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Assessing Project Risk Management Practices: Case Study on Selected Leather Industry in Addis Ababa

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The undersigned have examined the thesis entitled ‘assessing project risk management practices and environmental challenge: case study on leather industry in ethiopia presented by **Eyerusalem Getachew**, a candidate for the degree of **MA** and hereby certify that it is worthy of acceptance.

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DECLARATION

I declare that this is entitled "**assessing project risk management practices and environmental challenge: case study on selected leather industry founed in addis ababa***"* is my own work, has not been submitted for any degree, diploma or examination at any other university or other institutions. However, the contribution of others is involved, in the literature and discussion part of the document, but does not contain text, graphics or tables copied and pasted from the internet, unless specifically acknowledged, and the source being detailed in the thesis and in the references sections. Information taken from published and unpublished work of others has been acknowledged in the text and a list of references is given.

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ABSTRACT

Risk management (RM) is a concept which is used in all industries. The tanning industry is means of job creation and export earnings for developing countries. In order to examine how risk management process and environmental challenge is perceived in the manufacturing sector which is different tannery factory or leather industry. All analyses were based on a theoretical background regarding risk management process and environmental challenge in the manufacturing sector. The purpose of this study was to investigate the current risk management practices and the risk management system that is adopted by the chosen company. The study used both primary directly collected from workers using qusetionnary and secondary data(different text book used). The primary data were collected through questionnaires and secondary data were compiled from documents, reports, company website, and so on. The result revealed that the company has a risk management structure in place and it has developed written policies and procedures for risk management. Quality of project risk management tools and techniques with a mean score of 3.62, rated level of documented risk planning formality to be good in general with a score of 3.21, thought there is quality of risk management manual with mean score of 3.44 and slightly agreed from being neutral on capacity of the project risk management team with mean score of 3.59. The result shows from SPSS soft ware analysis minimum mean value above 3.12 for project risk management. Inter items correlation mean score value is 0.55 and range value is also 0.69 for project risk management in leather fatory.

Keywords: Risk management; Environmental Challenge; Risk management Process; Risk Management Methods.

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LIST OF ABBREVIATIONS AND ACRYNOMS

BOD	Biological Oxygen Demand
BAT	Best Available Technologies.
CETP	Common Effluent Treatment Plant
COD	Chemical Oxygen Demand
CREGS	Climate- Resilient Green Economy Strategy
CSA	Central Statistics Agency
ECPC	Environmental Cleaner Production Center
EIA	Environmental Impact Assessment
EIP	Eco-Industrial Park
ELIA	Ethiopian Leather Industry Association
EMS	Environment Management System
EPA	Environmental Protection Agency
ETP	Effluent Treatment Plant
FDRE	Federal Democratic Republic of Ethiopia
FEPA	Federal Environmental protection Authority
FGD	Focus Group Discussion
GTP	Growth and Transformation Plan
LIDI	Leather Industry Development Institute.
MoEF	Ministry of Environment and Forest
MoFED	Ministry of Finance and Economic Development

CHAPTER ONE

1. Introduction

1.1. Background of the study

Risk management (RM) is a concept which is used in all industries, from IT related business, automobile or pharmaceutical industry, to the construction or manufacturing sector. Each industry has developed their own RM standards, but the general ideas of the concept usually remain the same regardless of the sector. According to the Project Management Institute(Potts et al., 2008) project risk management is one of the nine most critical parts of project commissioning. This indicates a strong relationship between managing risks and a project success. While RM is described as the most difficult area within the manufacturing sector. its application is promoted in all projects in order to avoid negative consequences(Potts et al., 2008).

One concept which is widely used within the field of risk management is called the risk management process (RMP) and consists of four main steps: identification, assessment, taking action and monitoring the risks. In each of these steps, there are a number of methods and techniques which facilitate handling the risks((PMBOK, 2012).

The tanning industry is means of job creation an export earnings for developing countries. However, Leather industry is one of the pollutant industries and if there is no proper way of treating the waste from the industry it has harmful effect on the environment(FDRE, 2020).

Several developments in the global economy underscore the imperative for Africa to industrialize and engage in the production of manufactured and high value-added products. Industrialization is essential if Africa foster structural change and translate its recent high growth rates into significant social development(Mbate, 2017). Promoting structural change hinges on sound industrial policies and selective government interventions that redirect an economy's production structure towards more productive sectors.

The process of converting hides and skins into leather is carried out in aqueous medium. The process its self is characterized by a high demand and extensive use of chemicals to treat and soften hides. Over twenty different chemicals are employed to convert hides and skin in to commercial leather. The

resulting discharge from tanning drums and paddles contain numerous soluble and insoluble materials from hides as well as process chemicals to make up the effluent and waste water. A ton of hides yields about 200kg of finished leather and the rest of the material, blood, manure, hair, proteins, greases and fats make up waste. Among all the industrial wastes tannery effluents are ranked as the highest pollutants. The high concentration of chromium sites in South Asia is primarily due to the abundance of tanneries in the region. Many of the tanneries have poor environmental controls. Tanneries are isolated as for their characteristics, odors and mode of pollution since a tannery deals with tanning raw hides where a series of chemical operations are done to convert putrefying raw hides into non-putrefying leather. As the leather production contains of various stages of chemical operations, it emanates different wastes as per the operation procedure. It also creates different possibilities for reuse or conversion of residues through the waste management systems. Leather Manufacture is a by-product industry, depending on the slaughter of animals primarily for other uses. Leather is the skin or hide of the animals, cured by tanning to prevent decay and to impart flexibility and toughness(Madanhire & Mbohwa, 2015).

Ethiopia has great potential of livestock with cattle population of 53 million, with sheep and goat populations of 25 and 24 million, respectively, makes the country first in Africa; with an annual off-take rate of nearly 10% for cattle, 33% for sheep and 38% for goats, cognizant of this comparative Advantage the Ethiopian government makes the leather industry as one of the priority areas in the manufacturing industry. The Ethiopian government wants to bring accelerated economic growth which needs vibrant growth of different sectors including the manufacturing sector. Leather and leather products are among the main manufacturing export products. Within the manufacturing sectors, the leather industry comes as the leading exporter the country was able to generate above 123.4 million USD in the year 2014(Agency & Ababa, 2018).

1.2. **Statement of problem**

Tanning industry involves chemical reactions and mechanical changes which use a lot of water. It generates waste most of the time in developing countries which are discharged to rivers or other water areas or to open field land areas. It could have adverse effect on the environment and human if it is not properly managed due to the presence of dangerous chemical and elements such as chromium, sulfur(Tchounwou et al., 2012). Tanners do not want to incur the cost of

treatment of their waste from the tanning process which will be included in the production cost and affects their competitiveness in price; it is a challenge how to incentivize tanneries to use effluent treatment plants. primary, secondary and tertiary effluent treatment plants with minimum cost. The societies around tanneries complains about smell, health problem which violets their right to leave in clear environment. Untreated wastes also damage animal health and generally affects the living and non-living things in the environment. One of the most damaging ways in which tanning industries affect the internal individual process integrated aspects and the external ecological system involves the different waste water disposal and treatment schemes(Kadam, 1990). Preference of inadequate and costly end-pipe waste treatment technique to the technology aided preventive approach at the source in each process step is a puzzling issue of most Ethiopia tanneries.The government of Ethiopia formulated different proclamations, regulations and guidelines for implementation of its environmental policy. However, there are concerns and complaints on their implementations, i.e. establishing policy framework alone does not bring result unless otherwise different stakeholders work in coordination for its implementation. It is right time that the country needs more research, innovative and practical solutions to manage its industrial development including the tanning industry in sustainable manner. The challenge is become more evident in future when the economy is transformed to industrialization; unless the task of environment protection is started at the early step of the industrialization phases.

1.3. Research questions

The project study identified the following research questions:

- What is the extent to which project risk management is practiced in the project?
- What are the project risk management methods and techniques used?
- How are risks and risk management perceived in projects at leather manufacturing?

1.4. Objectives of the Study

1.4.1. General Objective

The general objectives of this study was to assess project risk management practices: the case of selected leather industry found in addis ababa.

1.4.2. Specific objectives

- To assess how risks and risk management are perceived in projects at leather factory

- To investigate how risk management is being used in practice at the factory.
- To evaluate the extent of application risk management and risk management process in the leather industry

1.5. Significance of the study

The importance of this research stems from the essence of risk management itself, for the reason that risk management has been identified as one of the most important tools in determining any project success; yet, few studies investigate the nature of this relationship. As a result, this research will drive the attention to the importance of a high level of awareness to risk management problems. In addition, studying the relation between risk management and project's success is important because most of projects are operating in a very dynamic and rapidly changing environment not always fixed circumstances and uncertainty factors are surrounding the firm, in such environment adopting changes very quickly is a must for the project overall to grow or even survive. Adopting overall project changes can't be applicable without the management ability to adapt model in risk management and make the new changes. Accordingly, the results of this research may help the managers to better evaluate the risks around them and better respond to these risks, and present them methods that may enhances their projects risk management.

In general, the research study attempt to provide the following benefits:

- Use as a reference material for the future researche
- It suggest better and effective risk management methods and processes
- Find possible solutions that is deemed to improve RMP and methods
- It to give full understanding about how RM is being implemented in the selected area

1.6. Scope of the study

This study is delimited to assessing the project risk management practices in leather factor found in Addis Ababa. Therefore, it its scope is limited in tanneries which have Access project.

CHAPTER TWO

2. Literature Review

The literature review part contains conceptual frame of the study concerning the theoretical frameworks by which the overall research tasks guided. It also covers some empirical literature review which helps in getting practical experience that could be taken as lesson and use full in making future recommendations.

2.1. Theoretical literature review

In primitive times man used animal skins to cover himself in order to protect him from the environment. Although skins were resistant and available they had some weaknesses: they were damp, they would decompose and when trying to avoid purification by drying they lost their mechanical properties such as flexibility and softness due to drying. Because of this, leather production became an important craft dated more than 3000 years old. This process of turning skin into leather product is called tanning(Ugya & Aziz, 2016).

Tanning is a process where putrefaction is avoided while maintaining or enhancing the mechanical properties of being flexible and soft even when dry. Hides and skins gain durability and can be used in a wider range of products because of this process. These skins usually come from large and medium size mammals such as the ox, cow, calf, buffalo, sheep, goat, pig and horses; although marine animals and some reptiles are also processed. Generally speaking leather processing is a technology that is composed of a series of step Operations that aim at isolating collagen by removing non-collage nous components of skin(Mbate, 2017).

According to (Tiles, 2009), Contemporary societies are called to respond to two orders of problems: the material, represented by the technology and by the production and the social, involving the quality of life and the human relationship. Both orders evolve in conformity with the internal laws regulating the relation between industry and society. However, there is a fundamental difference. While the laws of the material order are the economical laws built on well known principles, to which the subjects shall adapt regard to the competition and the development, those of the social order show a variety of facets, that in some cases might result incompatible and in conflict with the economy. The economy of the

environment is now placed side by side to the economy of recourses; together with the traditional inputs and outputs represented by labor and consumption, we have started to talk of natural recourses and waste.

Therefore, the laws of the market have resulted uncompleted. First of all because these laws take into consideration only the monetary aspects, but neglect the not-monetary aspects so important for the quality of life. The recourses to which we are not able to give a monetary value are the purity of the air, of the water and of the soil around us. How much is the price for a cubic meter of pure air we breathe. In order to solve these kinds of problems, there are some economical approaches to the sustainable development. The following approaches are suggested by(Tiles, 2009).

About 15% solid waste comes out from studied tanneries which are almost half of liquid waste (29%). all waste are risk for environmental challenge and waste water drain to the river. This indicated the cause of human disease. To protect this types of problem risk management and determine environmental challenge. According to respondent's opinion maximum amount of wastes was the mixture of both solid and liquid materials.

In the tanning process many chemicals such as Chromium oxide, ammonium sulfate, formic acid, sulfuric acid, sodium chloride etc are used which causes solid and liquid wastes İn the processing of raw hide and skin the sulphuric acid and salt are used and then it was treated with the solutions of chromium salts. In the tannery chromium, HCl, Sulphuric acid, Formic acid, Caustic soda, Caustic potash, Soda ash, Sodium arsenite, Arsenic sulphite etc is used for different tanning process such as soaking, liming, deliming, tanning etc(Moench-Pfanner & Van Ameringen, 2012).

At the end of every process the chemicals are washed by water which causes liquid waste. The major solid wastes generated by the tanneries are dusted curing salt, wet trimmings, dry trimmings, wet shaving, buffing, raw materials packing etc. gaseous emissions were observed by the researcher but no one respondents.

2.2. Definition of Risk

Although project risk management has been known and developed to a certain degree of maturity, there is yet to be a common definition for the term "risk", as is still being debated by

the risk community. To most people, risk is viewed in terms of a negative effect and quite surprisingly, some national standard-setting bodies such as the International Organization for Standardization (ISO) also uses the negative definition of risk(Ssempebwa, 2013).

It clearly identified that there are two options towards the definition of "risk". Firstly, risk is defined as an umbrella term which consists of two elements where risk with positive effects is known as opportunity while threat is risk with negative effects. Secondly, the word "uncertainty" is an overarching term to express risk solely representing negative effects or threat and refers opportunity to be an uncertainty that have positive effects. It is observed that option one seems to be the current trend being widely accepted by many practitioners and researchers of risk management.

According to (Heldman, 2010), most of us often overlooked the other side of the picture, thus tend to think of risk in terms of negative consequences. Although risks are potential events that cause threats to projects, they are also potential opportunities embedded in risk. It is an obstacle preventing a project, either positively or negatively, to be delivered based on goals being set.

In contrast to the perspective of viewing risk as an event that results in a positive or negative effect on the project objective if it occurs, is viewed as uncertainty. Uncertainty was defined as an unknown probability of occurrence of an event that derives from three principal sources, external factors, change of business strategies and ill-defined methods for project realization as mentioned by (Heldman, 2010). The unknown probability of impact and multiple variables with various levels of uncertainties within the context of a rapid changing environment creates "complexity" to manage project. A slightly different view was developed by (Chapman, 1997) where risk is an uncertain effect rather than as a cause of an effect on project performance such as cost, time and quality. Thus, the term uncertainty as risk includes "variability" in terms of performance measures and "ambiguity" which is closely connected with the lack of clarity due to various factors. The three key areas of uncertainty are associated with estimates, project parties and phases of the project life cycle(Dikmen & Birgonul, 2004).

In contrast to several perspectives of risk illustrated above,(Dowie & Dowie, 2000) argued persuasively to abandon the term "risk". He illustrated that the word itself contains multiple usage that consistently creates confusion and ambiguity in order to perform identification and evaluation on available facts

that support the decision making process as well as elicit and process quality judgments. Thus, it makes it difficult to integrate both distinct types of inputs in a logical and transparent manner.

It doesn't matter how the term "risk" is classified since the decision consist of both opportunities and threats that are equally important elements influencing project success as mentioned by Thus, both needs to be managed proactively and effectively through risk management approach which is covered in the next category of this literature review. Often definitions of risk or uncertainty are tailored for the use of a particular project. To make it more systematized, a literature research was done. The findings of this search resulted in a number of definitions of risk and uncertainties(Hillson et al , 2006).

Table 1: Defination of risk management from different point of view

Author:	**Risk definition**	**Uncertainty definition**
Winch (2002)	A stage where there is a lack of information, but by looking at past experience, it is easier to predict the future. Events where the outcome is known and expected.	Uncertainty is a part of the information required in order to take a decision. The required information consists of the amount of available information and uncertainty. The level of uncertainty will decrease the further a project is proceeding throughout the lifecycle.
Cleden (2009)	Risk is the statement of what may arise from that lack of knowledge. Risks are gaps in knowledge which we think constitute a threat to the project.	Uncertainty is the intangible measure of what we don't know. Uncertainty is what is left behind when all the risks have been identified. Uncertainty is gaps in our knowledge we may not even be aware of
Smith *et al.*	Risks occur where there is some	There might be not enough

Source: (Heldman, 2010).

All risk definitions complied in Table 1 describes risk as a situation where lack of some aspect can cause a threat to the project. Lack of information and knowledge are those factors which are most commonly mentioned by all the authors as leading reasons for a failure. The description provided by (Moench-Pfanner & Van Ameringen, 2012)will best fit the purpose of this paper; it concerns how risk is defined as a gap in knowledge which, if not handled correctly, will constitute a threat to the project. Uncertainty is defined in a more abstract way. The descriptions provided in Table 1 are similar to each other and the common factor is again lack of information and knowledge. The biggest difference by definition is awareness. For the purpose of this thesis, the definition of uncertainty provided by (Moench-Pfanner & Van Ameringen, 2012).

Find some of the risks to be predictable and easy to identify before they occur, while the others are unforeseeable and can result in unexpected time delays or additional costs. This statement finds confirmation in the definition provided by (Moench-Pfanner & Van Ameringen, 2012) who uses the same arguments defining uncertainty as rather unpredicted, unforeseeable events, while risk should be possible to foresee. The overview of definitions which can be found in literature regarding those two terms implies that uncertainty is a broad concept and risk is a part of it. This confirms close relation between those two concepts but at the same time distinguishes the In the following chapters, the focus is on risk itself and how it should be handled. Uncertainty is not a tangible term and thus will not be further developed in the paper(Gajewska & Ropel, 2011).

2.3. The Risk Management

Many explanations and definitions of risks and risk management have been recently developed, and thus it is difficult to choose one which is always true. Each author provides his own perception of what risk means and how to manage it. The description depends on the profession, project and type of business. Risk management in general is a very broad subject and definitions of risk can therefore differ and be difficult to apply in all industries in general. For the purpose of this thesis one definition of risk and risk management will be chosen, in order to have a clear understanding of these concepts in manufacturing industry(Cooper et al., 2014).

2.3.1. A Concept of Risk Management

A comprehensive description of the concept of RM and how it can be used in practice. 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 based on the information from the investment. In this way, decisions based on insufficient information can be avoided, and this will lead to better overall performance. In the literature, RM is described as a process with some predefined procedures. The scope of its definition differs among the authors; however the core information is the same. From a number of definitions which can be found in the management literature explanation brings the essence of this concept used for further analysis and will be further explained in the following section(Smith et al., 2006).

2.3.2. Benefits of Risk Management

To maximize the efficiency of risk management, the RMP should be continuously developed during the entire project. In this way, risks will be discovered and managed throughout all the phases.The benefits from RM are not only reserved for the project itself, but also for the actors involved. The main incentives are clear understanding and awareness of potential risks in the project. In other words, risk management contributes to a better view of possible consequences resulting from unmanaged risks and how to avoid them(Smith et al., 2006).

Another benefit of working with risk management is increased level of control over the whole project and more efficient problem solving processes which can be supported on a more genuine basis. It results from an analysis of project conditions already in the beginning of the project. The risk management also provides a procedure which can reduce possible and sudden surprises(Barnett-page & Thomas, 2009).

2.4. Project risk

The way project risk is described can vary. Project risk is "an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives such as scope, schedule, cost, and quality." The definition given here implies that risk can have positive effect which is somewhat contradictory to what most people think since in most cases whenever the term "risk" is used what is thought is the negative effect rather than the positive one. This can show that risk can positively affect projects if it is handled appropriately and systematically. The causes for a risk can be one or multiple and in the same way if the risk happens, it can have one or more impacts. "A cause may be a given or potential requirement, assumption, constraint, or condition that creates the possibility of negative or

positive outcomes". In this case identifying the causes of risk as early as possible and taking necessary measures can change the outcome of the risk in the positive one which can make the project successful.

Risk as a measure of the probability and consequence of not achieving a defined project goal. Project risk has its origins in the uncertainty present in all projects. Known risks are those that have been identified and analyzed, making it possible to plan responses for those risks. Known risks that cannot be managed proactively, should be assigned a contingency reserve. Unknown risks cannot be managed proactively and therefore may be assigned a management reserve. A negative project risk that has occurred is considered an issue. Individual project risks are different from overall project risk. Overall project risk represents the effect of uncertainty on the project as a whole. It is more than the sum of the individual risks within a project, since it includes all sources of project uncertainty. It represents the exposure of stakeholders to the implications of variations in project outcome, both positiveand negative(Moseki, 2014).

Organizations perceive risk as the effect of uncertainty on projects and organizational objectives. Organizations and stakeholders are willing to accept varying degrees of risk depending on their risk attitude. The risk attitudes of both the organization and the stakeholders may be influenced by a number of factors and they are broadly classified into three themes: risk appetite, risk tolerance and risk threshold. Risk appetite is the degree of uncertainty an entity is willing to take on in anticipation of a reward. On the hand, risk tolerance is to the degree, amount, or volume of risk that an organization or individual will withstand. Risk threshold refers to measures along the level of uncertainty or the level of impact at which a stakeholder may have a specific interest. Below that risk threshold, the organization will accept the risk. Above that risk threshold, the organization will not tolerate the risk(Security & Management, 2013).

An organization's risk attitude may include its appetite for uncertainty, its threshold for risk levels that are unacceptable, or its risk tolerance at which point the organization may select a different risk response. Positive and negative risks are commonly referred to as opportunities and threats. The project may be accepted if the risks are within tolerances and are in balance with the rewards that may be gained by taking the risks. Positive risks that offer opportunities within the limits of risk tolerances may be pursued in order to generate enhanced value. For example,

adopting an aggressive resource optimization technique is a risk taken in anticipation of a reward for using fewer resources(Gantz et al., 2013).

Individuals and groups adopt attitudes toward risk that influence the way they respond. These risk attitudes are driven by perception, tolerances, and other biases, which should be made explicit wherever possible. A consistent approach to risk should be developed for each project, and communication about risk and its handling should be open and honest. Risk responses reflect an organization's perceived balance between risk taking and risk avoidance(R.KOTHARI, 2018).

To be successful, an organization should be committed to address risk management proactively and consistently throughout the project. A conscious choice should be made at all levels of the organization to actively identify and pursue effective risk management during the life of the project. Project risk could exist at the moment a project is initiated. Moving forward on a project without a proactive focus on risk management is likely to lead to more problems arising from unmanaged threats(Petrovic, 2017).

2.4.1. Project Risk Management

The term project risk management can be defined differently by different scholars states that project risk management "includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project." This indicates that project risk management is not a onetime activity. Rather it is a continuous activity that takes place throughout the project life cycle. The objectives of project risk management are to amplify the chances and impact of positive situations, and reduce the chances and impact of negative results in the project(Adal, 2019).

Risk management is the act or practice of dealing with risk. It includes planning for risk, assessing (identifying and analyzing) risk issues, developing risk handling strategies, and monitoring risks to determine how they have change. Proper risk management is proactive rather than reactive." What can be understood from this idea is that project risk management is not what is immediately thought of when the risk happens. Rather it needs thorough planning and should be practiced throughout the project. Besides, mentions that risk management is not a separate project office activity assigned to a risk management department, but rather is one aspect of sound project management. It must be closely

coupled with key project processes, including but not limited to: overall project management, systems engineering, cost, scope, quality, and schedule (Moseki, 2014).

2.4.2. Project Risk Management Processes

Project risk management is not a onetime activity in project. Rather it is an activity that occurs continuously throughout a project. It is important that a risk management strategy is established early in a project and that risk is continually addressed throughout the project life cycle. The process of project risk management involves different actions. Different scholars include different issues in it. For instance, the process includes planning, assessment (identification and analysis), handling, and monitoring. In other way project risk management process deals with planning risk management, identifying risks, performing qualitative risk analysis, perform quantitative risk analysis, planning risk responses, and controlling risks which are described as follow.

- ***Plan risk Management:*** *The process of defining how to conduct risk management activities for a project.*
- ***Identify risks****: The process of determining which risks may affect the project and documenting their characteristics.*
- ***Perform Qualitative risk Analysis****: The process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact.*
- ***Perform Quantitative risk Analysis****: The process of numerically analyzing the effect of identified risks on overall project objectives.*
- ***Plan risk responses:*** *The process of developing options and actions to enhance opportunities and to reduce threats to project objectives.*
- ***Control risks:*** *The process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project.*

2.4.3. Risk Planning

Effective risk management needs formation of a risk management plan. Plan risk management is one of the basic stage at which the baseline for project risk management is set. Risk planning is “the process of developing and documenting an organized, comprehensive, and interactive strategy and methods for

identifying and analyzing risk issues, developing risk handling plans, and monitoring how risks have changed(Steyn, 2018).

- Develop and document an organized, comprehensive, and interactive risk management strategy.
- Determine the methods to be used to execute a program's risk management strategy.
- Plan for adequate resources.

The plan is used to explain the way the risk management processes needs to be implemented and how they adhere with other project management processes. In other term, the plan describes "the relationships among project risk management, general project management, and the management processes in the rest of the organization". Developing the overall risk management strategy for the project, deciding how the risk management processes will be executed, and integrating project risk management with all other project management activities are the objectives of the plan risk management process.

Risk planning is "iterative and includes the entire risk management process, with activities to assess (identify and analyze), handle, monitor (and document) the risk associated with a program." Risk Management Plan is the output of the risk planning process. The Risk Management Plan is "the risk-related roadmap that tells the project team how to get from where the program is today to where the program 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 program team knows the objectives, goals, and techniques of the risk management process: reporting, documentation, and communication; organizational roles and responsibilities; and behavioral climate for achieving effective risk management". Risk Management Plan is a roadmap and it can be specific or general. It can be specific in areas such as the assignment of responsibilities for project personnel and definitions and general in other areas to allow users to choose the most efficient way to proceed(Loru, 2020).

One of the purposes of risk planning id developing a risk management strategy which includes both the process and implementation approach for the project. Should 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 strategies, establish monitoring metrics (where possible), and define the reporting, documentation, and communication needs(Liknaw et al., 2017).

Providing risk management training to project personnel is another important aspect of risk planning. It is important that risk management training be performed by individuals, whether inside or outside the project, with substantial real world experience in making risk management work on actual projects. Risk management training should be adapted to various groups within the project depending on necessity. Besides, different emphasis can be given for decision-makers versus working-level personnel and technical versus nontechnical personnel(Kadam, 1990).

To get the maximum benefit, it is essential to carry out initial risk management planning early in the overall planning of the project, and the corresponding risk management activities integrated into the overall project management plan. It is also important to adapt the risk management plan as the needs of the project and its stakeholders become clearer or change. To effectively manage project risks, assigning certain budget for project risk management is also recommended though the project risk management processes form an integral part of the overall project management plan. This is essential to better track, control and defend the corresponding costs throughout the project. The risk management plan will define the monitoring methods to ensure that the corresponding expenditures are tracked appropriately, as well as the conditions under which the approved budget for risk management can be modified(Guillemette et al., 2015).

Risk management is not one-time activity in a project. Throughout the project, risk management activities need to be repeated. The risk management plan should define both the normal frequency for repeating the processes as well as specific or exceptional conditions under which the corresponding actions should be initiated. The subsequent risk management activities should be incorporated into the project management plan(Chapman, 1997).

2.4.4. Risk Assessment

Risk assessment is the problem definition stage of risk management, the stage that identifies and analyzes project issues in terms of probability and consequences, and possibly other (e.g., the time to impact). The results of risk assessment are the main input to many subsequent risk management actions. Kerzner indicates that risk assessment is often a difficult and time-consuming part of the risk

management process as there are no quick answers or shortcuts. Though there are available tools or instruments to assist in assessing risk, no single tool is entirely fitting for any project and often highly misleading if the user does not understand how to modify and apply them or interpret the results. In spite of its complexity, risk assessment is one of the most important phases of the risk management process since the caliber and quality of assessments can have a large impact on project outcomes (Hillson et al., 2006).

2.4.5. Risk Identification

The other important step in risk management process is risk identification. Risk identification can incorporate a survey of the program, customer, and users for concerns and problems. It is always inevitable to have risks at some degree in projects. Some of project risks are cost, funding, schedule, contract relationships, and political risks. Kerzner mentions that cost and schedule risks are often so fundamental to a project that they may be treated as stand-alone risk categories. The understanding of risks advances over time. As a result, risk identification should continue throughout project phases. There are several methods for identifying risk. The common practice to classify project risk depending on its source, either objective or subjective. Objective sources are recorded experience from past projects and the current project as it proceeds. Some examples of objective sources are lessons learned files, program documentation evaluations and current performance data. Subjective sources are "experiences based upon knowledgeable experts." This includes interviews and other data from subject matter experts(Garrido et al., 2011).

Another way of identifying risks is based on life-cycle phases which include project approval, preliminary and detailed planning, execution and closure. mentions that the total project risk is high in the early life-cycle phases because of the lack of information and the financial risk is the greatest in the later life-cycle phases. Different sources of information that help recognition of a potential problem can be used for risk identification. Some of the sources of information used for risk identification listed by Kerzner are:-

- Systems engineering documentation
- Life-cycle cost analysis
- Plan/WBS decomposition

- Schedule analysis
- Baseline cost estimates
- Requirements documents
- Lessons learned files
- Assumption analysis
- Trade studies/analyses
- Technical performance measurement (TPM) planning/analysis
- Models (influence diagrams)
- Decision drivers
- Brainstorming
- Expert judgment

Some of these techniques can also be used for other stages in project risk management process. For instance, expert judgment techniques can also be applied for forecasting and decision making. In using these techniques, the users need to identify the one which can be more suitable for their project since the techniques can have their own advantages and disadvantages based on contexts. Different methods can be used to identify risks in projects. One of the methods is breaking down project elements to a level where they can perform valid assessments. The information required to do this varies based on the phase of the project. Another method of identifying risk is to create a Work Breakdown Structure (WBS) as early as possible in a project, and use this to evaluate potential candidate risk categories against candidate system. Evaluating risk associated with some key processes such as design and manufacturing that will exist on a project is another approach to identify risks. The project implementers or stakeholders need to identify the methods which can best their project to identify risks(Heldman, 2017).

2.4.6. Risk Analysis

Another important phase of project risk management process is risk analysis. Risk analysis begins with a detailed study of the risk issues that have been identified and approved by decision-makers for further evaluation. Risk analysis has different objectives in project risk management process. Some of its objectives are to gather enough information about the risk issues to judge the likelihood of occurrence and cost, schedule, and technical consequences if the risk occurs(Abie & Borking, 2013).

2.5. Classifying project risks

There are several ways to look at the kinds of project risks. It is helpful to understand the different types of risk so that a team can explore the possibilities of each of them. However, one important thing to consider is some risks are relevant only for some projects. Construction related risk may not be viable for IT or software development project and pharmaceutical products development project risk may totally not be applicable for automotive projects. Various classifications are forwarded by different authors and researcher as a result. This section tries to discuss the one relevant for the project study(Dikmen & Birgonul, 2004).

2.5.1. Generic Vs Product Specific Risk

Generic risks are potential threats to every project. Some examples of generic risks are changing requirements, losing key personnel, or bankruptcy of the company or of the customer. It is advisable for a development organization to keep a checklist of these types of risks. Teams can then assess the extent to which these risks are a factor for their project based upon the known set of programmers, managers, and customers(Steyn, 2018).

According to Ronald,2013 Product-specific risks can be distinguished from generic risks because they can only be identified by those with a clear understanding of the technology, the people, and the environment of the specific product. An example of a product-specific risk is the availability of a complex network necessary for testing. Generic and product-specific risks can be further divided into project, product, and business risks. Project risks are those that affect the project schedule or the resources (personnel or budgets) dedicated to the project. Product risks are those that affect the quality or performance of the product being developed. Finally, business risks are those that threaten the viability of the product, such as building an excellent product no one wants or building a product that no longer fits into the overall business strategy of the company(Leta, 2004).

According to (Risk & Practice, 2004), there are some specific factors to consider when examining project, product, and business risks. Some examples of these are listed below as identified by the author.

1. People risks are associated with the availability, skill level, and retention of the people on the development team.
2. Size risks are associated with the magnitude of the product and the product team. Larger products are generally more complex with more interactions. Larger teams are harder to coordinate.
3. Process risks are related to whether the team uses a defined, appropriate product development process and to whether the team members follow the process.
4. Technology risks are derived from the software or hardware technologies that are being used as part of the system being developed. Using new or emerging or complex technology increases the overall risk.
5. Tools risks, similar to technology risks, relate to the use, availability, and reliability of support products used by the development team, such as design software, and other Computer-Aided Software Engineering (CASE) tools.
6. Organizational and managerial risks are derived from the environment where the product is being developed. Some examples are the financial stability of the company and threats of company reorganization and the potential of the resultant loss of support by management due to a change in focus or a change in people.
7. Customer risks are derived from changes to the customer requirements, customers' lack of understanding of the impact of these changes, the process of managing these requirements changes, and the ability of the customer to communicate effectively with the team and to accurately convey the attributes of the desired product.
8. Estimation risks are derived from inaccuracies in estimating the resources and the time required to build the product properly.
9. Sales and support risks involve the chances that the team builds a product that the sales force does not understand how to sell or that is difficult to correct, adapt, or enhance.
10. Spontaneous and sporadic risk identification is usually not sufficient.

Additionally,(Kadam, 1990) highlighted there are various risk elicitation techniques the team can use to systematically and proactively surface them. After risks have been identified and enumerated, the next step is risk analysis. Through risk analysis, identified risks are transformed into decision-making information. In turn, each risk is considered, and a judgment made about the probability and the

seriousness of the risk. For each risk, the project risk management team is suggested to do the following: I. Assess the probability of a loss occurring. Some risks are very likely to occur. Others are very unlikely. II. Establish and utilize a scale that reflects the perceived likelihood of a risk. Depending upon the degree of detail desired and/or possible, the scale can be numeric, based on a percentage scale. III. The team should establish a set numerical probability for each qualitative value. IV. Assess the impact of the loss if the loss were to occur. Delineate the consequences of the risk and estimate the impact of the risk on the project and the product. Like the probability discussion above, the team can choose to assign numerical monetary values to the magnitude of loss. Alternately, categories may be used and assigned values, such as 1=negligible, 2=marginal, 3=critical, or 4=catastrophic.

In addition to this careful attention is needed towards stakeholders while applying risk management. The three stakeholders involved in risk management are thought to include, the developer who must systematically and continually enumerate all the possible risks related to technical capability and making the schedule, the manager who must lead the team to follow the risk management process to proactively manage the project risks, the manager must also allocate resources for proactive risks management and the customer who must participate in the continual identification of risks. According to Ronald, none of the above stakeholders is empowered to manage business risks, i.e. organizational and managerial risks, and sales and support risks. This kind of risk must be managed by upper management and marketing department of the firm(Amos, 2015).

2.6. The comprehensive framework of RM

Various approaches and modes of project management do exist in the literature. Different approached can defined depending on basic feature of project. Traditional project management, agile project management and extreme types of project have different approaches of risk management. It is evident here that, the more complex a project is, the less will be known about it and therefore the more flexible is assumes to be the risk management. Some comprehensive frameworks are developed by scholars however. This framework is assumed to have the following phases(Pontes et al., 2011).

Cooper (2005) stated, the objective of risk management is to identify and manage significant risks. It involves several key phases, with feedback through a monitoring and review process. In most projects,

risk management overlaps with other management processes and procedures, in that many of the steps are undertaken as part of normal project management. This is thought to provide the basis for integrating risk management and project management activities. The following model of project risk management is forwarded by the author accordingly

2.6.1. The define phase

All Risk Management Plans (RMPs) embody aspects of a define phase, but much of it is usually implicit. Its purpose is to define project effort to date in a form appropriate for the RMP, to consolidate in a suitable form existing relevant information about the project which the RMP addresses and undertake project management activities to fill in gaps uncovered in the consolidation process(Turner, 2014)

2.6.2. The focus phase

At his phase, Rodney forwarded, all RMPs should embody a focus phase, although much of it is often implicit, and some of it may be given other titles. Its purpose therefore is assumed to be to define RMP scope and strategy as distinct from the strategy of the project it addresses and to plan the RMP in operational terms as a project in its own right. If a RMP is being applied to test the viability of a new project, a purely qualitative approach may be appropriate(Osipova, 2007).

2.6.3. The identify phase

Rodney stated the third phase is related to most RMPs having an explicit identify phase for sources of uncertainty. Some use a separate later phase to identify responses to these sources. It is useful to couple the identification of sources of uncertainty and responses, and to use the term ‘issues’ to mean ‘sources of uncertainty and associated responses. The key deliverable here is a clear common understanding of threats and opportunities facing the project(Turner, 2014).

2.6.4. The structure phase

The author indicated on the fourth phase how providing structure to clarify understanding of complex issues is central to RMPs. Some aspects of providing this structure are necessarily integrated with earlier phases, like the structure implied by the way issues are defined in the identify phase. For some RMPs, structure is implicit, assuming a simple standard structure by default. In general, the RMP is suggested to be as simple as possible, but not misleading(Srinivas, 2019).

2.6.5. The ownership phase

As per Rodney, all effective RMPs deemed to have an ownership phase have the following three purposes, I. distinguish the sources and associated responses the client is prepared to own and manage from those the client wants other organizations (such as contractors) to own or manage; II. allocate responsibility for managing sources and responses owned by the client to named individuals; III. approve, if appropriate, ownership/management allocations controlled by contractor(s) and third parties. The author commended the first of these purposes should be achieved on the first pass before moving on to the following phase of the RMP(Caron, 2013).

2.6.6. The estimate phase

Based on Rodney comprehensive risk management approach, all RMPs have an estimate phase, concerned with cost, time and other performance measures. However, it may be given alternative designations, and sometimes it has separate 'qualitative' (non-numeric) and 'quantitative' (numeric) components. When a quantitative (subjective probability based) approach is used, it is applied only to those sources of uncertainty which are usefully quantified(Ogolla & Moronge, 2019)

2.6.7. The evaluate phase

On the seventh phase, the issues of evaluating is captured. Here, all RMPs are assumed to have an evaluate phase, although it may be coupled with the estimate phase. Its purpose is the synthesis and evaluation of the results of the estimate. phase in the context of the structuring provided by all earlier phases with a view to managing the iterative nature of the RMP and client assessment of decisions and judgements. The deliverables will depend upon the depth of the preceding phases achieved to this point, looping back to earlier phases before proceeding being a key and frequent decision at this stage(Hayford & Ahmed, 2013).

2.6.8. The harness phase

The eighth phase, according to the approach, is related with harnessing the strategic plan shaped by earlier phases. The harness phase begins by obtaining approval for the strategic plans shaped by the first seven phases. Detailed action plans are then prepared. Action plans involve base plans incorporating proactive responses and contingency plans incorporating reactive responses with trigger points(Severin et al., 2010).

2.6.9. The manage phase

Managing implementation is mentioned as the last phase of Rodney's comprehensive RMPs approach. On this phase, all RMPs are expected to have a manage phase, ongoing as the project is implemented. One key deliverable is diagnosis of a need to revisit earlier base and contingency plans as basis of control. Another is rolling development of action plans ready for implementation as the detailed planning horizon rolls forward(Rodrigues-da-Silva & Crispim, 2014).

2.7. Risk treatment strategies

The very basic aim of having an effective project risk management is to reduce risk and their resulting losses. Having a plan is not enough. Risk response come to play after having a good management plan. The project team could respond in different ways to risk. Some of the response are proactive while some others are reactive and passive. The risk response intentions are needed to be planned indeed. This section deals with possible risk responses in the literature taking both conceptual and empirical studies. According to (Guillemette et al., 2015), Risk response, being part of the general project risk management, refers to developing, selecting, and implementing strategies in order to reduce risk exposure. According to this study, the RRP process recommends the risk treatment actions needed in the later stages and requires selecting the proper security control methods according to the impact and the likelihood of risks. This process also provides different execution possibilities and examines different "What-if" options. The goals of this process are: (1) Reduction of the probability of risk occurrence; (2) reduction of loss magnitude; or (3) changing on risk's consequences(Guillemette et al., 2015).

According to (Lyons & Skitmore, 2004) have conducted study in risk response and compared four selected risk response method usages. These are: risk elimination, risk reduction, risk retention and risk transfer. The research found out Risk reduction is the most frequently used risk response method closely followed by risk transfer, risk elimination and risk retention. In addition, the research compared three project response techniques namely, contingencies, contractual transfer, and insurance. Accordingly, it found out a preference for contingencies and contractual transfer over insurance.

Risk Action Plans developed and implemented to treat an identified risk depends on the nature of the project and the nature of the risk. However, some general suggestions can be provided. During the response identification and assessment process, it is often helpful to think about responses in terms of broad risk management strategies. The major risk responses according to Copper are: risk prevention (including risk avoidance); impact mitigation; risk sharing; insurance; and risk retention. Nevertheless, they provide a useful framework for thinking about how to deal with risks. These categories are in the nature of tactical responses. The organization is therefore expected to determine how they should be combined into its overall strategy, according to the extent to which it is prepared to accept or tolerate risk. Policy decisions such as this must be made at senior levels in the organization, not left to individual managers(Dikmen & Birgonul, 2004).

2.8. Environmental challenge due to waste of lather factory

Environmental pollution is one of the major problems of the world and it is increasing day to day due to urbanization and industrialization. The current pattern of industrial activity alters the natural flow of materials and introduces novel chemicals into the environment composed of water bodies, soil, plants, vegetables, human, and different living organism. Now a day one of a serious problem faced by the modern world is water pollution due to the increase in number of industries and this cause for other environmental pollution. Next to water, soil and air is the 2nd most important component of the environment, but it is the most undervalued, misused and abused earth and atmospheric resources respectively. Soil contamination has become a serious problem in all industrialized areas of the country. Soil is equally view as the ultimate sink for organic and inorganic form of contaminants discharged into the environment from industrial effluents. Most plants and animals depend on soil as a growth substrate for their sustained growth and development. The contamination of soils with heavy metals or micronutrients in phytotoxic concentrations generates adverse effects not only on plants but also poses risks to human health. High accumulation of metals affects both growth and metabolism and increases the production of reactive oxygen species in plants(Liknaw et al., 2017).

Survey result showed that the most environmental effect was bad smell to the surrounding area, indicated by respondents of 45% and the secondly scarcity of fresh water was 32%among the respondents. About 40 heavy metal and acid are used in the processing of raw hides (UNIDO, 2005). In

the report of Blacksmith institute 20% of the large number of chemicals used in the tanning process is absorbed by leather, the rest was released as waste. Due to lack of proper management facilities the tannery waste creates environmental pollution day by day. Pollution of environment is one of the most horrible ecological crisis to which we are subjected today. About 95% of the tannery industries have been built in unplanned way at the congested places of my survey area during the last fifty years. These unplanned tanneries caused environmental pollution very much. It was showed that the most harmful environmental effect was bad smell to the surrounding areas which caused environmental pollution(Amos, 2015).

The highest proportion (38%) of respondents had low environmental pollution awareness where 27% of the respondents had no knowledge in environmental pollution. The data indicated that 17% of the respondents in the study area comprised of medium awareness category about environmental pollution. About 18% of the respondents showed their high environmental pollution awareness. In the survey area the maximum respondents were low environmental pollution awareness. The maximum respondents were live in the slum. The slums people were very poor. The resident of the slums were used in dirty water for various purposes(Ogolla & Moronge, 2019).

CHAPTER THREE

3. Research Methodology and Design

3.1. Research Approach

Quantitative research is an inquiry into an identified problem, based on testing a theory, measured with numbers, and analyzed using statistical techniques to prove or disprove predetermined hypotheses regarding the relationships between specific variables. Qualitative research is described as the non -numerical examination and interpretation of observations, for the purpose of discovering underlying meanings and patterns of relationships. It was carried out by using open-ended observations and questionarry only used for interpretation.

According to the above explanation, this study is conducted using the combination of both qualitative and quantitative research approaches. The research strategy was chosen according to the research questions in the particular situation. A number of research strategies are available for conducting a research such as literature survey, experiments, questionnaire surveys, histories, case studies, and analysis of archival information. According to the research objectives, preferable research strategies like literature survey, questionnaire survey, case studies(other document), and archival records and documentations were selected for this research.

3.2. Research Design

This descriptive study examined the practice of project risk management at leather manufacturing factory. A Likert scale survey was employed to measure the dependent variable of project success and the independent variable of Risk Management. And also measure the dependent varable of project success and independent varable of environmental challenge.

3.3. Population and sampling technique

For this study, respondents were selected from the population. Here, the population of this study was around 23 different tanneries who are the member of the Ethiopian Leather Industry Association and found in Addis Ababa. The study was conducted based on the data gathered from 3 tanneries found in Addis Ababa and the available relevant secondary data with the aid of close-ended and open-ended questionnaire. In order to get valid data and maximize quality of information, purposive sampling is used to choose 45 target respondents whose work is believed to be involved with risks and who have

clues about how to deal with risks and environmental effect. In order to maximize the response rate, to the extent possible, data providers were given adequate time to provide useful and accurate data and close monitoring was done by encouraging respondents time to time until they fill the questionnaires and return them.

3.4. Types and methods of data collection

The study was conducted based on the data gathered from 3 tanneries found in Addis Ababa and the available relevant secondary data with the aid of properly structured close-ended and open-ended questionnaire.

In this study both primary and secondary data were used appropriately. The primary data collected through a questionnaire with respondents (top managers, engineers, quality workers, and production workers) during data collection phases. On the other hand, the research also collected Secondary data from government records, syndicated research service, industry publications and related online sources.

In order to achieve the purpose of this study, questionnaire was used to collect a data. A questionnaire was designed from related researches and literature. Questionnaire was used as the main data collection instrument for this study. The research was done on the drafts of the questionnaire questions to his research advisor and colleagues. Feedback from these individuals resulted in further refinement to the questionnaire.

The research was revised the questionnaire questions before starting collecting the data. The questionnaire was divided in four parts. The first part of the questionnaire was focused on getting the respondents background information such as level of education, their role in the project and number of month they involved in the project. The second part was consisted of 21 Likert scale format questions which are related to assessing the practice of risk planning, risk identification, risk analysis, risk response and risk monitor and control and environmental challenge. The third part of the questionnaire had six multiple choice questions to supplement questions in part two. The final part of the questionnaire consisted of two open-ended questions to get some further responses from the respondents.

The research designed interview guide for the samples were selected for the interview. The interview guide contained nine semi structured questions were designed from literature and previous related researches.

3.5. Data Collection Procedures

The data needed for this study was collected through questionnaire based on the following procedures. First, the final version of the questionnaire was distributed to the respondents. The questionnaire was distributed in person. After data collection through questionnaire was completed, the research conducted interview with the selected sample.

3.6. Methods of Data Analysis

Data collected is analyzed in two major ways since the approach followed is mixed method. Documentation is performed for all the necessary relevant sources. Collected documents are used to give background info and help confirm some of the data indicated on the questionnaire. These secondary materials are read and understood, then explained in manner that can answer the research questions.

The second part of the data is quantitative discussion. Any data collected through questionnaire is analyzed using statistical package for social science (SPSS). Descriptive analysis was employed to this end. Since the project focuses on assessment of risk management from project team perspectives, a Likert scale type questionnaire was developed basically. Sample responses was encoded in a five-scale degree of agreement and analyzed using factor analysis application of SPSS software to drive conclusion. Measure of centeral tendency was employed basically in the project. At the end of data collection was regression analysis related detail correlation explanation is not employed.

3.7. Description and Measurement of Variables

According to (Muhammad & Kabir, 2018), the variables need to be specified in a research so that the research gives clear picture to readers. Risk management is usually measured by internal and external factors. Internal factors are factors related to risk management structure (Including appropriate staff level, staff qualification, and efficiency), committee oversight, risk management process including risk identification, analyze the risk, evaluate or rank the risk, treat the risk, and monitor and review the risk.

External factors include legal environment, regulatory changes, business trends, etc. In this paper only internal variables were used to investigate the determinants of risk management in the factory and determine the environmental challenge.

In order to interpret the collected data, the questions to be any of value was measured. The researcher basically used nominal and ordinal scales to measure questions. The Likert type ordinal scale was used to measure the attitude of the respondents to determine to what degree they agree or disagree with the close-ended questions which vary from strongly agree to strongly disagree. The researcher also assigned score or weights to the alternative responses which are coupled to values from 1 to 5. Accordingly, values were assigned as: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree and 5 = strongly agree. The Likert scale which is used to determine the attitude of the respondents is used in accordance with the arithmetic mean to reach conclusion regarding the various responses.

3.8. Validity and Reliability test

Generally, since the questions are extensively derived from the problem statement, the measures are considered to have content validity. For the purpose of this study, the alpha test of reliability was employed using software called SPSS and a result of **0.934** was found, accordingly, any number between **0.5** and **1** show that the test instrument is reliable. Mean, standard deviations of the sample was determined.

3.9. Ethical Consideration

Respondent was informed about the purpose of the study. Confidentiality was maintained throughout the study by not disclosing the respondents' name on the questionnaire and research reports. No identifying information was entered on the questionnaires.

CHAPTER FOUR

4.1. Data Presentation, Analysis and Interpertaion

In chapter three the research methodologies also because the development of the questionnaire used for this research are described releted to risk management practice and environmental challenge. This chapter deals with the analysis and interpretation of the info gathered through questionnaire and secondary sources. Primary data collected from the company's managers are presented, analyzed, and discussed during this chapter. This chapter also presents the discussion of results of the study which include descriptive statistics of variables and correlation results for dependent and explanatory variables.

4.2. Results

A total of 45 questionnaires were distributed to personnel in the company who were believed to be involved in different risks directly or indirectly. And, 39 questionnaires were returned which represent 86.67 % response rate. All targeted respondents were presented with the questionnaire, although there were few unreturned questionnaires from some employees.

4.2.1. Characteristics of Sample Respondents

The current position of respondents indicates that mostly department manages were involved in responding to the questionnaires and their level of education is considerably high. Work experience of respondents shows that they all have been in the factory for at least for two years.

Table 2: Background of the respondents

Background Characteristics of Respondents					
Current Position of Respondents		Level of Education of Respondents		Work Experience of Respondents	
Positions	Frequncey	Levele of educations	Frequncey	Work experience	Frequncey
Department heads	5	Master's Degree	5	5-10 years	5
Engineering department	6	First Degree	6	3_7 years	6

Quality Department	10	Frist Degree	8	2- 5 years	10
Production Department	18	Deploma and above	18	Above 6 years	18
Total	39				

Source: Own Survey

General Project Risk Management Question

It is observed that the reliability test for the part is 1.09 related to average standard deviation and average mean was get 3.46 approximate that can be interpreted as good level of reliability test using SPSS soft ware about general project risk management determined in the form of mean and standard deviation. It can be concluded therefore that the results are reliable enough to make conclusion on the samples with related to risk management practice and environmental challenge about leather industry.

Item Statistics

Table 3: General project risk management item statistics

	Mean	Std. Dev	N
How do you rate your level of documented risk planning formality?	3.21	1.301	39
How do you rate the quality of your risk management manual?	3.44	1.071	39
How do you rate the capacity of your project risk management department/team?	3.59	0.996	39
How do you rate quality of project risk management tools and techniques?	3.62	0.990	39

Source: Own Survey

It can be observed from the above data that the mean score of the question measuring formality of risk management document is 3.21 and this indicates samples have stated a good formality for the project. The second better means score is for the question related to rating quality of the risk management tools and techniques used in the project risk management. A mean score of 3.62 is observed here which a good level of understanding is. The third level of score is identified for the quality of risk management manuals. The 3.57 mean score is another good level of understanding despite it is nearer to the median or arithmetic mean score of the responses, which is 3.21. The least score is identified on the question that is concerned with the capacity of the project risk management department/team. These indicated

respondents are confident, but not to a higher level about the capacity of the project risk managing team.

Project Risk Management During Project life cycles

The second part of the questionnaire focused on the comparative perception of applying project risk management during the five project life cycles 0.831 level of reliability test is realized for this part. Like the first part, the reliability test for the second part is identified to be good depending on the Alpha test standard.

Table 4: Level of risk management in the form of item statistics

	Mean	Sta. deviation	N
Level of Risk Management During Project Initiation	3.90	0.680	39
Level of Risk Management During Project Planning	3.85	0.988	39
Level of Risk Management During Project Execution	3.85	0.933	39
Level of Risk Management During Project Monitoring and Controlling	3.95	0.826	39
Level of Risk Management During Project Closure	4.13	0.767	39

Source: Own Survey

For the question related to the level of project risk management during project planning and execution, the mean score is identified to be 3.85 which is the lowest score of the group. Even this is higher the median score of 4.13, it indicates respondents are not confident enough to see project risk management as highly implemented in the project initiation cycles. On the other hand, mean score of 4.13. is identified for the application level of project risk management during the closure cycle. This indicates the level of risk management application is higher for project closure than planning and execution. When it comes to the monitoring and controlling cycle, the level of risk management application is considered higher than the above initiation with a mean score of 3.95. This indicates respondents have good confidence on average, in seeing the level of applying project risk management during the cycle as good. Respondents consider project risk management is higher in terms of application during project planning than project initiation, project monitoring and controlling and project closure. The highest mean score of 4.13 is observed level project risk management during project closure. This indicates respondents consider the level of risk management is at the highest level during project closure. Following in order of higher to lower based on the mean score is project closure, monitoring and controlling, initiation, project execution and planning.

Table 5: Inter items correlations in the level risk managements

	Mean	Minmimum	Maximum	Range	Variance	No of items
Items means	3.99	3.85	4.13	0.28	0.1	4
Inter items correlations	0.455	0.11	0.8	0.69	0.07	4

4.2.2. Stastical analysis of Risk Management practice and environmental challenge

According to the arithmetic means of the responses, respondents agreed that roles and responsibilities for risk management are clearly defined, the company comply with its risk management policies and procedures as well as it allocates necessary resources to support the risk management process. However, the arithmetic mean of the respondents indicates that respondents are neutral whether risk management policies and procedures are well understood at all levels or not. Unless the risk management policies and procedures are well understood by the concerned staff of the company, it would be difficult to comply with the risk management policies and procedures. This also indicates that there is a limitation in allocating the necessary resources like training and education. Generally based on the project risk management practice and environmental challenge stastical analysis determined related to mean score and standard devation with total number of respondent out of 39.

Table 6: Descriptive statistics of collected data about risk management and environmental challenge

List of questions	No of respondent	Mean	Std. Devation
Is all worker well understand about project risk management practice	39	3.21	1.301
Is give any training give for worker about risk	39	3.44	1.071
Is give any training give for worker abaout risk management practice	39	3.59	0.966
Your factory complies with its risk management policies and procedures?	39	3.62	0.990
Is your factory allocates appropriate resources to support the risk management process?	39	3.59	0.818
Is the committee members understand the risk profile of	39	3.82	0.942

the factory?			
Is the members understand the tools used to manage risks?	39	3.36	1.088
Is the members understand tolerance limits set for each risk?	39	3.87	0.951
Is the committee is playing effective role in the risk management process?	39	3.56	0.852
Is the factory develop plan to implement any project risk management to solve problem	39	3.64	0.986
Is all worker well understand about project risk management practice	39	3.90	0.912
Is give any training give for worker about risk management practice	39	3.82	0.885
Have you ever thought of water scarcity sometime in the future used for industrial (tannery) production?	39	3.90	0.788
Is there any sludge disposal site you know post tannery processing?	39	4.10	0.788
Do you think appropriate on job training given to the tannery chemical weighers concerning safety and recipe optimization?	39	3.90	0.882
Is the water used for tannery processing pre-treated?	39	3.82	0.997
Is the factory used waste water treatment used properly?	39	3.90	0.680
Is your factory check the effluent waste with ISO standard?	39	3.85	0.988
Do you think any measurement used if the waste affect the environment?	39	3.85	0.933
Are all workers understand the waste affect person?	39	3.95	0.826
Do you know the effect of waste water to environment	39	3.55	0.99
Do you know any effect in the case of waste from the tannery	39	4.13	0.767

Source: Own Survey

The third factor discussion is the perception of the comparative value of project risk management about other knowledge areas for project success. Table 6. indicates the mean score and standard deviation of the comparative value of project risk management relative to the other project management knowledge areas. A very good level reliability test measured to be 0.937 is observed for Is the members understand

tolerance limits set for each risk?. This is the highest of even higher than the overall reliability test of the study. Conclusion on this part is assumed to be very reliable based on the "Cronbach Alpha" test of a reliability standard, therefore. The following table indicates the mean score on the comparative value of project risk management about other knowledge areas.

management is perceived as being more are important than quality management in the same manner as it is perceived more important than resource allocatesnt". A much higher level of agreement is observed about participant perception of project risk management being more valuable than a project

For a question relating to project risk management as being more important than project schedule management, respondents agreed "Do you know any effect in the case of waste from the tannery?" with a mean value of 4.13. Despite being near to the median score of 3, it still is higher and indicated the risk management is considered more important than schedule management. For the question relating project risk management with cost management, samples responses show a mean score of 3.59. This represents a more level of agreement to the statement. Respondents tend to see project risk management as more important than cost management compared to its importance relative to project schedule management. Participants even agreed more to the statement stating project risk management is more important than project quality management about mean of 3.64. The same mean level of agreement. Does your observedcomplyject resource management. The risk management is considered more useful in the same manner for these two factors. This can be interpreted as "risk communication management.

A mean level of 3.73 agreement is observed. Distinctly, the same level means score of 3.82 is identified on perceiving project risk management to be more important than project integration management, procurement management and stakeholder management. This indicates the idea that these three factors tend to be perceived as being to have less important than project risk management for project success is in the same manner. The highest mean level of agreement is identified regarding seeing project risk management as having more contribution than project scope management. The summary of item statistics in. below illustrates the mean of item means is 3.687 which is higher than the median indicating a good level of agreement among the respondents tending to perceive project risk management more important the other knowledge areas. In addition, a positive inter item correlation mean of .646 is identified for part three of the survey.

To simplify the statistical analysis, questions with similar underlying construct are grouped into seven descriptive items namely: Risk management structure, Committee oversight, Risk identification, Risk measurement, Risk monitoring, internal control, and effectiveness of the risk management. The grouping of the items ensures that the various questions relating to specific topic are combined together. This in turn contributes to a more structured analysis of the research data. Is all worker well understand about project risk management practice? Based on this question there are different lable and response item in the form of frequency, percent, valid percent and cumulative percent as show below:

Table 7: Stastical analysis for risk management system related to percentaily and ferequncy

Respond lable	Frequency	Percent	Valid percent	Cumulative percent
Strongly disagree	4	10.3	10.3	10.3
Disagree	9	23.1	23.1	33.3
Netural	9	23.1	23.1	56.4
Agree	9	23.1	23.1	79.5
Strongly agree	8	20.5	20.5	100.00
Total	39	100.00	100.00	

Source: Own Survey

Is give any training give for a worker about risk? Based on this question there are different lable and response item in the form of frequency, percent, valid percent and cumulative percent as shown below:

Respond lable	Frequency	Percent	Valid percent	Cumulative percent
Strongly disagree	2	5.1	5.1	5.1
Disagree	5	12.8	12.8	17.9
Netural	12	30.8	30.8	48.7
Agree	14	35.9	35.9	84.6
Strongly agree	6	14.5	14.5	100.00
Total	39	100.00	100.00	

Source: Own Survey

Table 8: Respondent in the form of percent from the sample question

Respondents (N=39)						
Responses	**Scale**					
	1	2	3	4	5	Mean

The roles and responsibilities for risk management is clearly defined	1%	2%	2%	48%	47%	4.04
The risk management policies and procedures are well understood by all staff of the factory	_	30%	38%	26%	6%	3.09
Your factory complies with its risk management policies and procedures	_	6%	9%	72%	13%	3.91
Your factory allocates appropriate resources to support the risk management process	_	11%	15%	57%	17%	3.81

Source: Own Survey

(Dvir et al., 2003) believes that organizational structure involves an organization's internal pattern of relationship, authority, and communication. The structure is comprised of formal lines of authority and communication and the information as well as data that flow along these lines. Thus, organizational structure defines the lines of authority and communication, serves to allocate tasks and resources and provides a means of coordination. Supports the idea that organizational structure provides the authority to predetermine the way employees work. The structure and process of an organization are most effective when their design functions match their environment and have a positive impact upon the organization's strategies.

Therefore, one of the most important aspects for effective risk management is organizational structure. Organizational structure provides the concept, guideline, direction, and support to the employees. Organizational structure must be reviewed regularly and adjusted to adapt to changing financial environments. The committee's role is to recommend policies and procedures for managing risk, the management role is to review and approve them, and it is the committee's role once more to implement them and report back on their operation related to environmental challenge and project risk management on tannary factory. 51% of the respondents indicated that the company apply context dependent risk mitigation options to manage the risks attached to their business. As indicated in the literature review, there are four types of risk mitigation options namely: Risk avoidance, Risk reduction, Risk transfer, and Risk acceptance. Therefore, the

respondents' responses indicate that their company uses these different risk mitigation options depending on the assessment of the level of risk and its impact this analysis was involved with SPSS soft ware on the leather industry with risk management practice and environmental challenge. The respone factor or character validaty from 100% and have its own frequency from the total number of respondent out of 39.

Table 9: Response character

Responses	**Frequency**	**Valid Percent**
Missing response	0	8.5
Risk taking	5	10.6
Risk avoiding	16	27.7
Context dependent	17	54.1
Not known	1	2.1
Total	**39**	**100.0**

Source: Own Survey

4.2.3. Risk management practice process

4.2.3.1. Risk Committee

The responses and the arithmetic means described on the project risk management and environmental challenge perspective (see table 9), show that respondents agreed in all questions raised in relation to committee oversight role. According to the respondents, committee members understand the risk profile of the company and environmental challenge come from the factory, they understand the tools to manage risks and tolerance limits set for each risk and they believe that they are playing effective oversight role in the risk management process.

Table 10: Item statistics of the risk committee

Respondents (N=39)						
Responses	**Scale**					
	1	2	3	4	5	Mean
The committee members understand the risk profile of the factory	_	_	19%	70%	11%	3.91

The members understand the tools used to manage risks	_	6%	45%	36%	13%	3.55
The members understand tolerance limits set for each risk	_	2%	23%	62%	13%	3.85
The committee is playing effective role in the risk management process	_	6%	21%	60%	13%	3.79

Source: Own Survey

Based on the above stastical analysis about risk committee with risk management and environmental challenge. From the committee member understand the risk profile of the tannary factory 70% of the respondent agree. This means almost all member well understand about it. With in the risk committee stastical analysis the members understand the tools used to manage risks, the respondent almost all member not well understand about it. From the statstcical analysis 36% of respondent well know about it.

According to the risk management guideline of the factory, the committee is responsible for crafting strategies and policies, set out tolerance limits for each risk, clearly define responsibilities and authorities, ensure that various risks related to the business are adequately measured, monitored, and controlled, periodically review strategies and policies and ensure compliance with all relevant laws, regulations, policies, and procedures. Therefore, since the company enforces the committee to play effective role, the respondents' response is expected to be positive. The committee is playing effective role in the risk management process there is no one respondent have responde ssrongliy disagree and 60% of the respondent agree with the above items type and the mean score recorded out of 39 respondent.

4.2.3.2. Risk Identification

Questions in this section were designed to know whether the company regularly identify risks inherent to their business, the responsible body for risk identification, the type of tools used to identify risks, effectiveness of risk identification tools and the major risks that the business is exposed to. Responses indicated that the company regularly identifies its risks using various risk identification tools. The survey focused six methods which can be used to identify risks. These are

auditing/physical inspection, process mapping, workshops, brainstorming, product portfolio analysis and examination of past experiences.

he most recognized method used to identify risks is auditing or physical inspection followed by product portfolio analysis. Examination of past experiences is recognized as third most important method. Although brain storming, process mapping and workshops were rated lower, they were all recognized as methods of identifying risks, there were no additional methods identified in the open ended questions. Therefore, according to the respondents, it can be deduced that the above mentioned methods be regarded as the tools that the company is using for risk identification.

According to the respondents, the responsibility for identifying risks lies on the risk committee, executive management team, line managers, and middle level managers. Majority of the responses (see table 10) indicates that respondents are neutral with regard to the effectiveness of the risk identification tools used by the company.

Table 11: item statistics of the risk identification

Response	**Frequency**	**Valid percent**
Strongly disagree	3	4.3
Disagree	6	10.6
Neutral	14	51.1
Agree	12	25.5
Strongly agree	4	8.5
Total	**39**	**100**

Source: Own Survey

From the above statistical analysis about risk identification from the total frequency of respondent 14 number of respondent neutral and almost all member well know about how risk identification and understand how protect the environment based on the effluent protection from the factory.

Risk identification is the basic step of risk management process and related to the environmental challenge. The environmental challenge of leather factory related to the waste water effeluent. Based on the risk management process particularly in risk identification. Additionally the

respondent out 39 the response with strongly agree 4 and the valid percent 8.5 the total valid percent for each type of quessionarry experced with five major levels. This step reveals and determines the potential risks which are highly occurring and other events which occur very frequently. Risk is investigated by looking at the activity of organizations in all directions and attempting to introduce the new exposure which will arise in the future from changing the internal and external environment. Correct risk identification ensures risk management effectiveness. Unless the risk identification tools are effective, the company may not properly identify its risks and if the first basic step is missed, other risk management processes will also be affected negatively.

Effective risk identification should consider both internal factors (such as the organizational structure, the nature of activities, quality of human resources, organizational changes, and employee turnover) and external factors (such as changes in the industry, and technological advances) that could adversely affect the achievement of the company's objectives.

The completed questionnaire showed that the primary risks in the manufacturing company in order of severity is Operational risks, Technological risks, and Market-related risks.

4.2.3.3. Risk Measurement

Risk measurement is well deterimined in the risk management practice and environmental challenge in the leather factory. In the risk measurement and environmental challenge for tannery deterimed based on the frequency of the respondent in the form of valid percent and level of frequency from total number of respondent.

The aim of this section was to assess the tools that are currently being used by the company to measure risks, the effectiveness of the tools, and how frequent they are tested to make sure their accuracy 98% of the responses indicated that the company has a risk measurement system to control its risks. According to the respondents, their company uses a combination of quantitative and qualitative tools to measure risks. From the risks are assessed in terms of likelihhod and impact strongliy disagree(17%) out of 39 and 23% of the respondent are agree.

Generally in the risks are assessed in terms of likelihood and impact and the risk measurement tools are effective to properly manage risks.

As indicated in the risk measurement literature, there are five types of risk measurement tools, namely, statistical tools, analytical tools, scenario analysis, value at risk, and using experience and intuition. Respondents indicated that experience and intuition tools are the most important tools used by their company to measure risks followed by scenario analysis. VAR and statistical tools are seldom used from quantitative tools. There is no other risk measurement tool indicted in the open ended question. From the statistical analysis 38% of the respondent well understand about risks are assessed in terms of likelihood and impact this indicated that almost all number of respondent well deterimend and also 51% of the respondent agree with the risk measurement tools are effective to properly manage risks in leather factory and protect environment from pollution and well manage the risk.

According to the arithmetic mean of the responses (see table 11) respondents were neutral on the effectiveness of the risk measurement tools and whether risks are assessed in terms of likelihood and impact or not. 51% of the respondents responded that risk measurement tools are periodically tested to make sure their accuracy.

Table 12: item statistics of the risk measurement

Respondents (N=39)						
Items	**Scale**					
	1	2	3	4	5	Mean
Risks are assessed in terms of likelihood and Impact	17%	9%	38%	23%	13%	3.16
The risk measurement tools are effective to properly manage risks	4%	11%	51%	26%	8%	3.23

Source: Own Survey

4.2.3.4. Risk Monitoring and Review

The staticical analysis Response indicated that the company has a regular reporting system that provides the senior management with risk exposure of the company. The types of risks reported are operational, technological, and market related. Frequency of reports ranges from weekly to quarterly depending upon the management requirements. According to the responses obtained (see

table 12), majority of the respondents are neutral on the timelines and informative nature of risk reports to monitor risk position of the company.

Table 13: item statistics of the risk monitoring and review

Responses	**Frequency**	**Valid percent**
Missing	0	2.1
Strongly disagree	2	6.4
Disagree	2	12.8
Neutral	23	48.9
Agree	7	19.1
Strongly agree	5	10.6
Total	**39**	**100.0**

Source: Own Survey

Accurate, timely, and complete data is a foundation for effective risk management. Risk management reports should cover all material risk areas within the company. The risk monitoring and review out of 39 respondent.

4.2.4. Internal Control

The intention of this section was to evaluate the adequacy of risk management policies and procedures, the appropriateness of risk limits set for each type of risk, and to know whether risk management policies and procedures are reviewed periodically or not.

According to responses obtained (see table 13), 72% of the respondents replied that the risk management policies, procedures, and limits are adequate to identify, measure, monitor, and control risks of the company. Around 92% of the response revealed that the company has risk limits that serve as a means to control various risks associated with its business. 77% responded positively by saying policies and procedures are reviewed on a regular basis to incorporate best practices, processes, and new regulations. However, the arithmetic mean of the response indicated that respondents are neutral on the appropriateness of the risk limits set for each type of risk. The responses obtained seem to be controversial. If policies, procedures, and limits are reviewed on a regular basis and the current policies and procedures are adequate, the risk limits should have been appropriate for each type of risk.

Table 14:-item statistics of the perceived effectiviness of risk control

Responses	Are policies, procedures, and limits adequate		Does the company have risk limits		Are policies and procedures reviewed Regularly	
	Frequency	Valid Percent	Frequency	Valid percent	Frequency	Valid percent
Missing	2	17	1	2.1	-	-
Yes	32	72.3	43	91.5	26	76.6
No	5	10.7	3	6.4	13	23.4
Total	**39**	**100.0**		**100.0**	**39**	**100.0**

Source: Own Survey

4.2.5. Perceived Effectiveness of Risk Management

This section seeks information on the competency level of the staffs responsible to risk management, the level of risk management system, the availability of risk management

function and its major duties and responsibilities, the trend of the level of risk and the challenges that the company is facing in managing risks.

Respondents believe that the staffs responsible for risk management have the appropriate level of competency and experience. Effectiveness of risk management system used by the factory (see table 12) was rated as poor by 43% and it was rated as good by 40% of the respondents.

Table 15: item statistics of the effectiveness of risk management

Responses	**Frequency**	**Valid percent**
Missing	1	2.1
Poor	20	42.6
Good	19	40.4
Very good	7	14.9
Total	39	100.00

Source: Own Survey

Respondents said that risk management function has been established to manage the overall risk of the factory. According to respondents, the major duties of the risk management function are measuring risks, comparing the results with the set limit and reporting to the concerned bodies. 57% of the responses (see table 15) showed that the level of risk has increased during the last year. The respondents' justifications for the increasing trend of risk among others are: business expansion, stiff competition, and introduction of new products. According to respondents, the most difficult situations that the factory is facing in managing risks are: lack of adequate data, weak information management system, lack of competent and experienced staffs, and lack of awareness about the concept of risk management due to its newness.

Responses	**Frequency**	**Valid percent**
Missing	1	2.1
Increased	20	57.4
Decreased	15	34.0
Not changed	2	4.3

Not sure	1	2.1
Total	**39**	**100.0**

Source: Own Survey

From the given response we can observe some inconsistencies. On the one hand they responded that staffs responsible for risk management have the appropriate level of competency. On the other hand, they explained that lack of competent and experienced staff is one of the difficulties that the factory is facing in managing its risks. The existence of risk management structure along with policies and procedures alone do not result in effective risk management system unless these components of risk management system are backed by competent and experienced personnel.

4.2.4. Conception about enviromental sustainability

Environmental pollution is a great essue in leather manufacturing process related to waste water that discharge to the environment. The data collected from the selected leather factor with repect to effluent treatment plant to protect the environment from pollution are different understanding existed. Based on the data stastical analysis almost all respondent well understand about the effect of waste water to the environment. The respondent also know the source of water used for the process production of leather. There for based on the data collected and the reality realeted to cost ground water used for production and utilities.

Odor in the leather factory also other a great deails to the environment and the operator. Based on this statement the data colleted about the condition in the odor. All most all selected factory operator and normal worker said there is no comfort during production. Based on this data there is other research needed that come up the odor in the comfort zone because this also high effect on the environment and the worker found in the factory on health that affect the resparatory organ.

Worker in the leather factory said different direction and suggest to remove this bad odor. The first suggestions it need mega project and study the effect of chemical used for tanning such as chromium. This chemical used for tanning process but it is difficult and heavy effect on the health of human being.

4.2.5. Implementation of environmental standard and regulations

Waste water treatment plant needed to protect the environment and health of worker. There are different stage of waste water treatment process, primary, secondary and tertiary. As the data collected from tannary factory about waste water treatment all stage existed in leather factory. This means all treatment stage are properliy work.

After treatment of waste from the leather factory, effulent dirctelity discharged to the river. As the respondent said the effeluent have a little bit there is chemical further advanced treatment needed to avoid this kind of problem. From the stastical analysis from the collected data there is scheduled awreness creation program on waste water management issues in the tannery.

In leather factory different kind of chemical used for production process. This chemical easily dissolved with water. As the collected data from the respondent almost all wokere well understand about the chemical and its effect. Toxic chemical highliy used in the factory and this chemical highliy affect the environment. A great research needed to solve this enviromental challenge, minimize the requriment of water and also there is other modification to minimize waste water generation in the factory as the amount of waste water in the factory small amount the requriment of chemical needed to remove toxic chemical aslo small.

In all factory there is a storage existed to store chemical. This indicated that there is safety and protection. Generally any chemical used in the process munfacturing of leather store properily. Frequently chemical weighing materials checked and standardized for accurancy.

In the selected tannary factory based on the respondent there is appropriate on job training given to the tannery chemical weighers concering safety and recipe optimization

CHAPTER FIVE

5. Summary, Conclusion and Recommendation

5.1. Summary

39 samples are collected from targeted 45 sample frames which resulted in response rate of 86.6%. Sample frame is targeted using purposive non probabilistic method of sampling. Survey questionnaire has two major parts(environmental challenge and risk management practice). Accordingly, following are key findings of results.

For the factor indicating general project risk management, respondents agreed that there is sufficient risk planning formality, project risk management manual and quality project risk management tools and techniques with mean inter means score of 3.44. For the question related to is all worker well understand about project risk management practice, they tend to be more neutral.

Th score is only slightly higher than the median. On a rank level, samples indicated there are good quality of project risk management tools and techniques with a mean score of 3.62, rated level of documented risk planning formality to be good in general with a score of 3.21, thought there is quality of risk management manual with mean score of 3.44 and slightly agreed from being neutral on capacity of the project risk management team with mean score of 3.59.

As the result from the research work about project risk management practice and environmental challenge in the leather industry. The result shows from SPSS soft ware analysis minimum mean value above 3.22. This indicated that almost all workers are well undesrand about project risk management. During production in leather factory highly respect to the environmental pollution and effluent from the factory. The effulent or processed waste water not dirctily discharged to the enviromet. All ISO requriment was fulfill as the data indicated based on the analysis. Regarding to project risk management practice there is some problem. To solve this problem further finding and training needed for all staff and develop the general guidline and implemented the role to solve all problem and risk the leather factory.

In the research work details description about project risk management and environmental challenge using different method procedure. Data collection procedure also clear described on the research. Prepare questinarry in open ended and closed ended based on the project risk management and environmental challenge and used to identified the response of the research. Method of data analysis also identified in the research. Using SPSS collcted data analysis and mean, standard devation and percentage of each question regarding to project risk management and environmental challenge is identified.

Validations and reliability test also including on the study on the risk management and environmental challenge. This show how much the collected data valid related to the fact. For example waste water treatment in the factory or leather industry method clear defined and how the worker investigate when new problem existed in the factory. The closed ended question also included type of waste water treatment method, way of environmental protection related to the enfluent from the factory. Project risk management related different idea rised from the different risk managemt practice and how the worker understand about the risk and to solve different problem related to it.

Identified different framework on the study of risk management and environmental challenge including phase of the study must be deterimine

Ethical consideration also considered during data collection. Before collect the data frist understand the purpose of research and give any direction how to put his or her understanding in each question. During collection of data in the factory first ask the worker volantarity or willingness.

In the result and disccution part also including characteristics of the sample respondent this including data analysis, background of the worker including work experience, frequency and level of education also interperated on the research work. After this analysis using SPSS the main also study was undertaking and findout the final output of the study.

Stastical analysiss of the risk management was studied in this research work including descriptive analysis and percentage of the response based on the given level of response this means agree, disagree,nutral, strongly agree and strongliy disagree. Based on this level of

response risk management practice and environmental challenge clear identfiyed. Finally the following parameter was identified internal control, perceived effectiveness, conception about environment and implementation of environmental protection.

5.2. Conclusions

To conclude the research work in tannary industry about project risk management practies and environmental challenge perspective.The main objective of this study was to investigate the current risk management practices and the risk management systems that are adopted by leather manufacturing factory to control its risks. The main conclusions are grouped under seven items according to the questions with a similar construct namely: risk management structure and culture, committee oversight, risk identification, risk measurement, risk monitoring, internal control, and effectiveness of risk management.

Results show that the different leather factory has a formal risk management structure in place and the established structure is adequate for effective risk management practice and environmental challenge. It has also developed written policies and procedures for risk management. A formal risk management structure and documented policies and procedures could be regarded as a prerequisite for the effective management of risk exposure. However, there is a limitation in understanding policies and procedures developed for risk management. This clearly indicated the existence of lack of proper training and communication which could impede the risk management process.

Responses obtained from the selected respondents which easily understand the questionarries and the concept about risk management practice and environmental challenge indicates that the committee has the understanding of risk profiles, risk management tools, tolerance limits set for each type of risk. If there is a gap in understanding risk profiles, risk management tools, and tolerance limits, they would fail to ensure risks related to their business are properly identified, adequately measured, monitored and controlled.

5.3. Recommendations

As the concept of risk management is not yet fully understood in most tannarry manufacturing industries in Ethiopia, it is important to develop and implement a formal training program for risk management practice and environmental challenge and periodic updating of employees. Most leather factory including other factory have not good attitude to ward the research about environmental challenge and the risk come from the factor with different way for example during production and effeluent waste water. This will enhance the awareness of risk management in the companies and stimulate the interest in its management. Companies should strive to strengthen their risk management process: risk identification, risk measurement, risk monitoring, and internal control to effectively manage their risks. There is a need to develop an integrated system which ensures a systematic and comprehensive approach to manage risks. The company should invest on its IT system and human resources to get accurate, complete, and timely data to manage its risks effectively.

During collecting data factory not interested to give information about the risk management practice and environmental challenge due to this a little bit it is a challenge to collet the data. There for research is needed to come out with a valid risk management model related in leather manufacturing industry. Many foreign investors are eyeing the sector and sooner or later many investors will join the business and the risk exposure will change. In order to be competitive, the company capacity to manage its risks should be strengthened.

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St. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES
MASTERS OF PROJECT MANAGEMENT QUESTIONNAIRE

Dear respondents, the purpose of this questionnaire is to gather data on the project risk management and environmental challenge in the case company. The study is purely for academic purpose and thus not affects you in any case. So, your genuine, frank and timely response is vital for successfulness of the study. Therefore, I kindly request you to respond to each items of the question very carefully.

General Instructions

- There is no need of writing your name
- Where answer options are available please tick (√) in the appropriate box for part I and circle for your response to each statements of part II.

Contact Address

If you have any query, please do not hesitate to contact me and I am available as per your convenience at (Mobile: +251-924-03-15-97 or e-mail: *eyerusalem597@gmail.com****Thank you for scarifying your precious time in advance!***

Part 1: Demographic Information

1. Section/Department_____
2. 2. Education back ground 1.less than Grade 10_____ 2.TVT /Diploma_____,
3. BA/BSC Degree_____ 4 .MA and above_____
4. Experience, 1. Less than 5 years_____ 2. 5 to 10 Years_____3 and above ten year_____
5. Sex 1 .Female _____, 2.Male_____

Part II: project risk management practice for leather factory

With regard to project risk management practice for leather factory practices of your firm, please circle the appropriate number to indicate the extent to which you agree or disagree with each statement. The item scales are five- point Likert type scales with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Project risk management practice in leather factory		Strongly disagree	disagree	Neutral	Agree	Strongly agree
1.	Is the roles and responsibilities for risk management is clearly defined?	1	2	3	4	5
2.	Is the risk management policies and procedures are well understood by all staff of the factory?	1	2	3	4	5
3.	Your factory complies with its risk management policies and procedures?	1	2	3	4	5
4.	Is your factory allocates appropriate resources to support the risk management process?	1	2	3	4	5
5.	Is the committee members understand the risk profile of the factory?	1	2	3	4	5
6.	Is the members understand the tools used to manage risks?	1	2	3	4	5
7.	Is the members understand tolerance limits set for each risk?	1	2	3	4	5
8.	Is the committee is playing effective role in the risk management process?	1	2	3	4	5
9.	Is the factory develop plan to implement any project risk management to solve problem	1	2	3	4	5
10.	Is all worker well understand about	1	2	3	4	5

	project risk management practice					
11.	Is give any training give for worker about risk management practice	1	2	3	4	5

Part **III**: Environmental challenge of leather factory

Environmental challenge in leather factory		Strongly disagree	disagree	Neutral	Agree	Strongly agree
1.	Have you ever thought of water scarcity sometime in the future used for industrial (tannery) production?	1	2	3	4	5
2.	Is your factory applies Environmental guide lines to the leather Industry?	1	2	3	4	5
3.	Is there any sludge disposal site you know post tannery processing?	1	2	3	4	5
4.	Do you think appropriate on job training given to the tannery chemical weighers concerning safety and recipe optimization?	1	2	3	4	5
5.	Is the water used for tannery processing pre-treated?	1	2	3	4	5
6.	Is the factory used waste water treatment used properly?	1	2	3	4	5
7.	Is your factory check the effluent waste with ISO standard?	1	2	3	4	5
8.	Do you think any measurement used if the waste affect the environment?	1	2	3	4	5
9.	Are all workers understand the waste affect person?	1	2	3	4	5
10.	Do you know the effect of waste water to environment	1	2	3	4	5
11.	Do you know any effect in the case of waste from the tannery	1	2	3	4	5

I. Conception about environmental sustainability

1. What do you think is the main reason of installing ETP in the tannery?

    1. To protect the environment____ 2.To secure tannery penalty____ 3.I don‟t understand_____

    2. Do you exactly know the source of water the tannery uses for production process?

Rain water____ 2.Ground water____ 3.Municipal water_____ 4.Iam not sure___

    3. Do you feel comfortable with the odor from the tannery?

1. Not comfortable 2.Stongly not comfortable 3.Not affecting them__

If No, did you ever projected to other community and strive to solve the problem?

    1. yes___ 2. NO___

If yes, comment----------

II. Implementation of Environmental standards and regulations.

1. What kind of treatment plant your tannery Installed

1. Primary--------- 2 Secondary……. 3) Tertiary……4) Have no any treatment plant

If you have Treatment plant, Is it working properly 1.Yeas_____2.No_____3.I do not

know_____

2. How is the wastewater discharged in the tannery you are working?

1. Directly to the soil_____ 2.directly to the river nearby_____ 3.to the river through the treatment plant_____

3. Is there any scheduled awareness creation program on waste water management issues in the tannery? 1. Yes___ 2.No___

4. Do you know kinds of chemicals used in tannery production processes dissolved in water?

1. Yes_ 2. No___

2. Can you tell the most toxic chemical composing the wastewater in the tannery?

1. Yes___ 2. No___

5. What tannery production stage you think requires modifications to minimize wastewater generation?_____

6. Where are the tannery chemical stored?

    1. in separate store away from the tannery____. 2. in the processing area in the tannery___ 3. There is no defined organized chemical store I know._____

7. Is the tannery chemical weighing materials checked and standardized for accuracy?

1. Frequently_____ 2.Sometimes____ 3.Not at all____

8. Do you think appropriate on job training given to the tannery chemical weighers concerning safety and recipe optimization?

1. Agrees___ 2. Disagrees_____

9. How is about the adequacy of chemical recipe monitoring system installment in the tannery?

1. Efficient____ 2.satsfactory_____ 3.inadequate_____

10. If No, what affect it has on machinery performance and efficiency?

11. Is water left running between production stages? 1. Yes____ 2. No_____

12. Is fresh water used in every new bath? 1. Yes____ 2. No____

13.. Have you ever seen water reuse and recycling in any tannery production processes?

1. Yes____ 2. No_____

14. Are hides pre-cleaned before they are washed? 1. Yes___ 2. No____

15. Which production processes are most prone to mistakes and wasted products in water utilization?_____
___

16. Which production processes are easier to modify with respect to wastewater generation?

17. Is there any safety measure in place and significant commitment from the management to improve health condition? 1. Yes___ 2.No____

18. How often are workers exposed to chemicals dissolved in water?

.Frequently____ 2.Sometimes_____ 3.Not at all____

19. Is the tannery structure well installed to let efficient wastewater outflow under the floor?

1. Yes_____ 2.No_____ 3. I don‟t have an idea

Can you imagine the contamination level of the river passing by the tannery you are working?_____
_____
_____

If you think it is polluted, whatever the level, what is your personal effort to protect the environment_____