



**ST. MARY'S UNIVERSITY  
SCHOOL OF GRADUATE STUDIES**

**AN ASSESSMENT OF RISK MANAGEMENT PRACTICES IN HAWASSA  
INDUSTRIAL PARK**

**BY  
TSION LEMAWOSSEN**

**June, 2021  
ADDIS ABABA, ETHIOPIA**

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INDUSTRIAL PARK**

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**A THESIS IS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES  
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**ST. MARY'S UNIVERSITY  
SCHOOL OF GRADUATE STUDIES  
DEPARTMENT – PROJECT MANAGEMENT**

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## DECLARATION

I, Tsion Lemawossen, the undersigned, declare that this thesis entitled: “Assessment of project risk management practice in Hawassa Industrial Park” is my original work. I have undertaken the research work independently with the guidance and support of the research advisor. This study has not been submitted for any degree or diploma program in this or any other institution and that all sources of materials used for the thesis have been accordingly acknowledged.

Declared by

Name \_\_\_\_\_

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## ENDORSEMENT

This is to certify that Tsion Lemawossen carried out his thesis on “Assessment of project risk management practice in Hawassa industrial park and submitted in partial fulfillment of the requirements for the award of the degree of Masters of Art in Project Management at St. Marry University with my approval as university advisor.

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## ABBREVIATIONS/ ACRONYMS

CCA	Cause Consequence Analysis
COVID-19	Coronavirus Disease of 2019
EIC	Ethiopian Investment Commission
ETA	Event Tree Analysis
FDI	Foreign Direct Investment
FTA	Fault Tree Analysis
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOE	Government of Ethiopia
GTP	Growth Transformation Plan
HIP	Hawassa Industrial Park
HQ	Head Quarter
HRA	Human Reliability Assessment
HRA	Hazard Risk Analysis
IP	Industrial Park
IPDC	Industrial Park Development Corporation
JICA	Japan International Cooperation Agency
OSS	One Stop Service
SEZ	Special Economic Zone
SWIFT	Structured What If Technique
UN	United Nation
UNIDO	United Nation Industrial Development Organization
WB	World Bank
ZLD	Zero Liquid Discharge
ZWD	Zero Waste Disposal

## ABSTRACT

*The development of the industrial park in Ethiopia has been underway for some time. In most cases, the Industrial Parks (IP) aim to attract investors from abroad. The high level of advanced infrastructure demand of IPs is considered to be of greater importance. Since it is anticipated that international companies will operate in the parks, effective project management will be central to them. A systematic and formal project risk management is one of the key characteristics of effective project management. The risk to the project is forthcoming and cannot be prevented. In the case of large projects like IPs, there is usually a serious focus on the risk factor for project management. One of the public industrial parks in Ethiopia, the Hawassa Industrial Park (HIP) project under study. Taking into account the high-risk prevalence in IP projects, the project research area is chosen. Along with many other projects, environmental, financial, and social aspects make the project riskier. Aspects related to risk management practices are studied using a basic random sampling, purposive sampling technique, and a mixed approach method. Structured questionnaires and interviews were made to achieve the objective of the study. The risk management process, project risk management techniques, standardized mechanism, and management tools, were the main areas, while the questioners were focused on. Furthermore, on the findings, it is mentioned that there are gaps in the planning and implementation process of project risk management phases. And, the workers were using unorganized and informal risk management approaches, on the other hand, the researchers concluded that the HIP project staff lacked sufficient risk management knowledge, whereas the management team possesses superior knowledge and execution performance in risk management mechanisms and tools. Generally based on the findings, a recommendation for HIP project experts and management was that the corporation needs to pay close attention to risk management practices and techniques through capacity building and risk-related pieces of training. IPDC's top management must meet with the dedicated directorate regularly to discuss risk before it occurs, and the corporation should also prepare various working manuals and standards.*

**Keywords:** Project Management, Project Risk Management, Industrial Park.

# CHAPTER ONE - INTRODUCTION

## 1.1. Background of the Study

A project is a short-term activity that aims to produce a unique product, service, or outcome. The project's transient nature denotes that it has a start and end date. When the project's objectives have been fulfilled, the project is ended because its goal will not or cannot be met, or the project's need has passed (PMI, 2008). Project management is the method of leading a team's work at a specified time to accomplish objectives and satisfy performance criteria. And the work is accomplished through the use of processes such as: initiating, planning, executing, controlling, and closing. Managing a project entails managing the scope, quality, schedule, budget, capital, and risk of the competing project constraints. The correlation between these variables is such that at least one other factor is likely to be affected if any factor changes. For example, if the timetable is shortened, it is often necessary to increase the budget to add additional resources to complete the same amount of work (Hyttinen, 2017).

Risk is one of project accomplishing processes with uncertain events or conditions that might affect the project. Not all risks are negative. Some events like finding an easier way to do an activity or conditions like lower prices for certain materials can help the project and when this happens, it is called an opportunity; but it is still treated as a risk. Any project has no guarantees. It can transform even the easiest operation into unpredictable problems. Anything that may alter the outcome of the project operation is considered a risk (Watt, 2014).

Risk management is the systematic process of identifying, analyzing, and responding to project risk and it tends to reduce the risk areas in the project life cycle. Using managing risks early in the project life cycle, good risk management helps to prevent project crises and improve problem-solving. Risk management begins with recognizing possible threats and removing or minimizing the harm that will be caused by the realization of those risks. As the project proceeds the nature of risk changes. Old risks disappear and new ones come up (Project Management Institute, 2008). Consequently, risk management is a continuous process, so risks should be regularly reviewed and reassessed. The first stage is to identify and assess the potential risks associated with the project.

According to Durkacova & Kadarova, (2012) risk management is critical in an organization because, without it, a company cannot define its long-term goals. If a company defines its objectives without

considering the risks, it will likely lose focus once any of these risks become a reality. Many businesses have added risk management departments to their teams in recent years. This team's role is to identify risks, develop strategies to mitigate those risks, implement those strategies, and motivate all company members to participate in these strategies. Because larger organizations experience the most risks, their risk management strategies must be more advanced. Through the process of achieving any project, there is a likelihood of risk and uncertainty.

There are different common project risk areas of cost, schedule, performance, strategic, operational, market, legal, and environmental hazards, etc. under the projects of banking, insurance, manufacturing, industry, and others. And among different project areas, this paper relies on industry and manufacturing projects under Industrial Parks Development Corporation (IPDC) specifically on Hawassa Industrial Park.

The industrial park is part of the city that is zoned for industrial use rather than residential or commercial needs. These zones mainly contain oil refineries, ports, warehouses, distribution centers, and factories. To attain the goals stated in the Growth and Transformation Plan (GTP) Ethiopia National Planning Commission (2016), the Government of Ethiopia (GOE) set out an ambitious plan to develop several special economic zones (SEZs) / industrial parks (IPs) around the country, whereby promoting industrial development and enhancing export momentum. The GOE believes that IPs can also serve as a catalyst for creating employment opportunities and industry competitiveness and that they are effective instruments in contributing to regional development.

In Ethiopia, to create the highly needed favorable industrialization condition, Industrial parks are developed under the Industrial Parks Development Corporation (IPDC) which is a public enterprise established by the Council of Minister's regulation no 326/2014 to engage in the development and operation of public industrial parks (IP's) with the mandates of developing and administer industrial parks, lease developed land and lease or transfer, through sale, constructions thereon; and make necessary infrastructure accessible to industrial park developers; promote benefits of industrial parks, and thereby attract investors to the parks. Through having this mandate, the corporation is developing different types of public IPs more focused on the areas of Apparel, packaging, agro-processing, pharmaceutical, assembling, and ICT.

## 1.2. Statement of the Problem

In a complex project like industrial park development, the construction of the shed and infrastructure is subjected to more risk and uncertainty. Following this, IP construction remains to be the center of attention for study risk aspects more than anything. Regarding construction risks Tamosaitiene, (2014) and Paslawski, (2013) stated that construction projects are facing several risks which have negative effects on project objectives such as time, cost, and quality. Besides, the successes and implementation in the construction industry depend on the level of risk. As part of IPs construction; internal and external Infrastructure, treatment plant, shed design, and construction are the main prior risk areas on which the project risk management phases from initiation to closing relay on.

Moreover, in the design, development, and operation of industrial parks, safety is a crucial factor to be taken into account. Consequently, knowing how to deal with safety in this form of facility and how to deal with risk analysis is important. A health and safety risk management process should be established to define the following by the health and safety policies adopted in industrial parks for the prevention of incidents and occupational diseases by its employees and the third parties involved: hazard identification and review, techniques of risk management, prevention and security measures, responsibility and accountability chain, and monitoring and follow-up (Javier , Cristina , & Rosales, 2020). And this paper provides information related to the method of risk assessment of industrial parks to improve the health and welfare of workers.

Additionally, Hawassa Industrial Park is Ethiopia's flagship industrial park constructed at a cost of \$250 million (IPDC, 2017). And as a government mega-project, the funding, and financial risks are also considerable. Changes in the availability or cost of financing due to foreign exchange and interest rate variations on borrowed debt financing for the project's funding, and inappropriate cash flow management, are key risks that need to be managed in this regard. Financial risks regarding investors in the textile industry are a key factor in the estimation of attractive investment circumstances since the financial success of the textile industry depends on the manufactured materials and the capital used (LS, 2017). And the financial sustainability of the park also depends on production and export to cover the credit created by the park developer.

Another aspect that must be addressed in the development and operation of the industrial park is environmental risks. The clustering of industries in one spot highly endangers the environment. However, negative environmental impacts can be prevented, mitigated, and even eliminated through

informed and responsible environmental management in conjunction with the planning and operation of the industrial park. As per Chowdhury, (2014) some of the industry's toxic chemicals evaporate, some are absorbed and others are stored in the fabric in wastewater that is released into the atmosphere. In the Hawassa industrial park, the proposed Zero Liquid Discharge (ZLD) in the textile factories are expected to reuse and recycle process water above 90% of the total dyeing process water (Industrial Park Development Corporation, 2017). Industrial parks have a big impact on environmental pollution.

Force majeure threats are unforeseen occurrences that occur beyond the IP operator's control and delay or prevent performance. And the COVID-19 pandemic poses a threat to Ethiopia's aggressive industrialization policy based on export-oriented light production. The pandemic challenges the Hawassa industrial park with a new and unforeseen threat (UNIDO, 2019) and (Andualem, Pramila, Koen, Christian, & Eduard, 2020). Furthermore, the industrial risk prevention management techniques Tamosaitiene, (2014) specified that the optimal choice to manage risk is to avoid it. A risk can be avoided at the planning stage before the start of a project by incorporating necessary changes stemming from consideration of necessary risks. Preventive management techniques are used during the planning stage to avoid/minimize a necessary risk by considering it before the start of a project and planning for it.

Williams, (2008) mentioned that project risk management is not personal productivity. This is an easy mistake to make, however. The study is planned to take the real case and will approach project participants, and at the end, the project aimed to come up with constructive conclusions regard to the way of applying risk management during the five project management lifecycles.

Generally, the study will assess the risk management practices, the risk factors that affecting the project, risk analysis techniques, prevention methods taken by the park operator and tenants, and also from the developer side on the mitigation aspects/ techniques in one of the country's mega-project in Hawassa Industrial Park (HIP). As to the knowledge of the researcher, it seems that no study appears to have been made in Ethiopia that exclusively assesses the risk management practice in Hawassa Industrial Park.



### 1.3. Research Question

- Which types of risk management processes application for Hawassa Industrial Park are implemented at the project initiation phase?
- How the planned risks and the levels of risk management implemented for Hawassa Industrial Park?
- What are the main risk aspects during the execution phase which has an impact on the success of the HIP project?
- What types of project risk management tools & techniques are utilized in Hawassa industrial park?
- What is the mechanism of project risk monitoring and controlling in the Hawassa IP?

### 1.4. Objectives of the study

#### 1.4.1. General objective

The general objective of the study is to assess the project risk management practice in Hawassa industrial park.

#### 1.4.2. Specific objectives

- To identify the project initiation process in which the risk is involved in Hawassa Industrial Park.
- To know the mechanism of project risk monitoring and controlling in the Hawassa IP.
- To assess the project risk management processes implemented during the project planning Phase in the HIP.
- To identify the main risk features during the project execution phase in BLIP.
- To identify project risk management tools & techniques which are utilized in Hawassa industrial park.
- To analyze how the Hawassa industry park can limit or minimize the risk.

### 1.5. Scope of the study

The number of IPs in Ethiopia are now reached 18+ including government and private-owned industrial parks. Among these, the study was only limited to the Hawassa industrial park since it requires a lot of time and resources to assess all parks. Hawassa IP was selected as it is a flagship IP and ease accesses documents and data.

The study was assessed the project risk management practice in the HIP. The report was focused only on Hawassa Industrial Park which is located in the Sidama Region. The study will try to investigate the risk management for the five project lifecycles of initiation, planning, implementation and execution, monitoring and evaluation, and closing.

### 1.6. Limitation of the study

Data collection took much time due to COVID-19 and was the major limitation of the study. Also published pieces of literature on the industrial park development and operational risk are limited. There are also no written documents or procedures regarding risk practice in the Hawassa IP. However, the researcher used different studies on risk practice in the related areas.

### 1.7. Significance of the study

More critically, this study investigates is accepted to have its claim noteworthiness in several areas especially for those different IP on specifically the common risk areas. After addressing each of the investigate questions, the discoveries are anticipated to have the taking after significances. And also, the study will help to improve existing knowledge of the risk management process, project life cycle, and tools and techniques among HIP operators.

This study is important to assess the risk management practice in Hawassa industrial park. The study will provide information for all stakeholders involved, especially for the Industrial Park Development Corporation (IPDC), in order to make informed decisions on the IP risk management. It will help them in designing effective strategies and standards since there is a tendency of maximizing government IPs under the corporation. The study will help the development partners by providing insight to examine the degree of risk in the IP on the further technical supports of working document study. Additionally, the research paper will assist as important reference material for academicians, professionals interested in the knowledge area, and future researchers.

### 1.8. Organization of the study

This study paper is organized into five chapters: introduction; literature review; research methodology; findings and discussion; and conclusion. The first chapter is the introductory part which provides an introduction about the research problem, the research background, the problem statement, research question, research objectives, scope and imitation, and significance of the study. Section two is a literature review that addresses current information, including substantive

explanations, as well as contributions to philosophy and methods. In chapter three the research methodology and descriptions of the research theory, the research design, the population and sample of the survey, data collection methods, reliability, and validity of measurement instruments are listed. Chapter four covers the outcomes of the survey, including the rate of response, the description of the respondent, data processing, perception, and presentation of this report. For each of the research targets, Chapter five describes observations, conclusions from study outcomes, and contributions to the study.

### 1.9. Definition of terms

Project is a unique and temporary organization created to achieve the desired outcome, create a unique product, service, or result, and realize one or more business outcomes to achieve defined objectives that are linked to strategy (OGC, 2005).

Project management is defined as the vehicle used to effectively manage attributes and activities within a project to fulfill project objectives and requirements. This includes the application of knowledge, skills, tools, and techniques according to the PMI, (2004) while APM, (2006) defined it as a process to define, plan, monitor, and deliver risk is an almost universal concept.

Risk is what allows a profit to be made. If there was no risk, there would be no return to the opportunity to handle it effectively. There is a risk-return trade-off with each decision. There should also be a potential for the benefit if there is a chance of loss (risk) (Laurence, Gene, Steve, Doug, & Rod, 2013). It has numerous terminological and semantic connotations and is found in corporate, disciplinary, or methodological environments that are very varied. While there is no widely agreed solution, there are a few aspects that all risk models share. Uncertainty on how the world will change is the first (Habegger, 2008).

Indeed, risk management, on the one hand, focuses on improving the governance of the company as a whole by facilitating the decision-making process while choosing priorities; on the other hand, it focuses on recognizing, assessing, and mitigating uncertainties that impede progress and growth (Villanueva, 2013). Risk management, in general, refers to the processes involved in risk management on a specific project, such as planning, identification, analysis, responses, monitoring, and control. Nowadays sound management of risk is a crucial determinant of the success of a project due to increased attention to the variability of actual quality, time, and cost performance compared to the expected one as a consequence of growing pressure on reducing time and costs. It has been

demonstrated that failure to deal with risk is the main cause of budget exceeding, falling behind schedule, and missing performance targets (Carbone, and Tippet, 2004).

In several industries, such as the construction and information and communication technology, and manufacturing ones, this situation is exacerbated because projects characterized by huge investments, long execution processes, many resources and stakeholders, and unstable economic and political environments introduce a high level of complexity (Guofeng, and Weiwei, 2011). Strategic risk management is an integrated and continuous process of identification and assessment of strategic risks (human, technological, brand, competition, project, and stagnation risks), which are considered obstacles that prevent reaching an organization's financial and operational goals (Chatterjee, et al., 2003).

## CHAPTER TWO - REVIEW OF LITERATURE

### 2.1. Introduction

This section covers the previous works of literature, analysis, or studies relevant to the factors of project risk management practice carried out by researchers, in general, the points made by numerous scholars and organizations, the theoretical literature, Analytical examination, and the creation of a conceptual structure.

### 2.2. Theoretical Review

The study relied on several theories relevant to risk management in general and for the integrated industrial park development and operational risk management system.

#### 2.2.1. Theory of Risk Management

Risk theory attempts to explain why people make decisions when they are uncertain about the future. In most cases, a situation in which risk theory can be applied involves several possible world states, a number of possible decisions, and an outcome for each combination of state and decision. The theory predicts a decision based on the distribution of possible outcomes. The theory is useful for people who make decisions whose success is dependent on how the risks in the world play out (DeLee, 2017).

According to (Jlana, 2017) the risk-bearing theory of profit is a reward for taking risks. The essential responsibility of an entrepreneur is to take risks. Production entails a variety of hazards as well as unexpected costs. Nobody will take a risk unless they believe they will profit. The primary motivation for taking risks is to make money. Profit is thus a reward for taking a risk. The level of risk varies by industry. Some useful pursuits are more dangerous than others. Profit rates range from business to industry as well. The payoff for taking a risk is profit. The greater the risk, the greater the profit, and vice versa.

The decision theory divides lack of knowledge into "risk" and "uncertainty" in the two main categories. Which is known as what the possible outcomes are and what their probabilities are while making risky decisions. Perhaps a better word for this is "decision-making under known probability." Probabilities are either unknown or known with insufficient precision in decision-making under uncertainty (Hansson, 2004).

In financing, for example, risky options involve explicitly likely monetary outcomes and are assessed according to their expected value and risk. Thus, in the literature of finance, the traditional approach to risk is based upon an average portfolio theory framework. In addition, in the field of non-diversifiable risk and diverse risks, the idea of financial risk would be understood (Gehr, 1979). Furthermore, psychological and anthropological views of the discipline provided a sociological perspective on risk. Thus, the relationship between risk and culture and development with the risks and society could be dominated in sociology risk. There are two central issues. In this sense, the main concerns of sociological risk research would be the negative effects of unwanted events (Douglas, 1982).

Generally, project managers analyze what risks could occur and how, when, and why. Some methods like brainstorming, structured or semi-structured interviews, or the Delphi procedure are very suitable to perform project risk identification. Brainstorming is a group creativity technique that endeavors to come up with an idealist spontaneously provided by its members to solve any particular problem. Structured and semi-structured interviews are structured discussions in which certain questions arise in a certain order aimed at identifying risks (Victor A. Bañuls, 2017).

### 2.2.3. Risk Management Process

Many scholars defined the risk identification and management approaches in depth. According to Chen et al., (2004) Project risk assessment processes including risk identification, risk assessment, risk evaluation, risk analysis, risk mitigation, and risk control have been classified as risk management processes. The method of risk management consists of determining, concentrating, recognizing, structuring, ownership, estimating, evaluating, organizing, and handling. The risk assessment process has several ways of describing it, the basic steps are all identical.

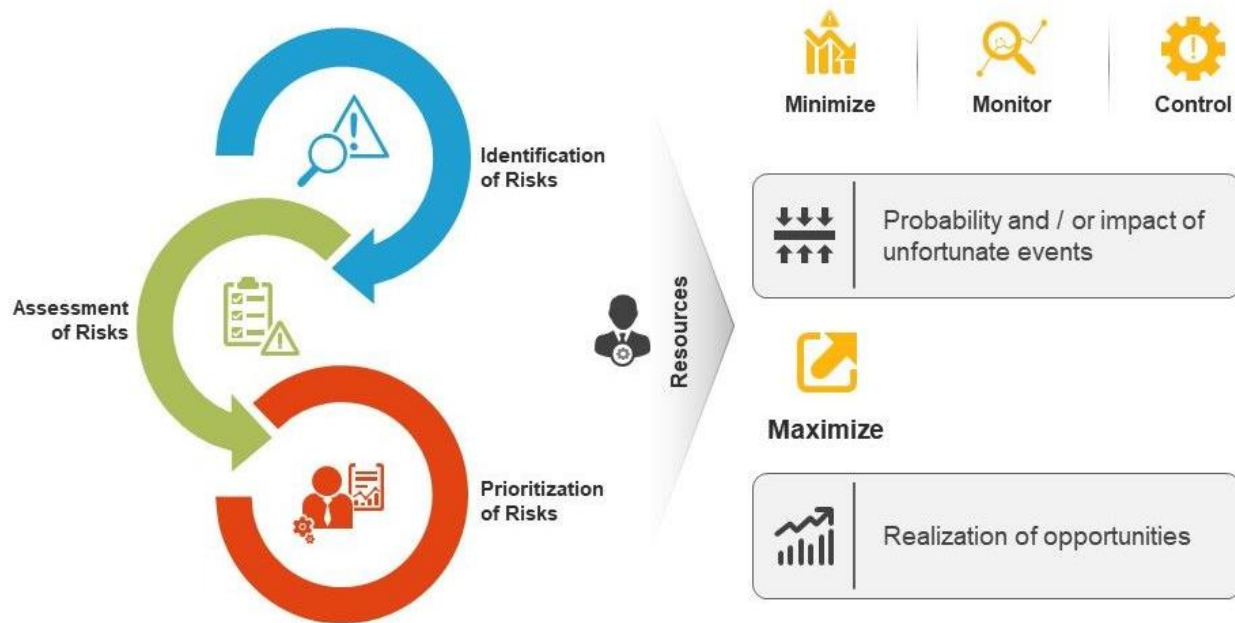


Figure 1: Risk Management process

Source: Prepared by IEduNote, 2020

### A. Risk Identification

Risk recognition, the first step in the risk management process, depending on the company and the project team, is typically casual and is carried out in different ways. Risk assessment depends largely on previous experience and the analysis of related projects introduced (Chicken & Posner, 1998). A variety of instruments and methods can be used to define the risks of any project, this is a preliminary step. According to Srinivas, (2018) several strategies suit unique types of challenges and projects, especially at the stage of recognition.

More or less on the risk identification as per the views of Durkacova & Kadarova, (2012) risks and risks can be hard to eradicate, but it becomes easy to take measures and gain the power them after they have been detected. If the cause of the threats has been identified and delegated before the complications arise, risk control would be more successful. The primary goal of risk management is to compensate stakeholders for future complications that may arise spontaneously throughout a project. Risk assessment is an iterative procedure that is carried out over the whole life cycle of the organization. Strategic, project/tactical, organizational can be categorized as defining the threats involved with company practices and decision making. Factors both external and internal to the

organization may result in the risks facing a company and its activities. Examples of main threats in both areas are outlined in the diagram below and illustrate those certain particular risks may have both external and internal drivers and thus overlap the two areas.

There are many techniques available for risk identification: Brainstorming, Interviews and self-assessment, Questionnaires or Checklist, facilitated workshops, SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis, PESTLE (Political Economic Social Technical Legal Environmental) analysis, And BPEST (Business, Political, Economic, Social, and Technological) analysis (PMI, 2004).

Risk identification primarily concerned with prioritizing and classifying the main categories of risk to consider in the manufacturing sector of industrial park development and operation are; environmental risks, including natural disasters in the industrial park, employee risk management on the operation of the HIP, such as maintaining sufficient staff numbers and cover the manpower supply in the IP, employee safety and up-to-date skills and productivity, political and economic instability in any foreign markets of the export goods to, health and safety risks, force majeure, commercial risks, including the failure of key suppliers or customers or the buyers of the tenant companies in the HIP (IPDC, 2017).

## B. Risk Assessment

Risk detection is accompanied by the estimation of threats. That also consists of the literature on the probability of occurrence and degree of harm of the two variables. The frequency is applied periodically as a temporal variable. This allows the quantitative grouping of risks into various categories as follows. To evaluate the required criteria, it will be necessary to include more detail, which must therefore be collected before the final determination of the criteria. For multi-dimensional evaluation, this is the prerequisite. In comparison, a precise and unambiguous visual depiction should be generated of the risk evaluation (Klöber-Kocha & Braunreuthera, 2018). Based on the Analytic Hierarchy Process (AHP) and the Bayesian Belief Network (BBN). Experts estimate the probabilities of the risks that will be processed in BBN to determine the likelihood of adverse events. With the AHP, the risks are ranked according to their relative impact. If the probabilities are then combined with the respective effects, the most significant risks can be identified.



A method for investigating the technical vulnerability of CPS and thereby indirectly recording their technical risks is provided by (Desmit et al. 2012). It is based on the assumption that such damage potential can only occur in junctions between cyber systems, physical systems, CPS, and humans, and the actual deviates from the expected transformation. The approach is based on a process plan for all parts of the production process, followed by the node plan. For each node, the properties are detected and checked for information loss, inconsistency, and relative frequency of repair during a process, lack of maturity of the node point, and duration to detection as one metric each. Each of these metrics is then classified into three categories for the evaluation of the loss potential with the aid of a decision tree.

The approach focuses on risks regarding the vulnerability of cyber-physical production systems and lacks the consideration of risks concerning the manufacturing system itself like machine breakdown or quality failures. Niesen et al. (2017) explain a data-based approach to risk management. In the industrial Park operation real-time data from intelligent sensors and big data technologies and use those in a concept that combines risk assessment methods with key performance indicators (KPIs). First, they develop a structured risk catalog and then focus on process and resource risks. However, no measures to reduce the risks are proposed automatically or derived from the current risk profile. However, no measures to reduce the risks are proposed automatically or derived from the current risk profile.

### C. Risk Evaluation

As per the risk scale which is found in the construction and operation phase of the industrial parks, risk tolerances are a must use. This assigns a risk level description, ranging from 'high-risk failure' to 'high chance'. This unique seven-point scale is the construction of the author and was found to provide a satisfactory resolution for the case under review. There are alternate scales possible (Pons D. , 2010).

Risk management includes matching the predicted risk thresholds with the measurement criterion to evaluate the most relevant risks or to remove small risks from further study. The aim is to ensure that the most critical threats are based on the utilization of capital. Care should be taken not to screen out regularly occurring low risks which may thus have a considerable increasing impact (Srinivas, 2018). According to the UN guideline report, (2018) the following courses of action are decided by

the preliminary analysis: Taking aside marginal risks (acceptable risks) which do not warrant treatment; Deciding on the handling of unnecessary risks; And Setting risk response goals.

Risk assessment offers guidance for recommendations about what risks need to be handled and on the most suitable techniques and procedures for risk mitigation. Subsequently, the purpose of the risk appraisal is to aid in the decision-making process as to which risks need care and which objectives to be allocated to their treatment. Risks are linked to targets, so risk responses can quickly be prioritized about those targets. In comparison to other risks, undesirable risks are rated and prioritized. The judgment as to when and how to handle a risk can also depend on the costs and benefits of risk-taking, and the costs and benefits of strengthened controls.

#### D. Risk Mitigation

Risk mitigation strategies are designed to eliminate, reduce or control the impact, before any injury or fiasco, of known risks inherent in a given undertaking. Risks can be foreseen and handled with these strategies in place. Fortunately, Meyer, (2016) explained the technology of today enables companies to formulate their risk mitigation strategies to the highest capacity yet. While the strategies that are most appropriate for them need to be identified by each organization, here are some simple strategies to perfect the process. The common four types of risk-mitigating strategies include risk avoidance, acceptance, transference, and limitation.

- I. **Avoid:** In general, risks with a high likelihood of both financial loss and harm should be minimized.
- II. **Transfer:** Risks that could be impossible to exist but can have a substantial financial effect should be mitigated by sharing or exchanging, such as buying premiums, establishing an alliance, or outsourcing.
- III. **Accept:** For some risks, the risk reduction costs are higher than the risk tolerance costs. The threats should be acknowledged in this situation and closely watched.
- IV. **Limit:** Risk limitation is the most prevalent prevention technique, i.e., organizations take some sort of action to address a potential risk and control their exposure. Risk limitation typically uses some acceptance of risk and some rejection of risk.

## E. Risk Control

All organizations are exposed to risks that unfavorably affect the company and have an effect on the loss of assets. Risks are present in every business, from accidental yet expensive failures to dishonest bribery. Regardless of why it occurs, to deter or reduce damages to the company, safeguards need to be developed (Reciprocity, 2020). There are three main types of internal controls: detective, preventative, and corrective.

According to the report Pip Coleacp, (2011) "Risk management" (control) requires that strategic priorities be defined by the enterprise. The decision to embrace or handle risk is important or not, depending on these priorities and, thus, internationally, on the policy. First and foremost, a risk management strategy determines the levels of risk (criticality) which are considered appropriate. The organization must therefore incorporate in its corporate priorities the needs of its partners and, most of all, those of its clients.

### 2.3. Risk Management in Manufacturing Sector

Manufacturing firms have been engaged in risk management since, before the industrial revolution, each generation introduced new challenges and new opportunities. It's no different today. Based on the document review results, there are a range of considerations that risk managers should perceive as an asset rather than a disadvantage to role risk management (Member of Deloitte Touche Tohmatsu Limited, 2015). The proper risk assessment must be in place to ensure the appropriate health and protection for individuals and the community.

As of Hawksley, (2012) perspective, risk assessment is also not optional for moral and legal purposes, and to uphold the integrity of a corporation, it is compulsory. But safeguarding the organization is also necessary; good risk management is good business. It ensures that the potential safety, health, and environmental risks to the business are understood and dealt with positively, by prioritizing actions for risk reduction and control and maximizing the effective use of financial and other resources.

Generally, as per the understanding of the researcher, risk management is important on the work processes to become more effective when events that can cause damage can be detected in advance. And steps are taken to minimize the risk of these events happening, mitigate the damage caused by

these events, and alleviate the expense of events that can interrupt normal productive manufacturing operations.

#### 2.4. Risk Identification in Manufacturing Sector

While there are many economic opportunities created by the industrial parks, and also there are several risks, whether in the area of planning, development or operation, business interruption, the environment, or social impact. Similarly, industrial parks are inherently complex systems comprising numerous users, all of whom communicate with an operator, a host community, and different regulators, requiring compliance with a large number of regulators number of guidelines, rules and standards, protocols. When risk evaluation using a comprehensive approach to define, prioritize and minimize them, the threats that industrial parks raise will be controlled (Chicken & Posner, 1998). And it is important to provide consistent risk recognition, avoidance, and reduction strategies at both the business and park level.

#### 2.5. Types of Risk in the Manufacturing Sector

There are different risk areas in manufacturing and among those, as of Project Kart, (2010) operational risk is characterized as the risk of failure due to ineffective or inefficient internal procedures, persons and systems, or external events. While the risks extend to any company, they are particularly important in the banking regime, where regulators are responsible for developing protections to deter the banking sector and the economy from crashing. The danger associated with the opportunity in a particular market for device failure. It is related to structures and people & covers functions such as succession planning, human resources, information management, control systems & regulatory enforcement.

Financial and non-financial financial. As mentioned by (Fang, 2016) the notion of risk would involve financial loss or consequences in this sense, but could also not necessarily include financial impact. Accordingly, financial risk comprises the relationship between a person (and an organization) and an asset or expectation of even loses or damages to earnings.

On the other hand, apparel is the main sector in Hawassa IP and by taking this, according to Serai Limited, (2020) suppliers must carefully track improvements in trade policy, macroeconomic trends, and disturbances in the competitive landscape while looking at the broader industry climate. It's also important to keep an eye on improvements to import and export controls, particularly in today's fast-

paced environment. Staying on top of these risk factors will assist vendors to predict industry trends and adjust their business strategies accordingly.

Static and dynamic. Taking this classification into account, the risk is caused by the dynamic changing economic environment and depends on the evolution of external variables the economy, competition, the membership of the industry and consumer, and the decisions that the organization takes internally. This would benefit society in the long run from dynamic risks as they are the result of the adaptation to the misallocation of resources. On the other hand, the static risks would be a risk not dependent on the assessment of the competitive environment in which the organization operates, but based solely on the company's internal factors (Javier, Cristina, & Rosales, 2020).

There are important areas of risk for the enterprises to consider and take action and Avis, (2018) mentions in his report that there are various challenges in implementing environmental protections in developed and emerging countries because of lack of expertise, lack of knowledge, and lack of legislation and their compliance. Implementation can be problematic due to the myriad requirements and demands for their implementation in various industrial park environments, as well as the varying capacities of park management. Also, Infographic, (2019) described the common risk areas in eight categories which are: Regulatory, trade and policy, Supply chain, Financing, Budgetary and planning, Logistics and transportation, Global, Labor, and rapid digital transformation of the manufacturing sector. Today, factories face several threats, including geopolitical problems, labor challenges, specifications for technologies, and more. Knowing where their biggest risk exposure is and stress-checking their processes is important for manufacturing firms.

Strategic and operational. This type of risk would therefore be managed at the level of the board and require strategic planning. For instance, the local government would do so with the elected members who would ensure that the proper policy and delegation procedures are implemented and that the risk is properly managed within the organization. On the other hand, while operational risks require the participation of the organization's highest hierarchy, they would be implemented at a lower level. From that point of view, the daily functions and services of the organization would be operational risks (Hawksley, 2012).

Generally, the IP developer would therefore have to eliminate all sorts of risks associated with IP developments and operations. Different surveys need to be carried out in advance to minimize

risks and realize cost-effective changes, including a comprehensive survey to classify sub-sector industries to be developed in industrial parks (Avis, 2018).

## 2.6. Risk Management Techniques in the Manufacturing Sector

Each risk management process requires specific tools to be applied. To this end, a great variety of techniques have been developed in the literature: The reviewed techniques have different goals. For example, some of them are aimed at evaluating multiple scenarios, depending on which risky events occur, such as Decision Tree Analysis, Expected Monetary Value, Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, SWIFT Analysis, and What-if Analysis. Other techniques, instead, focus on the investigation of origins and implications of risky events to establish chains of causes and consequences. They include Cause and Effect Diagram or Cause Consequence Analysis, Event and Causal Factor Charting, the 5 Whys Technique, Event Tree Analysis (ETA), Fault Tree Analysis (FTA), and Human Reliability Assessment (HRA) among others. Multiple aspects may be taken into account when choosing among techniques for managing risk in a project. A commonly used criterion looks at the nature of the information that is available (Villanueva, 2013).

Qualitative techniques require qualitative information and present results in form of descriptions and recommendations, while quantitative techniques rely on quantitative information and numerically analyze the occurrence and effects of risks (Project Management Institute, 2008). Another criterion suggests selecting techniques according to the subject of the information needed by a project (Association for Project Management, 2004). Also, the nature, size, complexity, degree of innovation, and phases of the life cycle of a project determine which techniques should be used. In particular, risk management is crucial in the planning stage of a project and its scope and depth increase as the project moves towards the execution phase, while they decrease in the termination phase (Chapman and Ward, 2003).

Furthermore, every single phase of a risk management process implies a different level of information and detail, thus requiring proper techniques (Hillson, 2004). The goal of the risk analysis, for instance, monitoring economic and financial outcomes, checking quality variance, or tracking time delays, may also be a criterion for identifying appropriate risk management techniques (Kmec, 2011).

Finally, techniques supporting risk management need appropriate levels of corporate maturity to yield the expected benefits and this may constitute a further criterion according to which they can be selected (Cano and Cruz, 2002).

## 2.7. Defining Dimensions for Selecting Project Risk Management Techniques

To identify the relevant aspects to take into account when choosing among project risk management techniques, the features of such tools and the available criteria for their classification were considered. It is widely proved and accepted that no risk management technique fits every phase of the risk management process but each gives its best results if applied to one or a few phases (Project Management Institute 2008, Chapter 11).

Also, according to the Association for Project Management, (2004), risk management should be defined within the context of its application: the lifecycle is to be considered in the case of a project. The studies of Chapman and Ward, (2003) reveal that moving from one project lifecycle stage to another at the industrial park project level implies more detailed and quantitative information available, leading to a different degree of uncertainty. Thus, the focus of any risk analysis and the adopted risk management techniques need to vary with the phases of the project lifecycle.

Generally, (Association for Project Management, 2012) recommends, considering the risk maturity of the park development and operation, selecting risk management techniques ensures that the approach taken is appropriate to the corporation that would apply it and analyses its results.

## 2.7. Empirical Review

The literature on project risk management activity in Ethiopia, in the case of Hawassa IP or other industrial parks in Ethiopia, is relatively scarce, or there is no literature or studies on the subject. However, there are various studies on socioeconomic, environmental, financial, construction, etc. other than the risk management practice in Hawassa. Whereas there is proof that industrial park risk management makes a real difference in both the developing and operation phases of the industrial development. The following are few examples of facts that illustrate the project risk management practice. As a result, the researcher selected project risk management practice to study the research on Hawassa industrial park.

Pons D. , (2010) On his study describes how risk assessment can be enhanced to incorporate non-technical risks, prospects alongside challenges, and competitive considerations. In these cases, a

system simulation approach was used to build a computational paradigm for prophylactic risk management. The resulting model is speculative, but it acts as a starting point for establishing a strategic risk management theory. The automotive industry in New Zealand is the subject of the research, and the technique was extended to a representative manufacturing company. In many aspects, the article applies to the area of risk management methods. Apart from focusing on challenges, it also describes openings and the particular processes by which they can be captured. The author develops a theoretical paradigm for intersecting risk management with policy formulation, and the paper explicitly discusses the risks posed by a manufacturing company in strategic risk management.

Yadeta, (2020) Aims to define the major risks associated with construction projects in Ethiopia that are likely to impact project efficiency during the project life cycle. Unexpected results showed that inadequate plans, facilities, and labor efficiency (construction risks), payment delays, submittals and approvals of construction documentation (financial risks), price inflation (economic risk), bribe and corruption (political risk), discrepancies in design procedures and requirements (design risk), and the engineer's, project supervision's, and subcontractors' control all perform poorly. As a result, the researcher suggests, project risks need to be eliminated by concentrating on the project's construction and applying proper risk assessment to the major risks.

On the environment aspect according to the government report IPDC, (2017) each government sets air quality standards to protect the public health of its residents, and they are a vital part of national risk management and environmental policies. Furthermore, there is a substantial chance of pollution of natural resources as a result of toxins and chemicals released by the IP's various operations at both the building and activity levels. However, the most important contamination occurs at the activity stage. Provide and promote the use of all appropriate protective measures, supplies, and clothing products for employees who are exposed to dangerous risks. To handle this, the developer and operator must organize all relevant operations, such as protection and disaster/emergency management, danger and risk prevention/control, worker health statistics, the population of the areas, forestation, and eco-industrial development.

As Oqubay, (2016) on his book describes, the government acted quickly due to the sensitivity and high-risk nature of IP development loans. In the past, Ethiopia's emerging private sector has demonstrated a tendency to concentrate on short-termism and the temptation of engaging in



speculative and non-production activities and to prefer light industry to risky intermediate and heavy industries. The allocation of rents, as a subvention represents, but must be linked to performances, the socialization of the risks facing businesses that participate in a new industry or produce new products. The government's approach is a conventional, centralized use of IP property rent to support the strategic development of a sector, but it comes with the possibility of rent dispersion among mini-plants, eventual overstock, foreign exchange drain, and so forth. Growth in industrialization is influenced by a variety of factors, including the rate and depth of learning, as well as government support for risk socialization.

Large-scale industrial ventures are more uncertain and difficult to manage than traditional projects because of their political, legal, technological, architecture, and operational dimensions. According to Arbina, Arjan, & Ezmolda, (2016) risk management is thus more critical and relevant in complex and large-scale ventures than in traditional projects, owing to their unique design and complexity. In addition to that lack of advertising or public awareness; funding issues; losing sight of the ultimate goal; risks associated with IP owners or sponsors; property or building selection/purchase risks; development risks; risks associated with human resources; economic risks; strategic risks; risks linked to the local environment are among the most significant risk categories for IP ventures in Albania, according to the findings.

According to professor, Ohno, (2017) in this performance report on the HIP mentioned that industrial park construction is a major endeavor with much of the same qualities as other investments. And while the government is in charge of this sector, it cannot escape the risk that comes with it. Many factors outside the control of a host country or a developer affect the pace at which tenants arrive, including global economic trends and interest rates, US and EU policies, domestic business cycles, financial and political crises, the proliferation of extremism or communicable diseases, as well as the ups and downs of the property market. However, Ethiopian officials should be prepared for tougher times and have a backup plan in place if one happens. This is a common precaution for any IP developer or investment operator.

Under Xiaodi, et al., (2018) case study report on IP development risks in Ethiopia, even though highly beneficial in the long run, Ethiopia's vast variety of public and government-funded initiatives, such as industrial parks, threaten to exacerbate external imbalances in the short term. There is also the probability of rent-seeking activity, which will seriously hinder the introduction of IPs. Land

growth, land valuation, and land right transfer can all pose a challenge. It may cause delays in the construction of public IPs' land and/or utilities, as well as low infrastructure efficiency. In this case, public park activities could be postponed, impacting IPD's progress in terms of attracting Park businesses and slowing industrialization. Owing to a lack of expertise, IPDC will be unable to procure sustainable resources such as raw materials for the public park. And there could also be bad sales work to draw the right companies to public parks.

(Ng'ang'a, Muthusi, & Nassiuma, 2015) On his research wants to compare business risks and risk control strategies in medium and large manufacturing firms. In Kenyan, Nakuru municipality theft, personal injury, collateral loss, and critical system breakdowns were the most common risks in medium and large manufacturing companies. The risk's comprehensiveness and the industry's management methodology were notably deficient. When industrial firms increase in scale and technologies, their risk profiles change. This is a consideration that the industry should consider when moving from one level to the next.

(Fang, 2016) The article seeks to recommend financial risk management strategies based on the condition of the Chinese manufacturing sector, using both internal price regulation mechanisms and financial risk management mechanisms to secure stakeholders' interests. In the financial activities of the process, the financial risk is inevitable Financing risk, investment risk, wealth recovery risk, and income allocation risk are the four primary types of financial risk. The financial situation and operational performance of the company include all of the financial risks that it faces. As a result, the financial risk of a company has several characteristics: several Chinese manufacturing firms have already developed a financial risk management scheme, performed financial risk analyses, specifically in terms of funding risk, acquisition risk, liquidity risk, and interest rate risk, and then taken a decision. As a consequence, an appropriate internal monitoring mechanism and a financial early-warning system are important. Internal audit efficiency, on the other hand, is clear support for the growth and creation of companies.

Generally, to fill the knowledge gap, the study looked at risk practices in other nations. And this analysis aims to analyze risk management practices in the Hawassa IP, including risk areas, management strategies, prevention processes, and risk management practices in the IP. Also, industrial park regulations are the main government power areas to mitigate the risk. As of (Azmach, 2019) a country with a low level of FDI needs to diversify its investors and form alliances with

domestic and international investors, mainly to increase domestic economic liberalization for long-term domestic economic linkage and, secondarily, to encourage foreign investment. It also needs to take constructive and reactive steps to promote growth and minimize risk in the industrial park development.

## CHAPTER THREE - RESEARCH METHODOLOGY

In this chapter, the most appropriate research method was chosen for this study to produce results for research questions and attain research goals and objectives. Also, the key role is to explain the preference of the research methodology system and the understanding of the relevant methodology. It then explores areas of the study field. It also defines the style of research design used to analyze this research project and lists all data sample instruments, sampling procedures, processing processes, data sources, presentation, and limitations. In general, Available and relevant literature and documents have been reviewed. These include relevant research conducted at national, regional, and international levels as well as various pertinent policies and legislation. Risk management is extensively examined in this paper by a study of the literature, with an emphasis on papers published in internationally recognized journals. Several risk management guidelines are presented. This study aimed to assess the project risk management practice in Hawassa IP. The feedback on risk management practice and HIP project success was obtained through a survey.

### 3.1. Research Area

The Hawassa Industrial Park is the flagship public IP that is owned by IPDC located 275 km far from the capital city of Ethiopia in Sidama Regional State. The total area of the Hawassa Industrial Park is 342.8 hectares with infrastructure service and factory sheds. In HIP 22 international companies operating on 52 factory sheds already rented to investors from the United States, India, China, Sri Lanka, Indonesia, and Ethiopia. The Park is specialized in the areas of the garment, textile, apparel, packaging, and laboratory equipment, all of which are 100% exportable. The Park is operational since 2016 with the coordination of the Ethiopian Investment Commission (EIC) and other government institutions under a one-stop-shop (OSS) service to achieve the gov't IP plans of incurring foreign direct investment (FDI) and job creation.

Industrial and manufacturing projects have different risk phases which are directly or indirectly have an impact on the project's success. The common risks that are mainly happening in the Industrial parks are planning and design, strategic, operation, market, social, force majeure, environmental, and hazmat risks, which are more focused on the development and operation stages of the Industrial Parks (UNIDO, 2019). Industrial Park Development Corporation (IPDC) as a government corporate entity, on the park development and operation, is facing different risk aspects. Taking this, the project under study will assess the risk management practices employed in Hawassa IP.

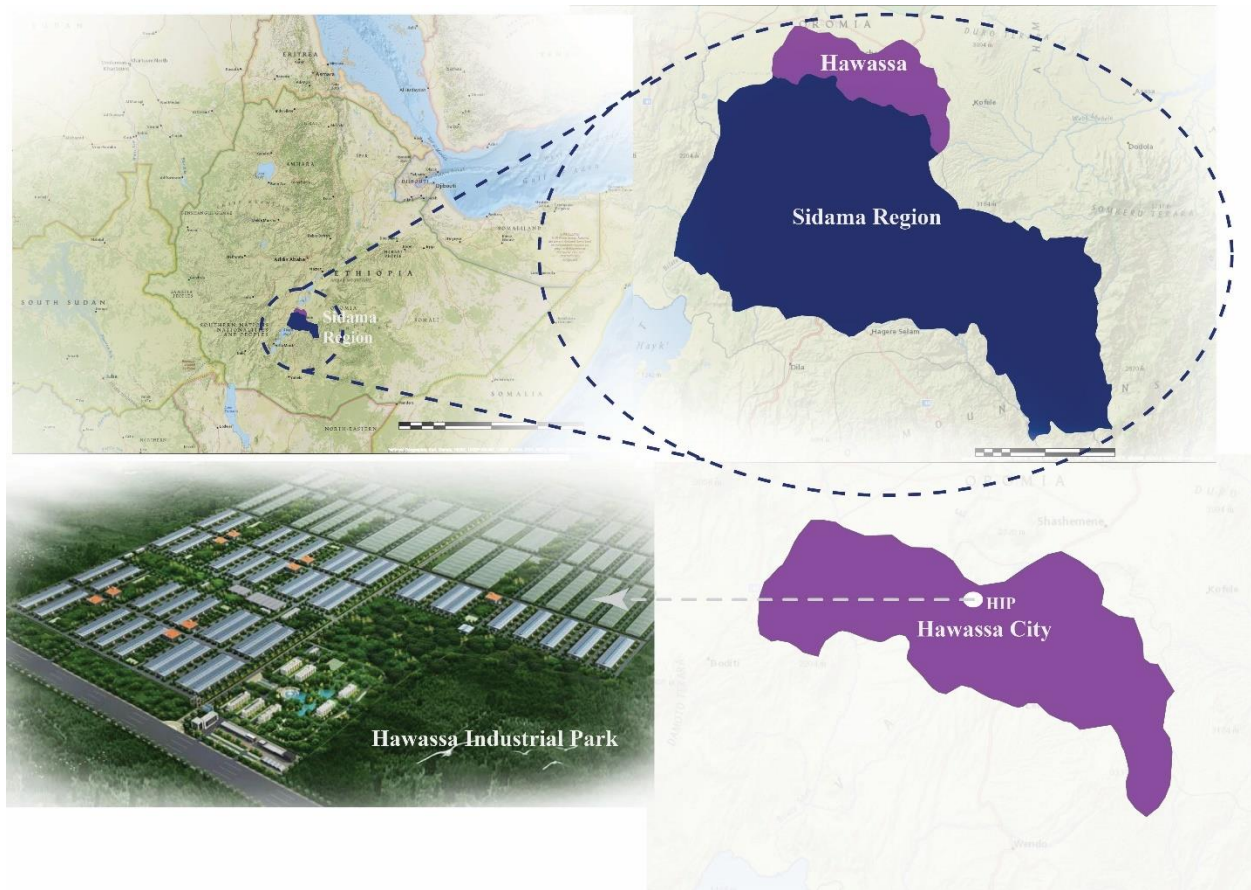


Figure: 2. HIP location map

Source: Prepared by the researcher, 2021

The research area is focused on Hawassa industrial park at Hawassa City Administration, the regional capital of the Sidama Region. The study is to conduct a project risk management practice in the Hawassa industrial park development and operation phase.

### 3.2. Research Design

As stated in the specific objective, the activities. This study majorly gives attention to those risk management practices thoughts, i.e.; project initiation phase, planned risk implementation, main risk aspects affecting project success, risk management tool and techniques, and project risk monitoring and controlling are assumed as an independent variable, whereas the assessment is assumed to be outcome variable which is the main thought of this study. The research design that the researcher

intended to use is a descriptive method that collects information from IPDC, Hawassa industrial park management, and the employee.

### 3.3. Data Type and Source

#### 3.3.1. Data Type

Many fields, including education, psychology, and the social sciences, have used qualitative and descriptive research techniques to perform research. These kinds of studies are also becoming more popular in the area of second language teaching and learning. Qualitative and Quantitative descriptive analysis are words that are often used interchangeably. However, there is a disparity between the two. Both forms of analysis have one thing in common: they use naturalistic evidence. That is, they aim to research language learning and teaching in their normal environments, with no interference or manipulation of variables (Nassaji, 2015). The data type that the researcher intended to use is a descriptive method that collects information from an employee of the IPDC and HIP.

#### 3.3.2. Data Source

Employees of the industrial park who work in IP development, operation, and management will provide the primary data. The analysis will be focused on both primary and secondary sources of knowledge. The primary data was obtained using a standardized self-administered questionnaire that was intended to carry a variety of information, including demographic information about the respondent, general information about practical works, and other relevant information for the situation in which the specified objectives were assessed. The questionnaire is divided into major portions and subsections.

Secondary data for this analysis came from World Bank (WB) studies, IPDC reports, United Nations Industrial Development Organization (UNIDO) reports, government legislation, and other IP project-related data that had been released. The literature review's secondary data was collected from archives, the internet, and journals.

### 3.4. Sample Size Determination

Generally, IPDC has 300+ staff who are working in headquarter and Hawassa IP according to the new structure of the corporation. The population of this research focused among the 300+ workers of the corporation on the 100 workers in the departments/directorates of the IPDC and HIP which is a record like IP development directorate, IP operation directorate, firefighting, and hazard unit,

Investment unit, OSS directorate, and administration directorate, and HIP project office which are working on risk management was the concentration of this Study.

### 3.5. Sampling Methods

The research targeted the review of the structure of IPDC and HIP on 100 workers from IPDC and HIP. From the corporation structure, the researcher targeted the main four (4) development directorates, three (3) operation directorates, Hawassa IP management team, investor association, and OSS team who has a direct relation with the research topic to conducting the survey. The researcher targets all the above directorates' director with their immediate personals under each division. And since the target population is large to cover by the survey, the researchers intend to use a basic random sampling and purposive sampling design to decide the sample size and address the problem statement and related research objectives in this analysis. The justification for using basic random sampling is that it means that all people have an equal probability of being picked.

### 3.6. Data Collection Methods and Instruments

The researcher proposes to use the following sample size estimation formula to assess the sample size of the population in IPDC after gathering samples from each directorate working in IP risk management. The formula is established by (Yemane, 1967) It estimates the sample size as follows:

$$n = \frac{N}{1 + N(e)^2}$$

**n** is the sample size,

**N** is the population size,

**e** is the level of precision or sampling error = (0.05)

Then,  $n = 100/1+100 (0.05)^2 = 80$

$n = 80$

Eventually, the method of data collection used in this research is descriptive statistics, which identifies the problem under study. And the study involves surveys as well as fact-finding and explains the actual state of affairs.

### 3.7. Data Processing and Presentation

The data obtained by the researcher during the data collection is introduced, analyzed, and examined in this report. The first step to identify the results is to edit and summarize the

responses (coding), followed by data entry and error checking (cleaning). In computer-assisted surveys, some of this data processing occurs during data collection, then it is followed by analysis, which includes relating the findings to the study questions, and in some cases, previous research. And at the end, the advice or recommendation is based on the outcomes.

### 3.8. Reliability and Validity

To determine the reliability of the statistics gathering tool the Cronbach's alpha has been utilized and this tool is the most widely used internal accuracy metric ("reliability"). It's commonly used when a survey/questionnaire contains several Likert questions that shape a scale. And this scale is accurate one of the commonplace ways to check the reliability and validity of data collected via the survey is that utilize of Cronbach's alpha constant.

Table 1: Reliability Statistics

Research questions	Item	Alpha Value
Project risk planning and management process	20	0.79
Project risk identification and analysis	20	0.78
Standardized mechanisms of corporation risk response and handle	20	0.83
organization strategic risk monitoring, control and management culture	20	0.70
Average Alpha Value	20	0.75

Source: Prepared by the researcher, 2021

Since the value of Cronbach's alphas for this study is above 0.70 for all scale variable items, the data collected from respondents was reliable and consistent. In other words, the result confirmed the reliability and consistency of the data collection instruments. According to Golafshani, (2003) when a test can be used by a variety of different researchers under controlled conditions, with consistent results and no variation in the results, it is considered reliable.

Several questions were included in the questionnaires to ensure validity. Questions have been developed to ensure they are representative based on information gathered during the literature review. Furthermore, consistency in the management of the questionnaires ensured content validity. Questionnaires that the researcher personally distributes to the subjects. To be clear and easy to



understand, questions were formulated and clear instructions are provided to the subjects in simple English.

### 3.9. Methods of Data Analysis

The study used qualitative and quantitative approaches to do the analysis. Quantitative tools such as tables and figures were used. As the main analysis technique, descriptive statistics were employed. The data were evaluated using descriptive statistics and Excel software in a row. Since frequency tables can be useful for representing the number of samples of a specific type of data point within a dataset, the researcher used frequency and percentages. Also, after the raw data was prepared with an appropriate format, the captured data is encoded and analyzed into Microsoft Excel. The obtained data is often evaluated using descriptive statistical analysis and interpretation. One of the most basic methods for viewing descriptive statistics is frequency tables, also known as frequency distributions. It was also displayed in the form of tables to display the degree of agreement.

### 3.10. Ethical Consideration

The project is being carried out following research ethics. Participants are given advance clarification and familiarization with the project's purpose. The response was then used solely for the study, with no alterations, and was kept confidential, as stated in the questionnaire. The researcher conducted the project in an ethical and morally acceptable manner, and data was collected with the participants' full consent. Due care is taken not to miscommunicate intellectual property and confidential data matters. In terms of references, all materials and sources are cited and listed in the reference section.

## CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION

### 4.1. Introduction

This chapter presents the data collected in the field, as well as its analysis and interpretation. The study attempted to investigate some general aspects of the risk management practices of the Industrial Park project by gathering information from the IP administrators, workers, and development partners via questionnaires and interviews. Generally, to classify the problems under investigation, the collected data was analyzed using descriptive statistics: data was presented in charts and tables, and frequency distribution, mean value, and standard deviation were computed. The questionnaire was distributed to 80 members of employees employed in the Industrial park development corporation HQ and Hawassa IP, and out of 80 questionnaires, 76 was properly answered and collected by the researcher (response rate is 95%) and the remaining 4 respondents didn't return the questioner (response rate is 5%).

### 4.2. Descriptive Statistics

As previously stated, the questionnaire was distributed to 80 people, 76 were completed. The questionnaire was primarily distributed to managers in the industrial park. The IPDC and HIP directors provided the majority of the responses, accounting for 36% of all respondents. Following that were 30% of IP operation workers including treatment plant workers and firefighters, 19% were from the management team of the headquarter and branch office, 10% IP development workers including development partners, and the remaining amount of 5% is not returned, questioners.

### 4.3. Respondent General Information

This section of the response is aimed at presenting general features of the samples. It has four major components including gender, academic level, study area, and work experience as shown below in the figure and table with description.

#### 4.3.1. Sex Distribution Rate

The male respondents have a higher gender variance than the female respondents. Male participants account for 59 of the total samples collected, and this compromises about 74% of the total. Female participants, on the other hand, make up only 21 of the total 80 samples, representing only 26% of the sample study. This indicates that the majority of the project team is male, with only a few female participants, and the researcher observes that in the top management or from the managers level

there was no female personals and also from the director’s side the number of female participants is only 2, and generally the participants or respondent number of females is found very small.

Table 2: Sex distribution

Gender	Frequency	Percent
Male	59	74%
Female	21	26%
<b>Total</b>	<b>80</b>	100.0%

Source: Prepared by the researcher, 2021

### 4.3.2. Respondents Age Category

The survey was divided into four age groups, as seen in the chart. The majority of the respondents are between the ages of 36 and 45. It means that 37% of respondents are between the ages of 36 and 45, while 35% are between the ages of 26 and 35. The remaining respondents (those under the age of 25 are 0%, and those over the age of 46 are 28%) In general, it appears that approximately 72% of the total Industrial Park Company headquarter and Hawassa IP employees were of sufficient age to provide accurate information for the research.

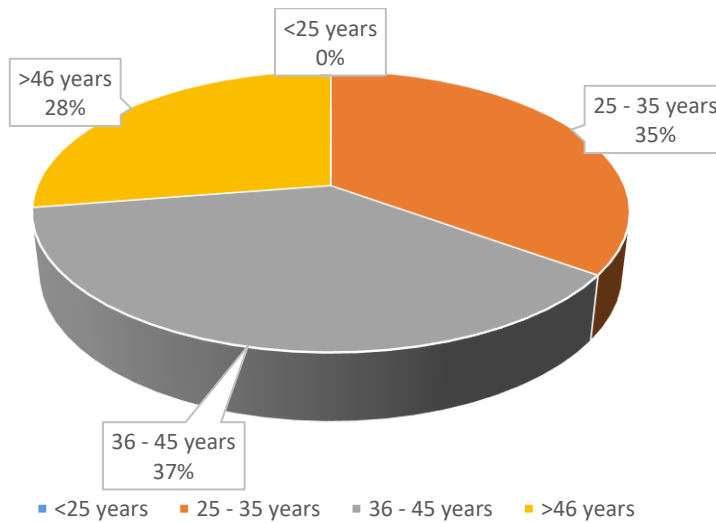


Figure 3: respondent age category

Source: Prepared by the researcher, 2021

### 4.3.3. Respondents Educational Background

The educational status of respondents is well-defined in the figure, which indicates that 51.25% of 80 respondents most of them are working in the area of management/director and have earned an MSC/MA, 32.50% have a BSC, 15% have a diploma, and from the development partners side on the advisory team 1.25% have a Ph.D. The majority of respondents (above 80%) have earned a BSC or MSC/MA, implying that they can understand the questionnaire and provide competent responses to questions about risk practice in the industrial park.

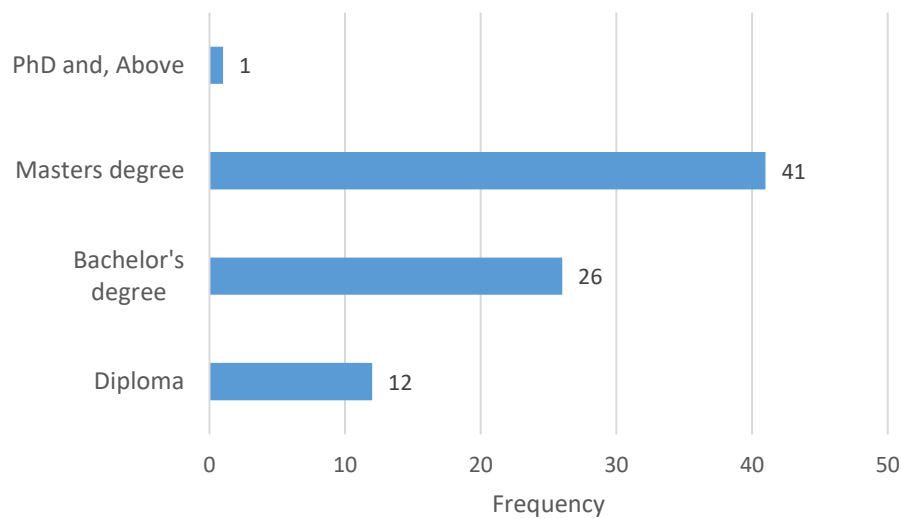


Figure 4: Respondent's education status

Source: Researcher's Survey Data, 2021

### 4.3.4. Respondents Occupation Background

The occupational job level demonstrates that the questionnaire was randomly distributed to all levels of the respondent's position. The graph depicts the total occupational distribution. 30% of respondents were operational experts including HIP firefighting and in the headquarter director and experts of the risk management team, 36% were directors of various departments, implying that the majority of respondents were from the operational and director levels. Top managers including the corporate management team who contributed to this response are represented by 21% of the total, while under development experts are represented by 13%.

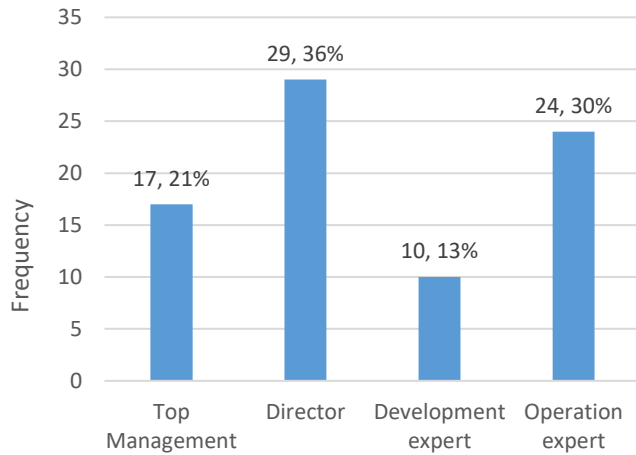


Figure 5: Respondent's occupation level

Source: Researcher's Survey Data, 2021

#### 4.3.5. Respondents work Experience

In terms of respondents' years of project experience, the majority of respondents have gained a significant amount of experience in industry-related projects, as follows: 51% of respondents have worked in industrial park projects for 5 to 10 years, 28% have 2-5 or less than 5 years of experience, 20% have 11-15 years of experience, and 1% have more than 16 years of experience in industrial park projects.

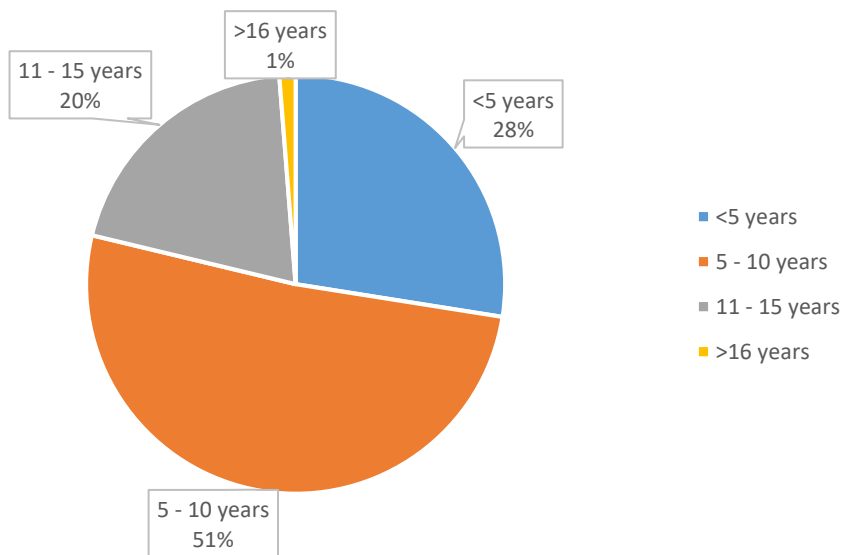


Figure 6: Respondents work experience

Source: Researcher’s Survey Data, 2021

Since the corporation is still new, the majority of the employees are from the industry minister, investment commission, and other related government and private companies. which is that the more they are experienced in industry-related fields, the better they might become familiar with industrial park project risk management practices, if not always.

#### 4.4. Results and Interpretation

This part describes those identified elements of project risk management practice and their role and level of significance on the successful implementation of risk management in Hawassa IP. These determinants are classified as a variable that is independent in our case, is presented with their relative tables of detailed data presentation. The main purpose of using this statistical parameter is to interpret the average response rate of respondents for each subject. The study used judgment to classify the range of scores obtained of the five-point Likert scale as follows: A variable with a mean score of 3.5 to 5.0 have taken as ‘strongly agree/agree’ on the five-point Likert scale, a score of 2.5 to 3.49 as ‘neutral’ on the five-point Likert scale and a score of 0.0 to 2.49 either ‘disagree/strongly disagree’ on the Likert scale.

Table 3: Likert scale visual interpretation

Scale		Visual Interpretation	Classification
Strongly disagree	Very High	1 - 1.49	1 - 2.49
Disagree	High	1.5 - 2.49	
Neutral	Average	2.5 - 3.49	2.5 - 3.49
Agree	Low	3.5 - 4.49	3.5 – 5
Strongly agree	Very low	4.5 – 5	

Source: Alana Pirrone, 2020

##### 4.4.1. Application of general project risk management cycle in HIP

The outcome result of general project risk management cycles of initiation, assessment, analysis, evaluation, treat, control, and monitoring in the HIP is the dependent variable which is this study tries to identify with other describing variables. Table 3 below shows the survey result through its

application of project risk planning and management process/cycle performers as it's described in the organization's management and structure.

Table 4: Project risk planning and management process in the HIP

Project risk planning and management process in the HIP	SA(5)	A (4)	N (3)	D (2)	SD (1)	Total resp.	Mean	Std.Dev.
	F	F	F	F	F			
	%	%	%	%	%			
There is a strategic approach or careful planning done to perform risk mitigation in the project	11	15	8	33	9	76	2.82	2.60
	14.5%	19.7%	10.5%	43.4%	11.8%			
Project team members are processes for risk planning, identification, and techniques	7	18	41	8	2	76	3.26	2.85
	9.2%	23.7%	53.9%	10.5%	2.6%			
project risk assessment method is incorporated with the project plan	6	9	17	26	18	76	2.46	2.24
	7.9%	11.8%	22.4%	34.2%	23.7%			
In HIP risk control and monitoring procedures being performing	46	19	9	2	0	76	4.43	3.98
	60.5%	25.0%	11.8%	2.6%	0.0%			
	0	4	6	8	58	76	1.42	1,15

Risk analysis, evaluation and prioritization strategies are performing in the organization	0.0%	4.0%	7.9%	10.5%	76.3%			
Average mean:2.88								
Average standard deviation: 2.56								

Source: Researcher’s Survey Data, 2021

As illustrated in the above table 4, Responses on project risk planning and management process in the HIP reveal that 11.8 % of the respondents strongly disagreed and 43.4 % of them disagreed with the existence of a defined or standard risk management plan to mitigate various risk in their project and this indicates that the majority of respondents disagreed in the presence of a strategic mitigation plan that is to be followed in the course of risk management that needs to be followed in implementing projects in the Industrial Park. Whereas 10.5 % are uncertain whether it exists. Also, 19.7 % and 14.5% are agreed and strongly agree that the project they managed has a defined or standard strategic plan to mitigate risk in the Hawassa IP project development and operation management.

The other issue that is considered in this part is the risk identification and technique process is practiced continuously throughout all phases of the Hawassa park development and operation to accomplish the project effectively. In these regards, 2.6% of the respondents Strong disagreed and 10.5% disagreed with practicing risk identification and techniques management throughout the life cycle of the project continuously. Most of 53.9% of the HIP and IPDC workers are uncertain whether it was practiced in the project. The remaining 23.7% and 9.2% of the respondents have practiced risk identification and use different techniques in the management continuously in the project they implemented.

Participants of the study about Hawassa IP development and operational risk assessment method respond, 23.7% are Strong disagreed and 34.2% disagreed with practicing risk assessment method throughout the life cycle. According to the response from the interview, the risk assessment method



is mainly undertaken at the HQ of IPDC under the management level which is risks mainly related to the procedure rather than risks that could affect the development and daily operation life. And Most of 22.4% of the HIP and IPDC workers are uncertain whether it was practiced in the project. The remaining 11.8% and 7.9% of the respondents have practiced the risk assessment method in the HIP project. Conferring to the literature review above in chapter two the proper risk assessment must be in place to ensure the appropriate project success and protection for individuals and the community.

The response on the HIP risk control and monitoring procedures 2.6% were disagreed on the application of risk monitoring, while 11.8% are neutral This is to mean that, some of the respondents such as project team members and others were don't have information about the IP risk control and monitoring implantation. Whereas more than half of the project members of 25.0% are agreed and 60.5% strongly agree that the corporation and HIP use project risk control and monitoring procedures. As it is designated in the interview the corporation applies risk monitoring through supervision and reporting. According to the report, Pip Coleacp (2011) project risk control requires that strategic priorities be defined by the enterprise.

The corporation as its best on the implementation of risk analysis, evaluation, and prioritization strategy of the HIP, the respondent give weight 76.3% and 10.5% strongly disagree and disagree on the strategic process of risk evaluation. 7.9% of the total are neutral on this area and 4.0% agree on the process of risk management of evaluation and analysis. As per the literature, risk management includes matching the predicted risk thresholds with the measurement criterion to evaluate the most relevant risks or to remove small risks from further study.

#### 4.4.2. Project risk Identification and Analysis management in HIP

Here in the implementation of project risk management, the respondent result is shown below in table 5.

Table 5: Project risk identification and analysis management in HIP

Project risk identification and analysis management in HIP	SA (5)	A (4)	N (3)	D (2)	SD (1)	No. resp	Mean	Std. Div
	F	F	F	F	F			
	%	%	%	%	%			
	2	12	8	54	0	76	2.50	2.12

Project team members has notifications in Hawassa IP that reminds to play a role in identifying risk	2.6%	15.8%	10.5%	71.1%	0.0%			
The Hawassa IP set out the basic steps of risk management practices to follow while performing a risk mitigation	3	12	52	4	5		3.05	2.63
	3.9%	15.8%	68.4%	5.3%	6.6%	76		
The corporation risk assessment documentation specifically defines the layers of management that have the power to make decisions on risk acceptance	3	6	11	17	39		1.91	1.75
	3.9%	7.9%	14.5%	22.4%	51.3%	76		
The corporation has a residual risk assessment due to risk management implementation	12	16	37	8	3		3.34	2.97
	15.8%	21.1%	48.7%	10.5%	3.9%	76		
There is a mechanism in place at your corporation for establishing and maintaining a system for sharing risk knowledge to specific IP stakeholders	0	0	8	10	58		1.34	0.95
	0.0%	0.0%	10.5%	13.2%	76.3%	76		
Average mean: 2.43								
Average standard deviation: 2.08								

Source: Researcher's Survey Data, 2021

From the above table, no one strongly disagreed but the greatest of 71.1% disagreed with the alerts or notification for the HIP workers to remind them to do something, indicating that the majority of respondents disagreed with the presence of notification. Also, 10.5% are neutral or don't have any relation with the above describing variable. In addition, 2.6% and 15.8% are agreed and strongly agree that the directorate that they are involving has a notification or alert system to remind them in the IP operation and management.

Another aspect of this section is the basic steps of risk management practices that the HIP follow while performing a risk assessment. In this regard, 6.6 % strongly disagreed, and 5.3% disagreed, with the implementation and, almost 68.4%, are uncertain if it was included in the project, the remaining 15.8% and 3.9% are used steps of risk practice continuously. As per the interview especially in the firefighting and treatment plant of HIP the team set and use different steps to mitigate the risk. As describes in the literature for the common four types of risk-mitigating strategies include risk avoidance, acceptance, transference, and limitation by Meyer, (2016).

Participants of the study about Hawassa IP risk assessment documentation and the layer of management to decide on risk acceptance responses, 51.3% are Strong disagreed and 22.4% disagreed. And 14.5% of the HIP and IPDC workers are uncertain, the remaining 7.9% and 3.9% of the respondents were agreed and strongly agreed. According to the response from the interview, on the layer of management, there is a directorate which is established recently in the HIP with having the power to decide on those risks which need a quick response. But most of the time decision is made by the IPDC risk director and by the top management.

As indicated in table 4, the corporation has continued risk assessment due to risk management implementation. So that, the respondents with 3.9% strongly disagree and 10.5% disagree on the corporation assessment. However, 48.7% are neutral which is they don't know about the driving variable. And 21.1% and 15.8% are agreed and strongly agreed.

An additional aspect of project risk management implementation through the mechanism of placing a system for sharing risk knowledge to specific IP stakeholders is weighted with zero agree and strongly agree by the respondent. Also, 76.3% and 13.2% strongly disagree and disagree on the establishment and maintaining system for knowledge transfer. So, meaning that the corporation and HIP were not implementing the knowledge transfer system regards to risk sharing with specific stakeholders. And 10.5% are neutral on this research question. However, according to the professor

(Ohno, 2017) as it is described in the literature; Ethiopian officials, top management, and managing commission should be prepared for risk-sharing with specific stakeholders and prepare a plan in place if one happens.

#### 4.4.3. Standardized mechanism of corporation risk response and handling in HIP

The guides and standards provide information on the process to be adopted in risk management and also contain advice on how that process should be implemented successfully. And table 6 showed the respondent rate on the standardized mechanism to handle the risks mentioned below.

Table 6: Standardized mechanisms of corporation risk response and handling in HIP

Standardized mechanism of corporation risk response and handling in HIP	SA (5)	A (4)	N (3)	D (2)	SD (1)	No. resp.	Mean	Std. Div
	F	F	F	F	F			
	%	%	%	%	%			
There is a standardized mechanism in place at the corporation to handle the risks mentioned below in HIP -								
Financial	23	8	40	3	2	76	3.62	3.25
	30.3%	10.5%	52.6%	3.9%	2.6%			
Environmental and social	67	9	0	0	0	76	4.88	4.36
	88.1%	11.8%	0.0%	0.0%	0.0%			
Safety and health	71	5	0	0	0	76	5.00	4.47
	93.4%	6.6%	0.0%	0.0%	0.0%			
Insecurity and theft	25	11	17	4	19	76	3.25	3.12
	32.9%	14.5%	22.4%	5.3%	25%			
IP operation and management	12	20	8	8	28	76	2.74	2.68
	15.8%	26.3%	10.5%	10.5%	36.8%			
Sociopolitical	4	0	46	15	11	76	2.62	2.25
	5.2%	0	60.5%	19.7%	46.4%			

Source: Researcher's Survey Data, 2021

As exemplified in the above table, responses on the application of standards of financial risk response and handling mechanism in the HIP project reveal that 2.6% of the respondents strongly disagreed and 3.9 % of them disagreed with the existence of a defined or standard risk management mechanism to handle various risk in their project. Whereas 52.6% are uncertain whether it exists. Also, 10.5% and 30.3% are agreed and strongly agreed that the project they are implementing has a standardized mechanism to handle financial risk at the park level. As per the interview conducted with the top management, financial risk is the main focusing area even the government working emphasizing IP privatization to sustain and build more parks in future.

The other main risk area according to the interview is environment and social risks and the corporation has a standard development and operation guideline regarding the environmental and social risk. Also, the park follows international guidelines when it is required by foreign tenants. Besides, responses on the application in the HIP project disclosed that 88.1% of the respondents strongly agreed and 11.8% of them agreed to the existence of a defined or standard risk management mechanism to handle various risks in their project. Whereas no resonant is found in uncertain or disagreed whether it exists or poor.

Generally, as it is described in the literature environment aspect according to the government report (IPDC, 2017) each government sets air quality standards to protect the public health of its residents, and they are a vital part of national risk management and environmental policies. Whereas, safety and health under the corporation development and operation process are the main risk areas. The respondents' rate that 93.4% of the respondents strongly agreed and 6.6% of them agreed to the existence of a defined or standard risk management mechanism to handle environmental and social risk. Whereas no resonant is found in uncertain or disagreed whether it exists or poor. According to the interview on the environment and social risks, and the corporation has a standard development and operation guideline. Also, the park follows international guidelines when it is required by the foreign tenant's product buyer.

The respondent on insecurity and theft risk management mechanism and standard in the HIP rate that 32.9% of the respondents strongly agreed and 14.5% of them agreed to the existence of a defined or standard risk management mechanism to handle theft and insecurity. Whereas 22.4% are uncertain about the condition. In addition, most of the park operation experts 25% and 5.3%are strongly disagreed and disagreed respectively the existence of standardizing mechanism in HIP and

the reason as it is found in the interview, there are many theft cases even in the year of 2020/21 almost on all of the foreign company shades.

Under the overall park operation risk management mechanism and standards, the response reveals that 36.8% are strongly disagreed and 10.5% are disagreed and meaning that the HIP and the corporation as HQ don't have IP operation and management standards mechanism to avert risk. Also, 10.5% are neutral or don't have any relation with the above. In addition, 26.3% and 15.8% are agreed and strongly agree that the corporation has a mechanism. Moreover, the interview supports that the corporation-specific risk directorate is new and this time even the HQ also doesn't have any standardized mechanisms to handle project operation and management risks.

As indicated in table 6 the respondent's rate 46.4% strongly disagree and 19.7% are disagreed on the standard mechanism to manage the risk related to the sociopolitical aspect and 60.5% are neutral and don't have any relation or information on this risk management. Besides, the remaining 5.2% are strongly agreed that the corporation has the standard mechanism to manage the risk in the HIP.

#### 4.4.4. Organization strategic risk monitoring, control and management culture in HIP

Strategic risk management questions below are with its describing variables which focused on the level of managing risk in a strategical way for the success of the Hawassa industrial park.

Table 7: Strategic risk monitoring, control and management culture in HIP

Strategic risk monitoring, control and management culture in HIP and IPDC workers	VH (5)	H (4)	A (3)	L (2)	VL (1)	No. resp.	Mean	Std. Div
	F	F	F	F	F			
	%	%	%	%	%			
Very High (VH), High (H), Average (A), Low (L), and Very Low (VL)								
How is the level of HIP management in the corporation to face the internal and external forces that impact the risk profile?	37	22	10	4	3	76	4.1	3.7
	48.7%	28.9%	13.2%	5.3%	3.9%			

How is the level of assessment of the efficiency of general controls in avoiding risks and resounding out risk activities within the Corporation?	12	15	39	8	2	76	3.4	2.9
	15.8%	19.7%	51.3%	10.5%	2.6%			
In the industrial park development phase, how is the level of risk management application throughout the project cycle?	43	3	12	15	3	76	3.9	3.6
	56.6%	3.9%	15.8%	19.7%	3.9%			
How is the level of HIP employees work with hazardous environment, e.g., with treatment plant chemicals?	56	12	6	2	0	76	4.6	4.1
	73.7%	15.8%	7.9%	2.6%	0.0%			
How is the level of attention of the corporation on the treatment plant?	61	6	4	4	1	76	4.61	4.1
	80.3%	7.9%	5.3%	5.3%	1.3%			

Source: Researcher's Survey Data, 2021

Above is table 7, the corporation respondent on how the level of HIP management to face internal and external forces. And the respondent rates that 48.7% and 28.9% are very high and high. This means that the management is capable to handle internal and external risks. Plus, 13.2% are given the capability of the management is average. and the remaining 5.3% and 3.9% are saying the capability of the management is low and very low.

As illustrated above, the participants on how the level of HIP management assessment of general controls in avoiding risks and resounding out risk activities within the corporation rated 15.8% and 19.7% and means that the level is very high and high. Whereas 51.3% are esteemed average. And

the remaining 10.5% and 2.6% are saying the management has a very low and low capability of assessing risk.

The additional focus that is considered in this part is the industrial park development phase on how the level of risk management application through the project cycle. And the participant weighed 56.6% and 3.9% with a very high and high level. The remaining 15.8% are given average and the remaining 19.7% and 3.9% are given very low and low levels. And according to the interviewed question the respondent highly weighted that the corporation level on the risk management application through the project cycle in the development level is good. And some of them saying that the development phase has many stakeholders who are in charge of risk management on each of the project life cycles.

The other issue that is considered in this part is the level of HIP employees working with hazardous environments and the respondent of 73.7% and 15.8% are saying the level is very high and high respectively. Also, 7.9% have responded to the level with average. Besides, 2.6% of the participant says the level is low. As per the interviewed managers, the workers in the treatment plant are highly affected or directly contaminated with chemicals in the park and the level of management to handle those is very high.

The corporation gives a big emphasis on the zero-liquid discharge (ZLD) treatment plant as the corporation's top management describes in the interview. And also, from the others side, the level of the corporation attention on the treatment plant is very high with 80.3% and high with 7.9% but 5.3% of the respondent says the level is average and 1.3% and 5.3% were saying very low and low.

#### 4.5. Data Discussion

Using the table of general risk management method, implementation, risk management principles, and the level of typical industrial park risk management by the company and HIP, this research has come up with the following discussion. In addition, the mean score for each of the section's independent variables has been computed in this section to generalize the findings of the descriptive analysis, as seen in the following discussion.

Under the application of general project management cycle in HIP recorded data shown in the table above, the risk assessment method and strategic plan to mitigate different risk with the mean value of 2.46 and 2.82 respectively implies that the Hawassa IP under the operation and management of



IPDC needs focus or improvement on the strategic plan and risk assessment to manage risk as it describes in the objective and research question. On the other side compared to the remaining describing variables risk control, monitoring procedures, analysis, evaluation, and prioritization strategy needs very high attention in the HIP with a mean of 1.42. And the total average mean is 2.88 and possibly can say, in the HIP the risk management cycle has been poorly executed. Generally, the project management cycle is the key element for project success as it is described in the literature. And the planning strategy, analysis, evaluation, prioritization, monitoring procedure, and controlling and risk assessment level should be implemented better than this in the IPDC for the success of HIP.

Table 8: Project risk planning and management process in HIP mean value data

Item 1	Mean	Std. dev.
There is a strategic plan to mitigate various risks	2.82	2.60
There are processes for risk identification and techniques	3.26	2.85
There is a risk assessment method	2.46	2.24
In HIP risk control and monitoring procedures being used	4.43	3.98
There is a risk analysis, evaluation, and prioritization strategy	1.42	3.98
Average mean: 4.12		
Average standard deviation: 3.73		

Source: Researcher's Survey Data, 2021

The other focus area in this study is the risk management implementation mechanism in the HIP. And the discussion by using the data interpretation average mean and average standard deviation value rate below.

Table 9: Project risk identification and analysis mechanism mean value

Item 2	Mean	Std. dev.
There are alerts or notifications in Hawassa IP that reminds the worker to do something	3.05	2.63
The Hawassa IP set out the basic steps of risk management practices to follow while performing a risk mitigation	2.50	2.12

The corporation risk assessment documentation specifically defines the layers of management that have the power to make decisions on risk acceptance	1.91	1.75
The corporation has a residual risk assessment due to risk management implementation	3.34	2.97
There is a mechanism in place at your corporation for establishing and maintaining a system for sharing risk knowledge to specific IP stakeholders	1.34	0.95
Average mean: 2.43		
Average standard deviation: 2.08		

Source: Researcher’s Survey Data, 2021

Throughout this study objective, the implementation of the Hawassa IP risk aspects which has an impact on the project's success is on average has well executed. As it shows in the mean value of notification reminder alert and continuing risk assessment there has better implementation progress. With a 2.50 mean value the HIP risk management practice while performing risk mitigation is poor and needs focus since it’s the main area of project risk management. In this section, the lowest performance is measure in the implementation of defining the layer of management to execute risk management with the mean value of 1.91. Whereas in the system sharing and knowledge transfer the corporation has a very poor experience. In general, the corporation needs to implement the risk management practice to achieve those in the above table.

On the other hand, discussion item 3 is focused on the standardized mechanism to handle the risk in the corporation specifically in the HIP by rating the mean and standard deviation results of some of the common industrial risks which are found in the document review and literature.

Table 10: Standardized mechanism of corporation risk response and handle mean value

Item 3	Mean	Std. dev.
Financial risk	3.62	3.25
Environmental and social risk	4.88	4.36
Safety and health risk	5.00	4.47
Insecurity and theft risk	3.25	3.12
IP operation and management risk	2.74	2.68
Sociopolitical risk	2.62	2.25

Average mean: 3.68
Average standard deviation: 3.36

Source: Researcher’s Survey Data, 2021

The mechanism whereby the corporation uses to manage safety and health risks using standards is rated with the mean value of 5 points. In addition, environment and social risk are rated with a mean value of 4.88. And, meaning that the corporation execution in the implementation of HIP safety, health, environment, and social risk is good. And the management follows the project risk management cycle including monitoring and controlling as the research interview and finding shows. Whereas the financial, sociopolitical, and insecurity risks are rated 3.62, 2.62, and 3.25 respectively with the average execution value compared to the items in section and has better execution result since it is not only solving or avert the risk by the HIP management but correspondingly needs to focus on the government side also. The lowest mean value is recorded on the overall IP operation and management risk that is implemented by the corporation and the HIP. And generally, item 3 has recorded the average mean value of 3.68.

The last item 4 is focused on the strategic risk management level of the park management and operator with describing variables and mean values.

Table 11: Organization strategic risk monitoring, control and management culture mean value

Item 4	Mean	Std. dev.
How is the level of HIP management in the corporation to face the internal and external forces that impact the risk profile?	4.13	3.76
How is the level of assessment of the efficiency of general controls in avoiding risks and resounding out risk activities within the Corporation?	3.36	2.97
In the industrial park development phase, how is the level of risk management application throughout the project cycle?	3.89	3.62
How is the level of HIP employees work with hazardous environment, e.g., with treatment plant chemicals?	4.61	4.14
How is the level of attention of the corporation on the treatment plant?	4.61	4.17
Average mean: 4.12		
Average standard deviation: 3.73		

Source: Researcher's Survey Data, 2021

Above is the table, the values of the mean in the IP management of the corporation level of facing different internal and external forces that impact the risk is 4.13 and the level of the workers working in hazardous environments is very high including working in the chemicals of treatment plant with 4.61 mean values. and in this study, the objective to identify the main risk aspects of the HIP in the implementation phase is identified through the study data analysis. Meaning that the treatment plant is a zero liquid discharge use different chemicals. At Hawassa Industrial Park, the IPDC has taken a ground-breaking initiative by building a world-class ZLD factory.

As a result, it has established itself as a model for achieving high growth through industrialization while retaining environmental balance. The generation of hazardous solid/semisolid wastes that generate disposal challenges necessitates the consideration of Zero Waste Disposal (ZWD) Plants as one of the key risk challenges of ZLD facilities. Regulatory stresses, in conjunction with economic viability-cost and availability of water, are the real driving force (Hussain, 2014). Besides, the level of risk management in the development phase has better performance as the interview and reports of the park development shown with a 3.9 mean value. As a result, by comparing the mean value in item 4 the assessment efficiency of general control in avoiding risk in the corporation and seeing the value of risk management in the development phase, the corporation has a better strategical implementation mechanism of risk management with the average mean value of 4.12.

Generally, the survey result indicated in the average mean is that the Hawassa industrial park project risk management process and cycle implementation score 2.88 with poor execution. The other area of the study is risk management implementation in the HIP with an average mean of 2.43 value. Meaning that the HIP project specifically in the risk mitigation has poor execution experience and needs improvement in the park.

Table 12: Questionnaires average mean value

Item		Mean	Sta. Div.
1	Project risk planning and management process in HIP	2.88	2.56
2	Project risk identification and analysis in HIP	2.43	2.08
3	Standardized mechanisms of corporation risk response and handle in HIP	3.52	3.20
4	Organization strategic risk monitoring, control and management culture in HIP	4.12	3.73

With an average mean value of 3.52, item 3 examines the mechanism of a standardized management system. Furthermore, the findings reveal that theft and insecurity have a high-risk value in the HIP, which is linked to financial concerns since breakage necessitates more attention from the IPDC or the operator because the tenant enterprises are the primary financial risk factors. The average mean value for the last item is 4.12, indicating that the management of HIP and IPDC on the implementation of strategic risk management is relatively excellent.

## CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATION

This study was conducted to assess the risk management practice in the Hawassa industrial park. Thus, a descriptive research design was adopted to assess the risk management process, implementation strategy, and standardized mechanism. The study employed qualitative methods based on the finding discussed earlier in chapter four. And also, the summary, conclusion, and recommendation are presented below.

### 5.1. Major Findings

The data analysis identified the research questions result related to the risk management process in Hawassa IP starting from initiation to closing level of the project life cycle. In comparison to the other independent variables, the park has an average mean value of 2.88. In the starting phase of the project, the IP operation management and OSS team had an average degree of risk management execution.

As the researcher discussed, the result of project risk management implementation in the HIP is poor with an average mean value of 2.43. Thus, the tools and techniques utilized in Hawassa IP have execution gaps. Also, as it is described in the research question in chapter one the mechanism of project monitoring and controlling in the HIP has unfortunate performance on carrying out risk analysis, evaluation, mitigation, decision making on the risk acceptance, prioritization approach, and on the system of risk knowledge sharing. Consequently, from the interview result, knowledge sharing has a gap not only in the HIP but also at the corporation level. Also, in the ZLD management the core team was from India and the technology transfer is very poor as the corporation D/CEO explained.

In comparison to the remaining areas, the questions of standardized methods, regulation, tools, and procedures that are used to tackle the risks specified in the questioner have relatively improved execution results. As a result, the overall HIP operation and management, residual risk assessment, sociopolitical risk management, insecurity and theft in the park approaches, and risk detection techniques are more likely to be executed better.

Hawassa IP has good strategic risk management on the risks that are already identified through the park development and operation phase of the project with an average mean value of 4.12 relatively compared to others. Whereas, the risks that are identified and have good strategic management are environment and social risk, safety and health risk, and financial risk. Thus, on the environmental and social risk, the park management team has developed operation standard and risk management mechanism with the support of the development partners of Japan International Cooperation Agency (JICA) and The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on the ZLD treatment plant and conflict resolution mechanism as per the interview result shows. On the other hand, the financial risks of the park sustainability are depending on the companies who are rented the sheds and fully operational with the amount of 100% export. And, the corporation and HIP management believed that the probability of risk occurrence in the area is low. Similarly, the park's safety and health risk management are well-managed, with a clinic and standby firefighters available 24 hours a day, seven days a week. In addition, the park has formed a separate directorate for the company and treatment plant worker's safety and health. In addition, the park has formed a special directorate to focus on the companies' and treatment plant workers' safety and health.

## 5.2. Conclusion

Using HIP as a case area, the project looked into risk assessment processes. The following conclusions are drawn based on the key findings of the research data analysis. The purpose of this study was to survey risk management practices in the HIP project. According to the findings of this study, the majority of the HIP project team lacked sufficient risk management expertise and were unfamiliar with risk factors and risk management approaches. The management team, as well as all of the HIP staff, could not practice and implement risk analysis procedures without the cooperation of development partners. This means that the likelihood of a risk occurrence cannot be predicted.

A response rate of 95% was achieved by collecting 76 samples from the targeted 80 sample frames. Whereas, Purposive non-probabilistic sampling is used to target a specific sample frame. There are six sections of the survey questionnaire. The first section is about sample descriptive data and has little to do with the results. The last five, as well as the interview, are thought to be important indicators of performance. However, among the respondent category, the female respondents are few.

From the research finding, this study discusses in different ways the methods for recognizing Risk and following procedures. When identifying project risks, qualitative methodologies are commonly used. The project team is led by the HIP and IPDC management teams, who focus on reporting group discussions and meetings and assume responsibility for approving identified risks. The lack of a dedicated project risk team makes the risk management process chaotic, disorganized, inconsistent, and unpredictable. Above all, even preliminary risk tracing tasks necessitate the participation of the project manager or other lead project.

## 5.2. Recommendation

This section of the study will propose some possible alternatives for the HIP and IPDC management to consider. To avoid or decrease the study's gap, the researcher suggests a few points, however, no industry project can completely exclude dangers.

The risk management process in HIP executed relatively well. Whereas, to improve the risk management in the planning, implementation, mitigation, monitoring, and controlling the corporation as a developer and operator should have to establish a directorate on-site in each of the industrial parks including the HIP. Also, to ensure project completion, stakeholders (e.g., individual companies, industrial area managers, local governments, and infrastructure administrators) must follow a risk management system and guidelines of organized damage prevention and recovery actions. Individual companies should classify dominant risk types and their potential effects on the Hawassa industrial park based on a national hazard risk assessment and corresponding business impact study. Furthermore, the IP planning method for mitigating various risks must be strengthened.

To carry out successful projects, a more assertive risk management process is necessary. A dedicated team must be established to identify and manage risks to achieve the goal. And this improves the enterprise's learning capacity. Since there isn't a dedicated team to monitor project risk, the risk management process becomes disorganized, unsystematic, inconsistent, and unpredictable. Above all, it necessitates the involvement of the project manager or other project lead, even for risk tracking tasks that are preliminary. For an effective risk management initiative, a standard risk management template and manuals are needed. Such guiding documents must also allow for upgrades and changes.



As a result of the study, risk management implementation in the HIP is poor. And to improve that the corporation and HIP should give training for the respective departments on the tools and techniques of risk management. As well as, to improve the decision making on accepting risk, also known as risk acceptance, happens when a company or individual recognizes that the risk's potential loss is insufficient to justify investing in the area. It's also known as "risk retention," and it's a type of risk management that's widespread in business and finance. Furthermore, involving more people in the decision-making process reduces the company's back-end execution risk. And, when it's time to execute they make themselves available. The second strategy to lower risk is to spend more time in the current situation, because the future may be utterly unpredictable. In a year, the IP will have even more information about the environment in which the firm will make decisions. Breaking huge decisions into smaller decisions is the third approach to reduce decision-making risk. If HIP management is debating whether or not to relaunch the entire company website, perhaps specific IP might help break down the issue so that the managers can make a more informed conclusion. Besides, beginning with the possibility and impact of the incident, as established by the assessment criteria by the corporation and HIP management. Then think about how HIP can respond to that risk to mitigate each aspect.

Through the Park operation and management, risk should have to be managed through continuous or residual assessment in the industrial parks. to implement continual risk assessment the corporation should have a monthly and weekly reporting system using different materials like an onsite checklist. The other area that needs better execution is insecurity and theft in the HIP and to manage those the developer should closely work with the municipal police and should strengthen security inside the park. Also, to obtain a strong risk management system the corporation should prepare regulation and operational risk management procedures to achieve the park development goal.

To priorities, the risks facing the IP Area, the Implementation Committee should conduct a Hazard Risk Analysis (HRA). The goal of the HRA is to identify the main natural and human-induced hazards and priorities the ensuing risks. HRA begins with the collection of relevant maps needed to assess the scope of a disaster; or, to create disaster scenarios, IP area impact analysis, and RM measures and action plans. And that may be relevant to the HIP RM Cycle, depending on the hazard risk assessment of an IP Area.

After analyzing potential risks in the HIP Area, the risks should be prioritized. To priorities hazards, each IP should consider the likelihood of hazard and the vulnerability to hazards. The vulnerability can relate to a population, an ecosystem, and/or the infrastructure. The interaction between these two factors can create risk. The higher is the risk, the higher the priority. And for each hazard, the corporation should prepare and ask: How likely is this hazard? And, how vulnerable is this IP Area to this hazard?

Using the matrix to identify the risk level in the corporation and specifically HIP.

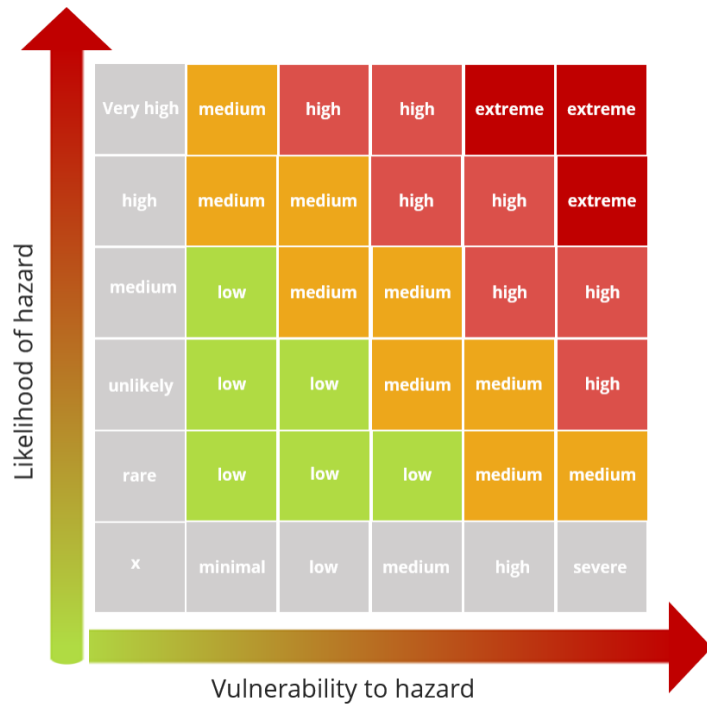


Figure 7: Risk Matrix

To continuously improve the risk management measures and action plans, it is required to also build the capacity of key stakeholders from different organizations. This may be done by promoting the risk management strategy to relevant stakeholders in the area, disseminating information, and raising awareness about risk management in Hawassa IP and surrounding area to the key staff of risk management-related departments and executives of organizations.

Finally, this study is not meant that it is full-fledged, but in the future, there might be additional research conducted to show more precise risk management practice and their level of

implementation. Additionally, the study recommends for similar researches to be undertaken in other government and private-owned industrial parks for generalization of the findings of this study.

## REFERENCES

- Andualem , M., Pramila , K., Koen , M., Christian , J. M., & Eduard , K. (2020). Firms In Ethiopia's Industrial Parks: Covid-19 Impacts, Challenges, And Government Response.
- Arbina, S., Arjan, Q., & Ezmolda, B. (2016). Risks in large scale projects management:Case of industrial parks development in Albania. *Lecturer & Research*, 111-116.
- Association for Project Management. (2012). *APM Body of Knowledge*. Princes Risborough, UK: Association for Project Management.
- Avis, W. (2018). *Environmental safeguards for indusrial parks*. UK: University of Birmingham.
- Azmach, E. W. (2019). *Regulating Industrial Parks Development in Ethiopia. A Critical Analysis*, 34.
- Chicken, J., & Posner, T. (1998). *The Philosophy of risk Managment . Risk Philosophy Journal* , 21, 21-42.
- Chowdhury, A. K. (2014). *Environmental Impacts of the Textile Industry and Its Assessment Through Life Cycle Assessment*.
- DeLee, D. (2017). *What is Risk Theory*. *Project Management Journal*, 95–114.
- Douglas, M. a. (1982). *Risk and culture*. USA, California: University of California Press.
- Durkacova, M., & Kadarova, J. (2012). *Risk management in industrial companies*. Slovak republic: Jubilee International Symposium on Applied Machine Intelligence and Informatics.
- Ethiopia National Planning Commission. (2016). *GTP*. Addis Ababa: Ethiopia National Planning Commission.
- Fang, F. (2016). *A Study of Financial Risks of Listed Manufacturing Companies in China*. *Journal of Financial Risk Management*, 5, 232-240.
- Gehr, A. (1979). *Risk and Return*. *The Journal of Finance*, 107-130.
- Golafshani, N. ((2003)). *Understanding Reliability and Validity in Qualitative Research*. *The Qualitative Report* , 597-606.
- Habegger, B. (2008). *International Handbook On Risk Analysis And Management* (Andreas Wenger, Victor Mauer, and Myriam Dunn Cavelty ed.). ETH Zurich: Swiss Federal Institute of Technology).
- Hansson, S. O. (2004). *Philosophical Perspectives on Risk*. Stockholm: Royal Institute of Technology.
- Hawksley, L. (2012). *Risk Management Practice in the Process Industries*. Zurich: EPSC Operations.

- Hyttinen, K. (2017). Project Management. Finland: Laurea publication.
- Industrial Park Development Corporation . (2017). Hawassa Industrial Park Zero Liquefied Discharge (ZLD). IPDC.
- Infographic. (2019). 8 Critical Business Risk Areas For Manufacturing Companies. USA: INFOGRAPHIC .
- IPDC. (2017). Hawassa Industrial Park Construction And Design. Addis Ababa: IPDC.
- IPDC. (2017). Updated Environmental and Social impact. Addis Ababa: Industrial Parks Development Corporation.
- Javier , G. G., Cristina , G. G., & Rosales, P. (2020). An Approach to Health and Safety Assessment in Industrial Parks.
- Jlama, N. (2017, January 26). wordpress. Retrieved From Nabrajlama: <https://nabrajlama.wordpress.com/notes/>
- Klöber-Kocha , J., & Braunreuthera, S. (2018). Approach For Risk Identification And Assessment In A Manufacturing system. Germany: Elsevier B.V.
- Laurence , C., Gene , G., Steve, I., Doug , J., & Rod , S. (2013). Introduction to risk management . USA: Extension Risk management education and Risk Management Agency.
- LS, S. (2017). Risk Assessment of Investment Strategy in the Textile Industry. International Journal of Economics & Management Sciences.
- Member of Deloitte Touche Tohmatsu Limited. (2015). Understanding risk assessment practices at manufacturing companies. UK: Deloitte Development LLC.
- Meyer. (2016). Riverlogic. Retrieved September 30, 2018, from <https://www.riverlogic.com/blog/how-to-perfect-your-risk-mitigation-strategies>
- Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis. Canada: LANGUAGE TEACHING RESEARCH.
- Ng'ang'a , S. I., Muthusi , B. M., & Nassiuma, B. (2015). Comparative Study Of Enterprise Risks And Management Practices In Nakuru Municipality, Kenya. European Journal of Business and Social Sciences, 3(2235 -767X), 120-140.
- Ohno, K. (2017). Hawassa Industrial Park. Hawassa.
- Oqubay, A. (2016). Made in Africa, Industrial Policy in Ethiopia . United States of America: Oxford University.
- Paslowski. (2013). Construction risk.
- Pip Coleacp. (2011). Risk Analysis and Control in Production. Belgium: European Union.

- Pons, D. (2010). Strategic Risk Management In Manufacturing. *The Open Industrial & Manufacturing Engineering Journal*, 3, 13-15.
- Pons, D. (2010, 06 15). Strategic Risk Management: Application to Manufacturing . pp. 21-29.
- Project Kart. ( 2010, November 2). Slideshare. Retrieved February 3, 2021, from [https://www.slideshare.net/hemanthcrpatna/risk-analysis-on-textile-industry?qid=2d377435-59fd-46c8-93f0-f1104d83c915&v=&b=&from\\_search=1](https://www.slideshare.net/hemanthcrpatna/risk-analysis-on-textile-industry?qid=2d377435-59fd-46c8-93f0-f1104d83c915&v=&b=&from_search=1)
- Project Management Institute. (2008). *PMBOK (Fourth Edition ed.)*. Newtown Square, Pennsylvania 19073-3299 USA: Project Management Institute,Inc.
- Reciprocity. (2020). Retrieved FEBRUARY 7, 2021, from <https://reciprocitylabs.com/resources/what-are-the-3-types-of-internal-controls/>
- researcher, d. b. (2021). HIP location map.
- Schwalbe. (2017). *Construction Risk*.
- Serai Limited. (2020). *Managing Risk In The Apparel Industry: Top 5 Areas To Consider*. Hong Kong: Serai Limited.
- Srinivas, K. (2018). *Process of Risk Management*. 5-10.
- Tamosaitiene, J. (2014). *Contruction Risk*.
- UN guideline report . (2018). *Effective Risk Management is Fundamental to the Success of Modernization in National Statistical*. UN.
- UNIDO. (2019). *International Guidelines For Industrial Parks*. Vienna, Austria: United Nations Industrial Development Organization.
- Victor A. Bañuls, C. L. (2017). *Predicting the Impact of Multiple Risks on Project Performance: A Scenario-Based Approach*. *Project Management Journal*, 95-114.
- Villanueva. (2013). *Project risk management methodology for small firms*. *International Journal*, 32, 327-340.
- Watt, A. (2014). *Project Management*. Victoria, B.C.: Pressbooks.com.
- Xiaodi , Z., Dejene , T., Ciyong , Z., Zhen , W., Jie , Z., Gebremenfas, E. A., & Jaidev , D. (2018). *Industrial park development in Ethiopia*. Vienna: UNIDO.
- Yadeta, A. (2020). *Critical Risks In Construction Projects In Ethiopia*. *International Journal of Civil Engineering, Construction and Estate Management*, 8(3), 32-39.
- Yemane, taro (1967). *Statistic, An introductory Analysis*, 2<sup>nd</sup> Ed., New York: Harper and Row

# ANNEX

## Research Questionnaires

Dear Respondent,

This survey aims to learn more about "Hawassa IP's project risk management practice." The information you provide will be used for educational purposes only. My supervisor and I promise that all details you get will be kept exclusively confidential. Both answers can be used to analyze part of the Master of Arts (MA) Specialization in Project and Management criteria. Please accept my heartfelt appreciation for your diligence and support!

**Yours Sincerely**  
**Tsion Lemawossen**

### Part One: General Information

Please put a “√” mark on all your responses in the appropriate place.

1. Sex:  Male  Female
2. Age Group (In Years):  
 25 or below  25-35  36-45  46 or above
3. Educational Background:  
 Diploma or below  
 Undergraduate degree (Bachelor’s degree)  
 Graduate degree (Master’s degree) or above
4. What is your occupation level in IPDC?  
 Top Management  Director  Development expert  Operation expert
5. What is your occupation level in HIP?  
 Top Management  Director  Development expert  Operation expert
6. Years of working period in the Industrial Park Development Corporation/ HIP (In Years):  
 Below 5 years  5-10 years  11-15 years  Over 16 years

Part Two: General project risk planning and management question for HIP and IPDC workers

Please specify your level of agreement with each of the following statement by marking (✓) on the space provided:

Strongly agree      Agree      Neutral      Disagree      Strongly Disagree  
 SA (5)      A (4)      N (3)      D (2)      SD (1)

Project risk planning and management process in the HIP						
No	Question	1	2	3	4	5
1.	Project team members are processes for risk planning, identification, and techniques					
2.	In HIP risk control and monitoring procedures being performing					
3.	Risk analysis, evaluation and prioritization strategies are performing in the organization					
4.	There is a strategic approach or careful planning done to perform risk mitigation in the project					
5.	Project risk assessment method is incorporated with the project plan and traceable as the corporation discovers risks or inadequate risk controls?					
Project risk identification and analysis management in HIP						
6.	Project team members has notifications in Hawassa IP that reminds to play a role in identifying risk					
7.	The Hawassa IP set out the basic steps of risk management practices to follow while performing a risk mitigation					
8.	Does the corporation risk assessment documentation specifically define the layers of management that have the power to make decisions on risk acceptance?					
9.	Does the corporation have a continuing risk assessment due to risk management implementation?					
10.	Is there a mechanism in place at your corporation for establishing and maintaining a system for sharing risk knowledge to specific IP stakeholders?					



**Standardized mechanism of corporation risk response and handling in HIP**

11.	There is a standardized mechanism in place at the corporation to handle the risks mentioned below					
		5	4	3	2	1
A.	Financial					
B.	Environmental and social					
C.	Safety and health					
D.	Insecurity and theft					
E.	IP operation and management					
F.	Sociopolitical					

Dear respondents If you would like to give additional information or perceptions on the above questions, please describe below?

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**Part Three: Strategic risk monitoring, control and management culture in HIP and IPDC workers**

Please specify your level of agreement with each of the following statement by marking (✓) on the space provided for the ranges:

Very High (VH), High (H), Average (A), Low (L), and Very Low (VL).

No.	Questions	VH	H	A	L	VL
1.	How is the level of IP management in the corporation to face the internal and external forces that impact the risk profile?					
2.	How is the level of assessment of the efficiency of general controls in avoiding risks and resounding out risk activities within the Corporation?					
3.	In the industrial park development phase how is the level of risk management application throughout the project cycle?					
4.	How is the level of IP employees work with hazardous environment, e.g with treatment plant chemicals?					
5.	How is the level of attention of the corporation on the treatment plant?					

Part four: Overall Interview Questions for HIP and IPDC management team

1. What are reasons for implementing a risk management process in the Industrial Parks?

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2. Organization of risk management in HIP and IPDC: who is responsible?

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3. In the corporation/ HIP, how do you comply with project risks?

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4. How are risks monitored and reported within the Hawassa IP?

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5. Do your IP division department evaluation new activities during the planning stage to identify and address risks? \_\_\_\_\_

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6. Is there any risk assessment model in the corporation/HIP for the projects?

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7. What are the corporation/HIP greatest risks, how serious are those, and how probable those happen?

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8. How the corporation employees are following project risk management process to deal with the risk in the IP? \_\_\_\_\_

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9. What is the corporation/HIP measurement of overall safeguards' efficacy in avoiding threats and carrying out risk activities? \_\_\_\_\_

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10. Is there any additional information you think I should have to know about your department's risk management program? \_\_\_\_\_

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Thank you for your time!