.8% and 15.1 % respectively.

4.4.4.1.2. Qualitative Risk Analysis Tools and Techniques

The respondents were asked to give their opinion on the tools and techniques used for qualitative identification of risk that is practiced in the manufacturing projects financed by DBE.

Table 4. 17: Tools and techniques used for qualitative risk analysis

Qualitative Risk Analysis Tools And Techniques	Response type	Frequency	Percent	Valid percent
Risk probability and impact assessment	yes	51	48.1	48.1
	No	55	51.9	51.9
	Total	106	100.0	100.0
Probability/impact rating matrix	yes	67	63.2	63.2
	No	39	36.8	36.8
	Total	106	100.0	100.0
Project assumptions testing	yes	24	22.6	22.6

	No	82	77.4	77.4
	Total	106	100.0	100.0
Expert judgment	yes	66	62.3	62.3
	No	40	37.7	37.7
	Total	106	100.0	100.0
Data precision testing(like quality, reliability and integrity of data)	yes	32	30.2	30.2
	No	74	69.8	69.8
	Total	106	100.0	100.0

Table 4.17 described about the analyzed data of qualitative risk analysis tools and techniques relied on the response of the respondents, therefore from a table it is simple to recognize that all the tools and techniques are in work by the manufacturing projects. Among these tools and techniques of qualitative risk analysis, the main tools and techniques which have been employed more includes Probability/impact rating matrix, Expert judgment and Risk probability and impact assessment, they took 63.2%, 62.3% and 48.1% respectively followed by data precision testing(30.2%) and Project assumptions testing (22.6%).

4.4.4.2. Quantitative Risk Analysis

The respondents were asked to give their opinion on the quantitative risk analysis practices in the manufacturing projects financed by DBE.

Table 4. 18: Quantitative risk analysis characters

Quantitative risk analysis	N	Mean	Std. Deviation
The project risk has been quantified with standard process	106	2.51	1.09
Identified risks were numerically analyzed to show their effect of on overall objectives of the project	106	2.74	1.08
Projects risk are clearly identified and enabled to identify realistic and achievable project cost, schedule, scope and targets.	106	2.75	1.16
The Project document has been updated after risks were analyzed quantitatively	106	2.62	1.18
Grand mean		2.65	

Table 4.18 contains the analyzed data based on the respondents' response about quantitative risk analysis characters that have been practicing by the manufacturing projects. The respondents reply to the whole of elements comes in to the level of almost disagree. Because, the project risk

has been quantified with standard process (its mean value is 2.51), identified risks were numerically analyzed to show their effect of on overall objectives of the project (its mean value is 2.74). and also the other two elements; Projects risk are clearly identified and enabled to identify realistic and achievable project cost, schedule, scope and targets(its mean value is 2.75) and the Project document has been updated after risks were analyzed quantitatively(its mean value is 2.62).

4.4.2.2.1. Quantitative Risk Analysis Inputs

The respondents were asked to give their opinion on the inputs used for quantitative risk analysis that is practiced in the manufacturing projects financed by DBE.

Table 4. 19: Inputs used for quantitative risk analysis

Quantitative risk analysis inputs	Response type	Frequency	Percent	Valid percent
Risk management plan	yes	73	68.9	68.9
	No	33	31.1	31.1
	Total	106	100.0	100.0
Identified risks and list	yes	54	50.9	50.9
	No	52	49.1	49.1
	Total	106	100.0	100.0
List of prioritized risks	yes	19	17.9	17.9
	No	87	82.1	82.1
	Total	106	100.0	100.0
Historical information	yes	50	47.2	47.2
	No	56	52.8	52.8
	Total	106	100.0	100.0
Expert judgment	yes	46	43.4	43.4
	No	60	56.6	56.6
	Total	106	100.0	100.0

Based on the project management body of knowledge guide the above parameters are listed to be treated as an input for quantitative risk analysis. Therefore, from table 4.19 it implicated that all the mentioned inputs of quantitative risk analysis were use by manufacturing projects. But, most of the respondent's utmost preference was risk management plan, identified risks and historical information by taking a rate of 68.9%, 50.9% and 47.2% respectively, followed by expert judgment and list of prioritized risks; they accounts 43.4%, 17.9 % respectively.

4.4.4.2.2. Quantitative Risk Analysis Tools and Techniques

The respondents were asked to give their opinion on the tools and techniques used for quantitative identification of risk that is practiced in the manufacturing projects financed by DBE.

Table 4. 20: Quantitative risk analysis tools and techniques

Quantitative risk analysis tools and techniques	Response type	Frequency	Percent	Valid percent
Interviewing	yes	50	47.2	47.2
	No	56	52.8	52.8
	Total	106	100.0	100.0
Sensitivity analysis	yes	73	68.9	68.9
	No	33	31.1	31.1
	Total	106	100.0	100.0
Decision tree analysis	yes	53	50.0	50.0
	No	53	50.0	50.0
	Total	106	100.0	100.0
Simulation	yes	14	13.2	13.2
	No	92	86.8	86.8
	Total	106	100.0	100.0

Table 4.20 described about the analyzed data of quantitative risk analysis tools and techniques relied on the response of the respondents, therefore from the table it is effortless to recognize that all the tools and techniques employed by the manufacturing projects. However, by taking in to account the importance, simplicity, applicability and advantages of each tools the degree of practice different from one project to another. As a result, among these tools and techniques of quantitative risk analysis, the main tools and techniques which have been employed more includes Sensitivity Analysis, Decision Tree Analysis and interviewing, they took 68.9%, 50% and 47.2% respectively followed by Simulation it's rate is the lowest which is 13.2%.

4.4.5. Assessment of Risk Response practice

The respondents were asked to give their opinion on the risk response practices in the manufacturing projects financed by DBE.

Table 4. 21: Risk response elements

Risk response characteristics	N	Mean	Std. Deviation
The project has planned responses as opposed to considering risks as they arise	106	2.92	1.04
The project has a developed strategies in order to prevent or mitigate all the identified risks	106	3.31	1.09
Assessing of one or more persons for each agreed to risk response is in place	106	2.79	1.19
A decision tree analysis method is in place to choose the most appropriate response	106	2.88	1.17
Options and actions are developed to enhance opportunities and to reduce threats to project objectives	106	3.04	1.15
Risks are addressed by their priority	106	3.67	0.81
An allocation of contingency reserve for cost and time considered	106	2.44	1.16
Grand mean		3.00	

Table 4.21 contains the analyzed data based on respondent’s response, about some of the particular elements of risk response characters that have been practice by the manufacturing projects.

For elements, such as the project has planned responses as opposed to considering risks as they arise, assessing of one or more persons for each agreed to risk response is in place, their mean value is 2.92 and 2.79 respectively. Besides, place of a decision tree analysis method to choose the most appropriate response and an allocation of contingency reserve for cost and time considered took a mean value of 2.88, 2.44 respectively.

On the other hand, other elements mean value is greater than three; which includes the project has a developed strategies in order to prevent or mitigate all the identified risks (mean value of 3.31), options and actions are developed to enhance opportunities and to reduce threats to project objectives(mean value of 3.04). Moreover, the other element, risks are addressed by their priority its mean value is 3.67.

4.4.5.1 Risk Response Inputs

The respondents were asked to give their opinion on the risk response inputs that is practiced in the manufacturing projects financed by DBE.

Table 4. 22: Inputs Used for Risk Response

Risk response inputs	Response type	frequency	Percent	Valid percent
Risk management plan	Yes	76	71.7	71.7
	No	30	28.3	28.3
	Total	106	100.0	100.0
List of prioritized risks	yes	45	42.5	42.5
	No	61	57.5	57.5
	Total	106	100.0	100.0
Risk thresholds	yes	6	5.7	5.7
	No	100	94.3	94.3
	Total	106	100.0	100.0
Risk ranking of the project	yes	25	23.6	23.6
	No	81	76.4	76.4
	Total	106	100.0	100.0
Probabilistic analysis of the project	yes	43	40.6	40.6
	No	63	59.4	59.4
	Total	106	100.0	100.0
List of potential responses	yes	38	35.8	35.8
	No	68	64.2	64.2
	Total	106	100.0	100.0
Trends in qualitative and quantitative risk analysis trends	yes	26	24.5	24.5
	No	80	75.5	75.5
	Total	106	100.0	100.0

Table 4.22 listed some of inputs of risk response that the guide to project management body of knowledge presented. The above result is therefore analyzed relied up on the response of the respondents and then, from the above table it is implicated that though all the mentioned inputs of risk response are used by manufacturing projects, most of the respondents' utmost preference was the Risk management plan (71.7%) whereas the other inputs are the least used inputs. This implied that the practice of risk response measures found unsatisfactory.

4.4.5.2. Risk Response Tools and Techniques

The respondents were asked to give their opinion on the tools and techniques used for risk response that is practiced in the manufacturing projects financed by DBE.

Table 4. 23: Tools and Techniques of risk response

Risk response tools and techniques	Response type	frequency	Percent	Valid percent
Risk avoidance	Yes	6	5.7	5.7
	No	100	94.3	94.3
	Total	106	100.0	100.0
Risk reduction	Yes	69	65.1	65.1
	No	37	34.9	34.9
	Total	106	100.0	100.0
Risk transfer	Yes	75	70.8	70.8
	No	31	29.2	29.2
	Total	106	100.0	100.0
Accepting the risk	Yes	36	34.0	34.0
	No	70	66.0	66.0
	Total	106	100.0	100.0

From the response of the respondents and data in table 4.23, it is easy to understand that all the tools and techniques of risk response employed by the manufacturing projects. However, due to the nature and significance of those responsive measures to minimize the severity and consequence of the expected risk the degree of practice differ from one project to another. As a result, among these tools and techniques of risk response measures, the main responsive measures taken by the projects are inclined in to risk transfer which accounts 70.8 % and risk reduction measures which account 65.1%. The other two responsive measures accepting the risk and risk avoidance measures was not the preferred options particularly risk avoidance option is not relevant as risks are not predictable and impossible to avoid.

4.4.6. Assessment of Risk monitoring and control practice

The respondents were asked to give their opinion on the risk response practices in the manufacturing projects financed by DBE.

Table 4. 24: Risk monitoring and control elements

Risk monitoring and control characteristics	N	Mean	Std. Deviation
Risks that occur within the project are controlled in a way that goes with the goal and objective of the project	106	3.12	1.03
Identified risks are tracked and reassessed	106	2.95	1.17
New risks are identified and residual risks are monitored	106	3.12	1.15
Project team hold periodic meetings specifically for risk discussions	106	2.87	1.07
Effectiveness of RM process is evaluated throughout the project	106	2.89	1.18
Risk monitoring and control is treated as a continuous process in the project	106	3.05	1.17
Project management plan , project documents and organizational process assets are updated after monitoring and control process	106	2.74	1.21
Project team performs reserve analysis	106	2.86	1.14
Grand mean		2.95	

Table 4.24 indicated the question that has risen to the respondents and their response result about the view and opinion of the particular elements of risk monitoring and control characters that have been practice by the manufacturing projects.

Risks that occur within the project are controlled in a way that goes with the goal and objective of the project, new risks are identified and residual risks are monitored, and also risk monitoring and control is treated as a continuous process in the project took mean value of greater than three. That is 3.12, 3.12 and 3.05 respectively.

Whereas, other elements like identified risks are tracked and reassessed, project team hold periodic meetings specifically for risk discussions, effectiveness of RM process is evaluated throughout the project took a mean value of 2.95,2.87 and 2.89 respectively. Besides, other elements also took a mean value of less than three, project management plan, project documents and organizational process assets are updated after monitoring and control process (mean value of 2.74), project team performs reserve analysis(mean value of 2.86).

4.4.6.1. Risk Monitoring and Control Inputs

The respondents were asked to give their opinion on the inputs used for risk monitoring and control that is practiced in the manufacturing projects financed by DBE.

Table 4. 25: Inputs used for monitoring and control

Risk monitoring and control inputs	Response type	frequency	Percent	Valid percent
Risk Management plan	Yes	69	65.1	65.1
	No	37	34.9	34.9
	Total	106	100.0	100.0
Risk Response plan	Yes	75	70.8	70.8
	No	31	29.2	29.2
	Total	106	100.0	100.0
Project communication	Yes	42	39.6	39.6
	No	64	60.4	60.4
	Total	106	100.0	100.0
Additional risk identification analysis	Yes	48	45.3	45.3
	No	58	54.7	54.7
	Total	106	100.0	100.0
Scope change	Yes	11	10.4	10.4
	No	95	89.6	89.6
	Total	106	100.0	100.0

Based on the project management body of knowledge the above parameters are listed to be treated as an input for risk monitoring and control. Therefore, from the above table 4.25 it is implicated that though all the mentioned inputs of risk monitoring and control are used by manufacturing projects, most of the respondents' greatest inclination includes risk response plan (70.8%), risk management plan (65.1%), and additional risk identification analysis (45.3%), followed by project communication(39.6%), and scope change(10.4%).

4.4.6.2. Risk Control Tools and Techniques

The respondents were asked to give their opinion on the tools and techniques used for risk monitoring and control that is practiced in the manufacturing projects financed by DBE.

Table 4. 26: Tools and techniques used for risk monitoring and tool

Risk Monitoring and Control tools and Techniques	Response Type	Frequency	Percent	Valid percent
Project risk response audit	Yes	72	67.9	67.9
	No	34	32.1	32.1
	Total	106	100.0	100.0
Periodic project risk review	Yes	59	55.7	55.7
	No	47	44.3	44.3
	Total	106	100.0	100.0
Earned value analysis	Yes	32	30.2	30.2
	No	74	69.8	69.8
	Total	106	100.0	100.0
Technical performance measure	Yes	45	42.5	42.5
	No	61	57.5	57.5
	Total	106	100.0	100.0
Additional risk response planning	Yes	51	48.1	48.1
	No	55	51.9	51.9
	Total	106	100.0	100.0

Table 4.26 indicated the question that has risen to the respondents and their response result about the Tools and techniques used for risk monitoring and control that have been apply by the manufacturing projects. Therefore, from the result it is clearly realized that all the tools and techniques of risk controlling are employed by the manufacturing projects. However, by taking in to account the importance, simplicity, applicability and advantages of each tools the degree of practice differ from one project to another. As a result, among these tools and techniques of risk monitoring and control, the main tools and techniques which have been employed more includes project risk response audit , periodic project risk review, and additional risk response planning, they took 67.9% ,55.7% and 48.1% respectively followed by, technical performance measure(42.5%) and earned value analysis(30.2%).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

In this chapter, the researcher reveal summary of the study findings, conclusions and recommendations. It also makes suggestion for further researchers. The researcher summarizes the findings parallel with the objective of the study, which was to assess the practice of project risk management in manufacturing projects financed by Development Bank of Ethiopia.

5.1. Summary of Findings

5.1.1. Regarding to assessment of general project risk management practice

In regards to the general project risk management practices of manufacturing projects financed by DBE, important elements that will show the characteristics of project risk management practices were analyzed and presented on table 4.7. Regarding to formulating and defining of the risk management plan, the manufacturing firms financed by DBE has a less practice. In regards to the estimation of required resources and costs by project risk management process the respondent's sentiment was to the level of disagree and not satisfactory. In addition to this, they gave an understanding that the project risk management exercises were unambiguously characterized and remembered for the timetable of the project. The projects experience was weak on activities like documentation of risk register framework, the availability of skilled project teams and expertise, as well as the identification of risks through work break down structure.

From the result, it understood that even if projects have a policy and procedure to entertain a risk management process, they lack a detail work activity regarding the practice of risk management process of elements. Dr. Des Tedford et al (June 2012) argued this is because they do not adopt formal risk management process in their business practice. Their decisions are biased significantly by the immediate business needs.

5.1.2. Regarding to assessment of risk management Planning process

Based on the elements that characterize the planning process, the result in table 4.8 shows a grand mean value of 2.87. This is due to the reason that, the respondents response was below agree and neutral on the consideration and execution of planning elements during the project risk planning process. This is therefore, clear that most of the manufacturing projects financed by DBE have a less practice of risk planning which so influence the success of the project. According to (Salichos, July 2015) the planning of risk is iterative and includes the entire risk management

process, with activities to assess (identify and analyze), handle and monitor. The result is the risk management plan. He therefore supported the significance of risk planning that it is important to say that careful and explicit planning enhances the probability of success for other risk management processes.

The results in table 4.10 inferred that, though most of the manufacturing projects financed by DBE have been a limitation to perform risk planning properly, they utilized some of the tools and techniques of risk planning. Comparatively, expert judgment is the most preferred tools it accounts 68.9%, followed by planning meetings and analytical technique as they took 61.3% and 54.7% respectively. (Salichos, July 2015), pointed out also in his study the tools and techniques in order to develop the risk management plan, these are analytical techniques, expert judgment (experts could be senior management, project stakeholders, subject matter experts, industry groups and consultants and others) as well as meetings of the project.

5.1.3. Regarding assessment of risk identification process

Risk identification is arguably the most important phase of the risk process, since any risk not explicitly identified is being taken unconsciously and unexpectedly. It is therefore important that risk identification receive proper attention (Hilson, 2000).

Respondents were therefore, asking about some of the particular elements of risk identification characters that have been practice by the manufacturing projects financed by DBE. Hence, in table 4.11 the result shows the grand mean value of 2.96, which specified under less practice. Particularly, there was a limitation of using WBS, Scope Statement, Milestones as well as risk register to identify potential risks.

Regarding to tools and techniques of risk identification even if (EJOHWOMU, March 2014) implicated in his study that Brain storming, site visit and consulting of experts were the most used method and in contrast, using risk data compiled from previous experience, case based approach were the least used. In this case, among these tools and techniques of risk identification SWOT analysis, documentation review, checklist analysis, and information gathering comes in to front by taking 72.6%, 65.1%, 61.3% and 55.7% respectively. Whereas, others like assumption analysis, and diagramming analysis take the next place with a share of 50.9% and 22.6% respectively.

5.1.4. Regarding assessment of the risk analysis process

The risk analysis process aims to evaluate the consequences associated with risks and to assess the impact of risk by using risk analysis and measurement techniques (Pipattanapiwong, 2004).

This process intends to prioritize the identified risks for further actions. The main input to risk analysis process is the identified risks from the risk identification process. The probability and impact of identified risks are two key variables in assessing the risk. This process can range from a very simple qualitative analysis to a quantitative analysis, which is more sophisticated.

Therefore, respondents were asked about some of the particular elements of qualitative and quantitative risk analysis characters that have been practicing by the manufacturing projects. The result implicated in table 4.15 and 4.16 shows the grand mean value of qualitative and quantitative risk analysis, which is 2.78 and 2.65 respectively.

In general, from this result, it is find out that the risk analysis practice of DBE financed manufacturing firms explained by a less practice level. However, comparatively, qualitative method of risk analysis was mostly practice by these projects than quantitative methods of risk analysis. Nevertheless, the qualitative risk analysis is often sufficient and the quality of the data does not justify any more sophisticated techniques (Patterson & Neailey, 2002). Quantitative techniques offer more rigor and objectivity but they are very demanding in terms of data. They typically involve a statistical analysis of historic data drawn from a database of experience developed in previous projects (Bowers & Khorakian, 2014).

Table 4.17 described the results of employed tools and techniques of qualitative risk analysis by these projects, and therefore the main tools and techniques which have been employed more includes Probability/impact rating matrix, Expert judgment and Risk probability and impact assessment, they took 63.2%, 62.3% and 48.1% respectively followed by data precision testing(30.2%) and Project assumptions testing (22.6%). (Kendrick, 2009), asserted that qualitative risk assessment based on categorization of both probability and impact provides greater insight into the absolute risk severity.

Moreover, the result in table 4.20 described about tools and techniques employed by these manufacturing firms, therefore from the table it is effortless to recognize that the main tools and techniques that have been employed more includes sensitivity analysis, decision tree analysis and interviewing. They took 68.9%, 50% and 47.2% respectively followed by Simulation its rate is the lowest, which is 13.2%. Sensitivity analysis is considered an important modeling tool and needs to be realized in a systematic manner. It answers the question: “how sensitive is the end result to changes of various factors affecting it?”, and can help us to decide between alternative courses of action on the basis of those factors (Stefanovic, 2005).

5.1.5. Regarding assessment of Risk response process

Risk response is the process of developing options and actions to enhance opportunities and to reduce threats to project objectives. According to Hilson (1999), to be effective, risk responses must meet a number of important criteria. All responses must be appropriate, affordable, actionable, achievable, assessed, agreed and allocated & accepted.

Result in table 4.27 revealed about the elements that characterize the risk response aspects practiced by the manufacturing projects financed by DBE. The grand mean value of 3.00 implicated that these projects have a fair practice of risk response measures, as some of the common risk transfer strategies include use of insurances, performance bonds, warranties and guarantees are most important mechanism to control risk by these projects.

From the finding, it is identified that the obtainable response capacity also supported through the tools and techniques or responsive measures of risk transfer and risk reduction. (Hilson, 1999) regarding to risk reduction put his view that, “it may also be possible to “design out” certain types of risk in the early stages of a project, by making strategic project decisions, which preclude certain risky possibilities”

5.1.6. Regarding assessment of risk monitoring and control process

Based on the elements that characterize the risk monitoring and control process, based on the response rate of the respondents the result in table 4.24 shows a grand mean value of 2.95. Which implies the level of practicing monitoring and control process during the project risk management processes by manufacturing projects financed by DBE is at low level of practice. However, this final process of project risk management is vital since all information about the identified risks is collected and monitored (Winch, 2001). By the progress of the project, new information becomes available and the list of project risks changes by appearance of new risks, whether foreseen or unforeseen, or disappearance of some anticipated risks.

(Salichos, July 2015), argued that control risks is the process that improves efficiency of the risk approach throughout the project life cycle to continuously optimize risk responses.

5.2. Conclusions

The general target of the study was to lead an assessment and evaluation of project risk management practices of the manufacturing projects financed by DBE administered at head office level.

In such manner, the Project Management Institute (PMI), project risk management processes such as risk management planning, risk identification, risk assessment (qualitative and quantitative), risk response planning and risk monitoring and control were followed. What's more, based on these processes the project risk management practice and application of these of the manufacturing projects are assessed based on the respondent's perception and opinion. In like manner, the following conclusions have been made;

- ✿ With respect to the process of project risk planning, though, the manufacturing project has an act of formulating and defining the risk management plan, its level of practice low. Besides, there is an encounter that the necessary resources and expenses has not evaluated and estimated properly which are required for the project risk management processes and furthermore not adequately considered for the project financial plan. During the risk management process, experience of utilizing the risk management methodology and a portion of the tools and information sources were not attractive. To play out the risk management plan some of key partners were also not actively participated and the understanding and support from them were too limited. Furthermore, during the project risk management planning process the projects for the most part utilized a source of inputs like Risk Breakdown structure, Template for the organization's risk management plan, and Work Breakdown Structure and a portion of the tools and techniques that will bolster the risk management planning like expert judgments, planning meetings and analytical techniques were utilized. They are placed with respect to sequence or order.
- ✿ In the case of risk identification, while it is accepted that the most significant stage in the project risk management process, manufacturing projects has improved execution in such a case that projects do not have the foggiest idea about the risk. They cannot respond effectively; which means, either to take the important activities to manage the threat, or to abuse the opportunity. At the point when we see the outcome from the study a large portion of the risk identification exercises are finished by the projects. The project risks were seriously identified based on established risk identification process for projects by experts; Risks were not recognized all through the project lifecycle and during the risk identification process the contribution and activities of the project team was not watched effectively. Notwithstanding,

on the issues like risk registration, a clear description of the risks within the cause and effects and the participation of all key project involved in risk identification, there was an impediment to lead the risk identification process by manufacturing projects. Besides, Most of the risks faced on the DBE financed manufacturing firms are inclined to project specific risk, external risk and internal risk. In addition to these, based on the result obtained from the respondents replay in order to perform the risk identification activity, projects consumed some of the important inputs like Risk Breakdown structure, Template for the organization's risk management plan, and Work Breakdown Structure. Likewise, tools and techniques that make ease the identification of risks also applied by the manufacturing projects, which includes SWOT analysis, documentation review, checklist analysis, and information gathering.

- ✿ In light of the process of risk analysis, based on the finding of the analysis part, projects usually used both the qualitative and quantitative ways of risk analyzing techniques. With these instruments, manufacturing projects has a limited experience of analyzing the risk analysis in order to assess the impact and likelihood of identified risks as well as analyze numerically the probability of each risk and its consequence on the project objectives, as well as the extent of overall project risks. To cascade the qualitative risk analysis inputs including risk management plan, identified risks and scales of probability and impact were utilized. Moreover, some of the tools and techniques were instrumented to make the analysis of risk like probability/impact rating matrix, expert judgment and risk probability and impact assessment. On the other hand, to perform risk analysis these projects used some of the quantitative risk analysis inputs including risk management plan, identified risks and historical information mostly. Moreover, some of the tools and techniques were instrumented to make quantitative analysis of risk like sensitivity analysis and decision tree analysis.
- ✿ Regarding to risk response process, similar to the previous project risk management processes and practice; the manufacturing projects financed by DBE were not that much successful on the practice of risk response activities. Though it is not satisfactory, of the types of inputs some of them like risk management plan, list of prioritized risks, probabilistic analysis of the project were consumed to some extent. The obtainable response capacity also supported through the tools and techniques or responsive measures of risk transfer and risk reduction.
- ✿ In case of the risk monitoring and control process, similar to the result of risk response these DBE financed manufacturing projects experienced limited efficiency practice on the activities of monitoring and control. Within this limited practice, of the inputs of risk monitoring and control, the respondents' greatest inclination was risk response plan, risk management plan, and additional risk identification analysis.

In general, there is an inadequate experience and practice of project risk management process in the manufacturing projects financed by DBE. The implementation and application of outstanding project risk management has not observed and a great attention was not given. For unsatisfactory practice some basic factors which are perceived as the barriers for risk management implementation on manufacturing projects were identified which includes: lack of attention by the top management, poor estimation and allocation of budget to the risk management process.

Moreover, limited understanding of the techniques by assigned managers, poor capacity of finding suitable risk management methods and difficulty in obtaining estimates and assessment of risk probability also contributed for unsatisfactory risk management practice.

5.2. Recommendations

Risk management is indispensable for effective project accomplishment when it is considered and applied throughout the project life cycle. Undertaking proprietors, project managers, supervisors, project participants, and professionals ought to understand this reality and utilize legitimate risk management process and methods in the manufacturing industries. The equivalent ought to be valid for the manufacturing firms financed by DBE. Projects should establish independent organ or department of risk management in their project organizational structure to facilitate the risk management process on all sections of the project life cycle.

Therefore, the researcher suggests the following recommendations related with the stated findings and conclusion:

- ✿ DBE financed manufacturing ventures need to build up a risk management culture by developing a well formulated risk management plan where each accomplice and partners should also participate actively and comprehend the significance of the best possible execution of project risk management processes. During planning, the necessary resources and costs should properly estimate and budgeted. Moreover, these manufacturing ventures need to commit additional time during the planning stage to appropriately design risk management exercises and recognize risks. They have to utilize the WBS and risk register for planning and scheduling purposes as well as to recognize potential risks. To maximize the utilization of the risk management methodologies and a portion of the tools and information sources both Projects and DBE should provide appropriate instruction and training for project managers and experts on risk management discipline to improve their comprehension of the techniques, methods, procedures and strategies.

- ✿ Projects as well as DBE are supposed to exhaustively identified risks based on established risk identification process for projects by professionals throughout the project lifecycle. They are required to improve their acts of archiving risk register framework, following and reassessment of risks, adjusting the project risk management process in to the project strategy and procedure to improve their capacity to estimate and assess probabilities. During the risk identification process, relevant partners, stakeholders as well as the project team must be involved.
- ✿ There is a need to improve the utilization of qualitative and quantitative risk assessment and analysis tools particularly quantitative instruments. Despite the fact that it was shown that they utilize a blend of subjective and quantitative risk appraisal apparatuses, most of the manufacturing businesses depend on subjective/qualitative risk evaluation instruments, for example, probability/impact rating grid, risk probability and impact assessment, project assumptions, expert judgment and experience. This may be because of absence of commonality with quantitative apparatuses and the generally reasonable nature of subjective devices. This implies they also need to enhance their record keeping and create chronicled database of past activities.
- ✿ These manufacturing organizations need to give more consideration to risk responsive planning including appointing one or more responsible risk response professional and picking the fitting reaction procedure dependent on potential results. Managers need to build up a risk grid or matrix that can be utilized to recognize critical risks that require further consideration and minor dangers that may be set on a watch list.
- ✿ Manufacturing firms have more work to do to improve the challenges to risk management achievement and to build the recurrence of utilization of risk management monitoring and control practices and devices. It is suggested that DBE as well as the financed manufacturing projects actualize project risk management processes as a standard way of doing business. There must be constant help from top administration for executing legitimate practices and providing training to project administrators and other key members.

5.3. Recommendation for Further Research

It is broadly acknowledged that though risk management requires a comprehensive commitment and effort to practice, it is a significant piece of project management which whenever done proficiently prompts the accomplishment and success of the project.

With this discernment, this study focused on the assessment of project risk management practice on projects particularly on manufacturing projects financed by Development Bank of Ethiopia

dependent on the assessment and view of the project's project managers, and Development Bank of Ethiopia staff members who have duties and responsibilities assigned to manage and control these manufacturing projects. Accordingly, the finding of the study appears it needs a compelling and appropriate risk management practice, which in turn has its own effect on the projects' success and loan portfolio of the bank.

Subsequently, this prompts future researchers to concentrate on the project risk management practices not only on the manufacturing but also on other sectors/projects financed by the Bank that their findings would contribute to reduce the projects failure and to improve the Bank's surplus.

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APPENDICES

APPENDIX I- COVER LETTER OF THE QUESTIONNAIRE

Dear Respondents;

My name is Zelalem Adugna Tsegaye. I am a postgraduate student at **Addis Ababa University School of Commerce, Master of Arts in Project Management**. Currently, I am undertaking a research project work on the topic entitled *“Assessment of Project Risk Management Practices in Development Bank of Ethiopia Financed Projects; the case of Manufacturing Projects Administered at Head office”*. The purpose of this questionnaire is to collect data/ information about the mentioned topic that will be used as an input for my research project work in a partial fulfillment of the requirements for MA Degree in Project Management.

Since your responses are very crucial for the result of the research to be reliable, I kindly request you to reply the questions carefully as per the intention of each question and be sure that your responses are keeping confidential and only used for academic purpose. Hence, in advance I would like to say thanks for your valuable time and willingness to fill this questionnaire and your kind cooperation is appreciated.

If you have any queries please Contact me with the following Address;

Zelalem Adugna (Phone no: 0918 06 21 29 or E-mail- zelalemadugna00@gmail.com)

Addis Ababa

April 2020

APPENDIX II- QUESTIONNAIRE

General instructions;

- The questionnaire contains 2 parts
- Part I is about demographic information of the respondent
- Part II contains questions about project risk management process and practices
- It is not desirable to write your name.
- Read carefully and give appropriate answers by ticking (✓) or filling the blank spaces or boxes.

SECTION I: Demographic Information

1. Project Name:

2. Indicate your Age group

Below 30 Above 45

Between 30 and 45

3. Indicate your Gender:

Male Female

4. Indicate your Educational level

Diploma: Masters:

Degree:

If others please state.....

5. Indicate your current position in the project

Managerial Professional

6. Working Experience related to Project Risk Management

Below 2 years 6-10 years

3-5 years More than 10 year

SECTION II: Project Risk Management Process and Practices

A. General Project Risk Management Process

No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
7.	There has been a well formulated risk management plan for the project					
8.	The required resources and costs are estimated which are needed for the project risk management processes and was included in the project budget.					

9.	<i>Risk management activities were clearly defined and included in the schedule of the project.</i>					
10.	<i>There is documented risk register system</i>					
11.	<i>The project has team of experts with relevant experience in project risk management</i>					
12.	<i>Risks were identified during work breakdown structure</i>					
13.	<i>There is a policy and procedure that guide the project team to go through a disciplined risk management process</i>					

B. Risk planning

No.	Questions	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
14.	<i>Planning meetings were hold to develop the risk management plan.</i>					
15.	<i>There was a participation of all key stakeholders and then risk management plan has obtained agreement and support from them</i>					
16.	<i>The risk ensures that the degree, type, and visibility of risk management that commensurate with the project plan</i>					
17.	<i>The risk management methodology including the tools and data sources that are used in the risk management process were established</i>					

18. Which input is used in risk management planning for the project?(Select two or more inputs if it is necessary)

- | | |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <input type="checkbox"/> Risk Breakdown structure | <input type="checkbox"/> Project charter |
| <input type="checkbox"/> Template for the organization's risk management plan | <input type="checkbox"/> Organization's risk management policies : |
| <input type="checkbox"/> Stakeholder register | <input type="checkbox"/> Work breakdown structure: |
| <input type="checkbox"/> Stakeholder risk tolerances | |

19. What tool and technique is used in risk planning for the project? (Select two or more tools if you can use and necessary)

- | | | |
|-----------------------------------------------|-------------------------------------------|-------------------------------------------|
| <input type="checkbox"/> Analytical technique | <input type="checkbox"/> Expert judgment: | <input type="checkbox"/> Planning Meeting |
|-----------------------------------------------|-------------------------------------------|-------------------------------------------|

C. Risk identification

No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
20.	<i>The project risks were identified based on established risk identification process for projects by experts</i>					
21.	<i>Risks are identified throughout the project lifecycle</i>					
22.	<i>The project team is involved in the risk identification process</i>					
23.	<i>All key project participants involved in risk identification</i>					
24.	<i>A clear description of the risks within the cause and effects are understood and documented</i>					
25.	<i>Risk register is prepared and used for risk identification process in the project</i>					
26.	<i>Scope statement, milestones, WBS and deliverables of the project are used to identify risks.</i>					

27. Which Risk category is that your project mostly encountered in the manufacturing project?

Internal risk

External risk

Project specific risk

28. Which input was used in risk identification for the project? (Select two or more tools if you can use and necessary)

Risk management plan

Enterprise environmental factors

Product description

Project planning outputs

Risk categories

Historical information

29. What tool and technique was used in risk identifications? (Select two or more tools if you can use and necessary)

Documentation reviews

Information gathering techniques

Checklist analysis

Assumptions analysis

SWOT analysis

Diagramming analysis

D. Risk analysis

i. Qualitative risk analysis

- *Qualitative risk analysis is the process of assessing the impact and likelihood of identified risks.*

<i>No.</i>	<i>Questions</i>	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
30	<i>The project has been gone through established qualitative risk assessment</i>					
31	<i>The project had risk matrix that defines probability of list of risks identified and their impact</i>					
32	<i>Assumptions made for during the analysis of identified risks was clearly stated</i>					
33	<i>The Assessment of risk was done by factual information and data</i>					
34	<i>Project documents were updated after risks were analyzed qualitatively</i>					

35. *Which input has been used for the project qualitative risk analysis? (Select two or more tools if you can use and necessary)*

- | | |
|------------------------------------------------------|------------------------------------------------------------------|
| <input type="checkbox"/> <i>Risk management plan</i> | <input type="checkbox"/> <i>Project type</i> |
| <input type="checkbox"/> <i>Identified risks</i> | <input type="checkbox"/> <i>Data precision</i> |
| <input type="checkbox"/> <i>Project status</i> | <input type="checkbox"/> <i>Scales of probability and impact</i> |
| <input type="checkbox"/> <i>Risk register</i> | <input type="checkbox"/> <i>assumptions</i> |

36. *What tool and technique was used in qualitative risk analysis for the project? (Select two or more tools if you can use and necessary)*

- | | |
|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> <i>Risk probability and impact assessment</i> | <input type="checkbox"/> <i>Data precision testing (like Quality, reliability and integrity of data</i> |
| <input type="checkbox"/> <i>Probability/ impact risk rating matrix</i> | |
| <input type="checkbox"/> <i>Project assumptions testing</i> | |
| <input type="checkbox"/> <i>Expert judgment</i> | |

i. Quantitative Risk Analysis

The quantitative risk analysis process aims to analyze numerically the probability of each risk and its consequence on project objectives, as well as the extent of overall project risk.

No	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
37.	<i>The project risk has been quantified with standard process</i>					
38.	<i>Identified risks were numerically analyzed to show their effect of on overall objectives of the project</i>					
39.	<i>Projects risk are clearly identified and enabled to identify realistic and achievable project cost, schedule, scope and targets.</i>					
40.	<i>The Project document has been updated after risks were analysed quantitatively</i>					

41. *Which input has been mostly used in the quantitative risk analysis in the project? (Select two or more tools if you can use and necessary)*

- Risk management plan*
 Historical information
 Identified risks and list
 Expert judgment
 List of prioritized risks

42. *What tool and technique has been used for the project quantitative risk analysis in the project? (Select two or more tools if you can use and necessary)*

- Interviewing*
 Decision tree analysis
 Sensitivity analysis
 Simulation

E. Risk Response

No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
43.	<i>The project has planned responses as opposed to considering risks as they arise.</i>					
44.	<i>The project has developed strategies in order to prevent or mitigate all the identified risks</i>					
45.	<i>Assigning of one or more persons for each agreed to risk response is in place</i>					
46.	<i>A decision tree analysis method is in place to choose the most appropriate response</i>					

47.	<i>Options and actions are developed to enhance opportunities and to reduce threats to project objectives</i>					
48.	<i>Risks are addressed by their priority</i>					
49.	<i>An allocation of contingency reserve for cost and time considered</i>					

50. *Of the types of input, which input has been mostly is used in risk response in the project? (Select two or more tools if you can use and necessary)*

- | | |
|-------------------------------------------------------------|-----------------------------------------------------------------------|
| <input type="checkbox"/> <i>Risk management plan</i> | <input type="checkbox"/> <i>Probabilistic analysis of the project</i> |
| <input type="checkbox"/> <i>List of prioritized risks</i> | <input type="checkbox"/> <i>List of potential responses</i> |
| <input type="checkbox"/> <i>Risk thresholds</i> | <input type="checkbox"/> <i>Trends in qualitative and</i> |
| <input type="checkbox"/> <i>Risk ranking of the project</i> | <i>quantitative risk analysis trends</i> |

51. *What tool and technique/or options is used in risk response for the project? (Select two or more tools if you can use and necessary)*

- | | |
|------------------------------------------|----------------------------------------|
| <input type="checkbox"/> <i>Avoid</i> | <input type="checkbox"/> <i>Accept</i> |
| <input type="checkbox"/> <i>Reduce</i> | |
| <input type="checkbox"/> <i>Transfer</i> | |

F. Risk monitoring and control

No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
52.	<i>Risks that occur within the project are controlled in a way that goes with the goal and objective of the project</i>					
53.	<i>Identified risks are tracked and reassessed</i>					
54.	<i>New risks are identified and Residual risks are monitored</i>					
55.	<i>Project team hold periodic meetings specifically for risk discussions</i>					
56.	<i>Effectiveness of risk management process is evaluated throughout the project</i>					
57.	<i>Risk monitoring and control is treated as a</i>					

	<i>continuous process in the project</i>					
58.	<i>Project management plan, project documents and organizational process assets are updated after monitoring and control process</i>					
59.	<i>Project team performs reserve analysis</i>					

60. *Of the types of input which input has been mostly is used in risk response in the project? (Select two or more tools if you can use and necessary)*

- | | |
|-------------------------------------------------------|-------------------------------------------------------------------------|
| <input type="checkbox"/> <i>Risk management plan</i> | <input type="checkbox"/> <i>Additional Risk Identification analysis</i> |
| <input type="checkbox"/> <i>Risk Response Plan</i> | <input type="checkbox"/> <i>Scope change</i> |
| <input type="checkbox"/> <i>Project communication</i> | |

61. *What tool and technique is used in risk monitoring and control in the project?*

- | | |
|---------------------------------------------------------------|-------------------------------------------------------------------|
| <input type="checkbox"/> <i>Project risk response audit</i> | |
| <input type="checkbox"/> <i>Periodic project risk review</i> | <input type="checkbox"/> <i>Additional risk response planning</i> |
| <input type="checkbox"/> <i>Earned value analysis</i> | |
| <input type="checkbox"/> <i>Technical performance measure</i> | |

Thank You for Your Responses!

