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COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

DEPARTMENT OF PROJECT MANAGEMENT

**Assessment of Safety Management Practices in building construction:
The case of Grade 1 Contractors in Addis Ababa.**

By: Samuel Wagaye

Advisor: Zegeye Muluye (Dr.)

**A Project Work Submitted to Addis Ababa University School of Commerce in
Partial Fulfillment of the Requirements for the Degree of Master of Arts in Project
Management**

June, 2022

Addis Ababa

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Declaration

I, the undersigned, declare that the research entitled “**Assessment of Safety Management Practices in building construction: The case of Grade 1 Contractors in Addis Ababa**” is the result of my own effort and study that all sources of materials used for the study have been acknowledged. I have conducted the study independently with the guidance and comments of the research advisor.

This study has not been submitted for any degree in any university. It is conducted for the partial fulfillment of the Master of Arts Degree in Project Management.

Samuel Wagaye

Date

Letter of Certificate

This is to certify that Samuel Wagaye has conducted this project work entitled **“Assessment of Safety Management Practices in building construction: The case of Grade 1 Contractors in Addis Ababa”** in under my supervision.

This project work is original and suitable for the submission in partial fulfillment of the requirements for the award of Master of Arts Degree in Project Management.

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Abstract

In construction industry, many of the accidents and hazards are obvious. However, as the number of workers employed in the sector increases, so do the number of serious injuries and fatalities. Therefore, the objective of this study is to evaluate safety management practices in Addis Ababa City building construction projects that are built by grade I contractors, with a focus on the methods used for safety management. The study focuses on determining the fundamental cause of construction site accidents, which occur often. The research was conducted using a survey method that included the use of a questionnaire to collect primary data. For this study, 81 questionnaires were distributed to grade I construction company, with 77 replies collected for analysis. The contractors are found in eleven Addis Ababa sub-cities. The data was analyzed quantitatively using descriptive statistics method in SPSS—20. The study's findings showed that the majority of contractors do not have effective safety management practices. According to contractor responses, the main causes of construction site accidents are carelessness, ignorance and poor working conditions, with the most common accidents being falls from scaffolds, ladders, and working heights during finishing activities.

Keywords: Safety management practice, hazards and injuries, root causes of accident

Acronyms and Abbreviations

BC	Building Contractor
GC	General Contractor
GDP	Gross Domestic product
ILO	International Labor Organization
MoLaSA	Ministry of Labor and Social Affair
MoUWD	Ministry of Works and Urban Development
OHS	Occupational health and safety
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
SMS	Safety management system
SPSS	Statistical Package for Social Sciences

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In today's world, the construction industry is considered to be the backbone of every nation's development and plays a significant role in economic progress. The building sector has a major impact on the economy, the environment, and society around the world. Major construction projects in many developing nations account for about 80% of the country's total capital assets Lioyd (1987). Construction in these countries accounts for 10% of gross domestic product and more than 50% of investment on fixed assets. In addition to that, the industry provides high employment opportunities, probably only second to agriculture (Ofori, 2008). Similarly, in Ethiopia, public construction projects shared an average annual rate of 58.2% of the capital budget between years 1997/98 and 2001/02 (Wubshet, 2004). Moreover, construction industry accounted for 4%- 7.6% of the total GDP of the country between years 2010/11- 2013/14 (MoFED, 2014). This shows that the construction industry plays significant role in Ethiopian economic development.

But this industry is one of the most hazardous industry sectors with many thousands of workers being killed and seriously injured each year. Worldwide occupational injury rates in construction are highest for all major industries. Construction is always risky because of outdoor operations, work-at height, complicated on-site plant machinery and equipment operation coupled with worker's attitudes and behaviors towards safety (Choudhry and Fang, 2007).

Construction sites are dangerous, filled with heavy and sharp objects, platforms of varying heights, flying sparks and debris, and a variety of other potentially dangerous elements. This is why construction workers are required to wear hard hats, gloves, safety goggles, and other safety equipment while on the job. It's no surprise that so many injuries occur on construction sites; too many employees are either ignorant of the

dangers or have a high risk tolerance, which is often accompanied by a dislike for what they perceive to be burdensome or bulky safety equipment.

The purpose of this paper is to assess safety practice in grade one contractors in Addis Ababa, Ethiopia, and to recommend the finest and most advanced project safety management practices.

1.2 Background of Grade one contractors

To work as a contractor and participate in construction in Ethiopia, one must first obtain a construction license from the Ethiopian Ministry of Construction. There are four categories of contractors: General Contractors (GC 1-10), Building Contractors (BC 1-10), Road Construction (RC 1-10), and Special Contractors (SC 1-4) who specialize in a single area of construction. Only GC-1, BC-1, RC-1, or SC-1 registration is permitted for overseas investors. Grade one contractors are the biggest construction contractors' classification in Ethiopia which is qualified to undertake construction of building, roads, railways, bridges, airports, dams and other related works. This study focused on building construction projects in the case of grade one contractors. According to Ethiopia Ministry of House and urban development there are 106 general and construction contractors who have registered in Ethiopia. The Addis Ababa City Administration, on the other hand, has only 96 contractors registered. As a result, the study concentrated on construction firms with a grade of one in building construction in Addis Ababa.

1.3. Problem statement

The construction industry has a poor occupational safety record. In fact, it accounts for around 11% of all occupational injuries and 20% of all occupational deaths. Every year, the International Labor Organization estimates that at least 60,000 people die on building projects across the world. This indicates that in the industry, one fatal accident happens every ten minutes. Risky behavior and hazardous conditions cause the most of these accidents. (Mouleeswaran, K.Mouleeswaran, 2015. Because of these issues, building construction safety is a large and worldwide concern that requires careful consideration.

By 2025, Ethiopia aims to be one of the lower middle income nations (GTP2, 2016-2020). It will be achieved by a shift in the industry sector. In the first development and transformation plan implementation years, the construction industry, which accounts for 8.5 percent of GDP, saw a spectacular average growth rate of 28.7%. (GTP1, 2010-2015 national planning commission Ethiopia). Construction is a vital industry that is responsible for mobilizing vast quantities of diverse resources and budgets, creating significant job opportunities and playing an important role in Ethiopia's economy. Work-related accidents affect an estimated 271 million people globally each year, with 2 million people dying as a result of their injuries.

According to the Ethiopian Ministry of Labor and Social Affairs (MOLSA, 2016), there were 4535 work-related accidents reported in 2015/16, with 100 (2.21%) being deadly. A medical bill of 4,000,000ETB was incurred as a result of these safety concerns, as well as a loss of 11,500 working days linked to injured employees' absence.

Thus, in Ethiopia, safety considerations in construction have yet to be investigated and regarded as an issue. The study's chosen region is Addis Ababa, which has a large number of construction and consulting firms as well as building construction and easy for the researcher to collect data. These problems have a huge impact on personnel, projects, project stakeholders, and the country as a whole.

Several studies have looked into building safety in developed countries, such as Glendon and Litherland (2001), Kheni (2008), and Zeru Tariku (July 2014). Researchers in most of these studies created a new framework model or replicated an existing one to improve the adequacy of their models. However, in the context of developing countries with special needs, there is a lack of research in this field. However, based on practice and experience in the construction industry, earlier literatures in Ethiopia have left insufficient documentation on safety management.

Based on practice and experience in the construction industry, injuries and fatalities resulting from construction-related incidents continue to be an obstacle in building construction and identifying which phase of construction to focus on. More attention or emphasis on health and safety management practices is required in the construction

industry. As a result, accidents in the construction industry have risen dramatically. These issues have a huge influence on personnel and project stakeholders as well as the country at large.

This study aims to identify safety practices in grade one construction companies when it comes to executing safety standards at the Addis Ababa level, which are designed to generate the best guiding practice for construction safety. The goal of this research is to evaluate safety management procedures in grade one contractors in Addis Ababa and provide required recommendations based on the findings.

1.3 Research Questions

In this research paper the research questions have been addressed as general and specific.

1.3.1 General research question

- ❖ The general research question this study answers is what is the level of safety management used by grade one contractors in Addis Ababa City construction projects?

1.3.2 Specific research question

What are frequently occurring construction site accidents?

- ❖ What are the main root causes of accidents in the case of grade one contractors?
- ❖ Which phase of the project life cycle is most prone to accidents in the case of grade one contractors?
- ❖ What types of accidents are frequently occurs in the case of grade one contractors.
- ❖ What are the strengths and weaknesses of safety management in grade one contractors?

1.4 Objective of the study

1.4.1 General Objective

The general objective of the study is to assess the safety management practice of building construction projects in grade one contractors in Addis Ababa by specifically investigate the methods implemented for safety management.

1.4.2 Specific Objective

The specific objectives of this research are:

- To assess the root causes of accidents in construction site in the case of grade one contractors.
- To assess the project phases that most accidents occurred in the case of grade one contractors.
- To assess the type of accidents this occur frequently in the case of grade one contractors.
- To assess the strengths and weaknesses of safety management practice in the case of grade one contractors.

1.5 Significance of proposed research

There is practically little literature devoted to construction site safety in developing countries such as Ethiopia. Existing articles usually advise ways to avoid accidents. Assume, however, that there is a powerful regulatory authority in place to enforce the law.

The research can also be utilized to highlight important points on how grade one contractors in Addis Ababa construction industry implement safety management techniques in building structures and to suggest some steps that should be performed to close the gap and improve the safety management system. If properly applied, this research will improve the working environment and productivity of construction site personnel.

The study's significance is to suggest measures that can be taken at all stages of the project in order to provide a safe work environment for all employees and protect them from accidents, and to ensure the presence of satisfactory safety standards within the

organization. Furthermore, to strengthen safety standards that are employed at specific construction sites by including general safety regulations.

1.6 Scope of the study

Geographical scope: assessing safety management practices in building construction projects located in Addis Ababa, Ethiopia. Addis Ababa was chosen due to the availability of appropriate data and the researcher's convenience.

Conceptual scope: The study focuses on the assessment of safety management in grade one contractors. The study was conducted strictly with regard to construction site safety management, which is a broad topic but one which can be narrowed down to standard criteria.

Methodological scope: The study's target population is limited to Grade 1 Building Contractors. A questionnaire was used to gather primary data, which includes the responses of employees who work as professional site engineers and foremen in a Grade 1 Building and General Contractors.

1.7 Limitations of the study

The limitation of the research is that even though there were around 96 grade 1 contractors working in Addis Ababa during data collection, the majority of them were not active. The remaining corporate locations were forced to close owing to supply shortages and price increases for cement, rebar, and finishing products. As a result, in order to overcome this constraint, the researcher attempted to collect samples from other building sites owned by the same company.

The other limitation of this study will be completed on a very short timeline in order to fulfill the Collage's deadline. As a result, the information gathered may be insufficient or may lack all of the necessary details and depth.

1.8 Organization of the Study

The researcher has organized the study into five chapters. The first chapter deals with the introduction elements, including the introduction of the study; background of the study;

background of the organization; statement of the problem; objectives of the study; research questions; significances of the study; scope of the study; limitation of the study; operational definition; and organization of the study are briefly discussed. The second chapter contains a review of the related literature, which discusses important topics related to the effect of building project procurement on capital budgeting. The third chapter consisted of research design and methodology. The fourth chapter offers the presentation, analysis, and interpretation of the data. Finally, the last five chapters present a summary of the findings, conclusions, and recommendations of the study. The study's references are mentioned at the end. The questionnaires that were utilized are also given in the Appendix section.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The researcher will offer a review of related literature focusing on safety management systems in this part. To start with, the researcher revisits the fundamental notion of construction safety and investigates the subject's significance and importance for the construction industry. The researchers investigate the present circumstances and techniques in place for construction safety. In addition, information about construction safety and accidents in the construction business is provided. Other literature on the issue that reveals empirical results is also reviewed and evaluated as a source of evidence and for confirming the dependability of this research's findings.

2.2.1 Safety and Safety management

Safety is a term that encompasses all procedures and activities designed to protect people's lives, health, and physical integrity. Safety in the workplace is monitored using a set of measures that track the frequency of near misses, injuries, illnesses, and deaths. Employers and safety officials must also undertake investigations following each event to ensure that all safety processes and measures are followed, or to establish new ones if necessary, in order to enhance these metrics. According to Lingard and Rowlinson (2005) safety is defined as absence of danger & a state of protection and condition not involving risk safety in construction site means freedom from danger, harm, and injury to the person who is involved in construction activities & taking precautions measures to protect the lives of the workers against fatal injuries and death.

Safety management is supposed to consider all potential hazards and accidents that might endanger project personnel. The safety of any workplace is critical to reducing such risks, both legally and ethically, but in primarily risky environments such as the construction industry. Safety takes on crucial importance since the business's regular tasks are highly harmful. As a result, it is critical to establish appropriate safety actions and strategies to

address any major safety issues. It is the process of identifying safety risks and implementing steps to reduce the likelihood of a risk materializing as well as to reduce or eliminate the possible consequences of recognized project safety concerns.

It is well acknowledged that the success of safety management in building and establishment engineering ventures determines the future of included firms. Safety management may be done and safety mishaps in construction projects can be avoided by strengthening the construction management office's safety management job, describing the responsibility of each group participating in construction tasks, and boosting the monitoring of government agencies. As a result, public safety in building and establishment operations may be guaranteed. (Liang Wang et al., 2010)

The topic of safety management has been addressed in building projects in both developed and developing countries. Some essential aspects that contribute to a crucial bit of accidents are: safety management mistake, poor training programs, ignorance, carelessness, an outdated technique, and no plausible monitoring strategy. As a result, they aimed to offer a continuous safety progression consisting of six steps. Among these methods are making safety decisions, identifying hazards, surveying and assessing risk, selecting safeguards, and recording discoveries, and renewing our knowledge in relation to the work situation. In general, growing more consideration must be given to safety performance and creating a more secure environment in building projects. (Charehzehi Ahankoob et al., 2012)

In terms of safety performance, the construction sector has reached a plateau. Safety environment may be topographically sensitive; thus, it is critical to examine how the construction of safety atmosphere is classified and utilized to improve safety execution in diverse contexts. These results highlight the role of authoritative variables as well as unique factors in affecting individual safety execution. (Chen McCabe Hyatt et al., 2017)

Safety execution has grown in popularity as a subject of research and is increasingly being investigated nowadays. Before directing an evaluation on performance safety, the study acknowledges and discusses the critical concerns that necessitate a center. Multi-

level analysis should be used to base studies on safety execution. (SaatMohd Subramaniam Shamsudin et al., 2016)

There is a shortage of safety management in the Chinese construction sector, which investigates dangerous actions on construction sites and the variables that drive them, which affect construction site safety. The findings show that contractors' safety management practices are concerning, such as a lack of personal protective equipment, frequent safety meetings, and safety training. (C.M. Tam et al., 2003)

The building sector in Bangladesh is more labor-intensive than in wealthy countries. Cave-ins are common while excavating in deep pits, concreting without gloves and boots, and utilizing unsteady scaffolding, as well as a lack of personal protective equipment, lengthy periods of exposure to severe temperatures, bad housekeeping, and so on. (Ripon et al., 2006)

A variety of causes contribute to the high injury rates, including inadequate construction planning, a lack of design safety, insufficient safety training, worker behaviors, and intrinsic security. According to this study, construction-related health and safety issues, as well as a lack of comprehension of site standards assisted in the formulation of the questionnaire by providing a theoretical foundation on safety management. The author also covers the causes of construction accidents and the role of falls in creating accidents and injuries on building sites. (Yousif S. et. Al., 2017)

A detailed study of safety management methods on construction sites is necessary, as is a review of important safety regulations. Construction companies continue to be concerned about occupational health and safety. As a result of the company's poor safety controls, the construction sector, the global culture, and the economy have suffered financial and human losses. The research looked at corporate safety rules, training, and meetings, inspections, penalties, and employee attitudes toward the preservation of the construction industry. (Dheeraj Benny et.al., 2017)

2.2.2 Safety management practice in Ethiopia construction

Construction is a substantial contributor to Ethiopia's economy and one of the fastest-growing industries. According to Yalew WW (2013), emerging nations such as Ethiopia work hard to improve their fundamental services by constructing schools, hospitals, housing complexes, stores, offices, motorways, power plants, industries, bridges, and other infrastructure. All of these building tasks, however, are carried out at a low cost by unskilled labor groups. Occupational injuries and accidents are common among these employees, owing to illiteracy, poverty, and a lack of health and safety training and awareness on workplace dangers and risks. Workers in this industry are known to endure quickly changing workplaces, intense competition, and unemployment threats.

As a growing sector of the country's economy, the position of construction workers, particularly their safety conditions, should be prioritized, and the working environment should be kept safe. Despite the industry's rapid growth over the last few decades, only a few studies have been done to study the occupational safety and health condition of construction employees.

Ethiopian construction laborers work under difficult circumstances due to a lack of safety measures and bad working relationships, accidents occurred. Because most construction sites lack safety safeguards, workers are susceptible to a variety of work-related accidents.

2.2.3 Causes of Accidents in the Construction Industry

Accidents are described as "unwanted events that cause bodily harm to individuals or property damage." (Peyton and Rubio, 1991) The high accident rate in building is a global issue that must be addressed by all parties involved (Poon et al. 2008). Although there has been a decrease trend in construction accidents in many regions such as Hong Kong over the previous decade due to the adoption of several safety measures, there is still room for improvement in the construction accident record. Previous research in Hong Kong found that an accident has a high societal cost, with over \$10 million in compensation paid for non-fatal accidents each year from 2004 to 2008. When compared

to the indirect costs of accidents, the direct financial losses are simply the tip of the iceberg. Employees who are hurt and their families suffer from lost wages and grief.

According to Schaufelberger and Lin (2014), dangerous work circumstances were the primary cause of 10% of construction site accidents, with 90% being the consequence of risky behavior. Similarly, the HSE stated that around 80% of incidents in the UK are caused by human error. Furthermore, it was understood that work accidents on construction sites are caused by two basic mechanisms: dangerous working circumstances and risky conduct. (Li and Poon, 2013).

Equipment and Tools Accidents: Many individuals suffer injuries as a consequence of hand tools, screwdrivers, knives, saws, hammers, nails, and drilling machines slicing and cutting them. The most harmful characteristics of hand tools are their misuse and lack of proper maintenance. (HSE, 2004).

Electrical Accidents: As per to OSHA, almost 1,500 construction workers died in electrocution-related accidents during a ten-year period. Electrical accidents are the third largest cause of mortality among construction workers, with approximately half of electrocution deaths occurring on construction sites. Electrical accidents on construction sites are usually divided into three types. Contact with overhead electrical wires is the most common form. When employees come into touch with transformers and live wires, the second sort of accident occurs. When working with tools, machinery, and other appliances, contact with electrical currents is the third most prevalent form.

Fires and Explosions in Construction Site: The combination of combustible materials is the primary cause of fire and explosions; sparks, flames, heat sources, gases, and chemicals may all contribute to a construction site fire. Welding is one of the most common causes of construction site fires. Power tools can potentially spark a fire if they short out. Grinder or drill sparks can ignite combustible materials. A fire or explosion might result from open flames or smoking near gas.

Noise in the site: Noise is described as any undesired or desired sound in the workplace. It is one of the most prevalent Occupational Health and Safety risks and may be encountered in a variety of settings. Long-term exposure to excessive noise can cause

irreparable hearing loss and deterioration in one's quality of life. Noise is generated by the operation of equipment, machinery, and power tools, as well as the movement of trucks and material delivery.

Hazardous Substances in site: Hazardous substances come in three different forms: a liquid, solid and gas. Poisons and substances are two examples. Asthma and dermatitis can be caused by some paints and varnishes, as well as bonding agents and resins. (HSE, 1998)

Working environment of the site: The most significant contributing causes to the accident were poor housekeeping and dirty building sites. (Site-Safe, 1999)

Safe premises, machinery, and materials, safe methods of work information, instruction, training, and supervision, and a proper working environment and amenities should all be provided under occupational health and safety (OHS).

Lack Personal Protective Equipment (PPE): Employees who operate in a setting where they may be exposed to danger or potential risk must wear personal protective equipment, according to the Occupational Health and Safety Act (PPE). Safety shoes, helmets, gloves, masks, eye protection, and ear protection are all examples of personal protective equipment (PPE). The occurrence that resulted in the injury was linked to lack of PPE. (Al-Kaabi & Hadipriono, 2003)

Lack of Effective Safety Training: Workers benefit from effective training because it helps them avoid injuring themselves. (Hinze & Gambatese, 2003)

First-Aid Arrangements: These measures would not remove dangers; rather, they would lower the potential risk to the wounded individual. (Fang, et al., 2004)

Weather Condition: Extreme weather has a direct influence on safety and health performance. Heat stress causes nausea, headaches, fatigue, severe thirst, profuse sweating, disorientation, agonizing large muscle cramps, and loss of consciousness. As a result of these symptoms of heat stress, heat cramps, heat exhaustion, or heatstroke can develop, and if left untreated or severe enough, can end in death. (Neitzel, et al., 2001)

Accident due to Structural Failure on Construction Site: To assist study, the causes of building collapse can be categorized into broad categories. These include poor design, poor construction, foundation collapse, unusual load, unexpected failure mode, and a combination of reasons. Bad design includes not only computation errors, but also failure to account for the loads the structure will be subjected to, erroneous theories, reliance on inaccurate data, and ignorance of the effects of repeated or impulsive stresses, and improper material selection or misunderstanding of their properties. These failures, which are formed on the drawing board, are the responsibility of the engineer. The most common cause of structural failure has been faulty construction. If the inspection was lax, the engineer is equally at blame. This includes the use of salty sand to build concrete, the replacement of inferior steel for that required, poor riveting or even inappropriate tightening tension of nuts, the excessive use of the drift pin to line up holes, inadequate welds, and other construction worker-known techniques. Even the best-designed and built edifice will not stand on a shaky foundation. The building will support its own weight, but the soil beneath it may not. There are several examples of faulty foundations, including the renowned Leaning Tower of Pisa.

The construction industry, according to the study, has a higher rate of workplace accidents than other industries. Falls from heights, such as scaffolding are the most common accidents in the building and construction industry.

2.3 Empirical Study

Construction is a major and active industry that is the backbone of the global economy in general and Ethiopia's economy in particular, mobilizing immense amounts of varied resources and budgets and embracing massive workforce by offering a large job opportunity. It is involved in the planning, execution, and monitoring of all forms of civil works. Construction of building, dam projects, road projects as well as water supply and sewerage civil works, are just a few of the important projects in the construction industry.

Regulatory authority finds are weak or non-existent, and employers only ostensibly support rules. Unlike many other nations, Ethiopia has a single comprehensive labor legislation (Ethiopia, Labour Proclamation 377/2003, 2003) that covers all areas of

ensuring that labor relations are controlled by basic fundamental rights and obligations, with an emphasis on industrial peace in all workplaces.

The legislation is also written to ensure and safeguard all essential rights at work, as well as to establish the powers and responsibilities of the organ entrusted with executing the law's goals, which is akin to labor inspectorates. In different sections of part seven of the proclamation 377/06, the law applies to all employer-employee relationships or undertakings that employ one or more persons, and clearly states the duties and responsibilities of the employer and employees, as well as the liability, medical benefits, and compensation. Other related laws, such as regulations and directives, can be found, such as a directive issued by the Ministry of Labor and Social Affairs (MoLaSA) 2007G.c for General Occupational Health and Safety, Environmental Protection, and a specific section five dealing with the construction health and safety industry, and another directive issued by the Ministry of Works and Urban Development (Ethiopia, Ethiopian Building Directive 5/2003, 2003) in its section four discussing the health and safety of the construction industry. According to their findings, the most essential safety management method that predicts the outcome is safety training. Among the consequences are: The outcomes include knowledge, compliance, motivation, and engagement in safety.

According to Wright (1998), factors that produce positive pressure to proactively manage safety were highlighted. These were fear of prosecution by maintaining a responsible image and thus avoiding negative regulatory, customer, or public reaction; belief that it is necessary and morally right to comply with safety regulations; compliance with customer or regulator certification schemes; cost-cutting for ill-health and injury; conformity with total quality management, empowerment, and other principles; and a desire to improve staff morale and productivity.

The following factors were identified as reducing motivation as a result of factors that create positive pressure to proactively manage health and safety: cost of safety improvements; ease of implementation; existence of corporate entity and personal accountability of decision makers; background of employees and managers; and sector specific obstacles, such as short term contracting.

According to Liska et al. (1993), zero-accident techniques have been discovered. Safety training and orientations; provision of safety incentives; inclusion of safety pre-task planning in safety goals; safety person or personnel; safety policies and procedures; fire protection program; accountability/responsibility and safety budget; alcohol- and substance-abuse program in place; accident and near-miss investigation; and, record keeping and follow-ups were identified as being associated with safety success.

According to Tam and Fung (1998), the impact of management methods on safety performance was studied. According to the findings of the study, the following management measures were beneficial in minimizing accidents: post-accident investigation; safety rewards; safety training; and the employment of more directly employed personnel.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The research design, demographic and sample methods, procedures, and data collection procedures are all covered in this chapter. The chapter also focuses on the target population on which the research is going to be done; the technique for sampling; the size of the sample; and data analysis.

To describe the findings of the obtained data in this study, a descriptive design was adopted. Because there is a lack of understanding regarding the characteristics and nature of safety-related problems, a descriptive research was chosen. Additionally, this design may be beneficial in terms of observing the safety management system and describing the practical existing gap.

3.2 Research Design

The research design used in this study was descriptive design. Because there is limited understanding concerning safety issues, a descriptive research was performed. In addition, the safety management system must be monitored and this design may be advantageous in describing the practical existent gap.

To characterize the data from the research sample, descriptive statistics are employed. This statistics are typically used to describe a research sample before analyzing the investigation's primary assumptions. This provides information on the representativeness of the sample and the data required for other researchers to replicate the research. (Geoffrey Marczyk, David DeMatteo, and David Festinger, 2005)

3.2.1 Research Approach

The study takes a quantitative approach, examining data obtained from respondents in the form of a questionnaire. The information gathered during the site inspection as well as an informal chat with a few respondents served as a point of the recommendation.

3.3 Population and Sampling

3.3.1 Target Population

A population is a whole collection of people, things, or events, whereas a sample is a subset of that population (Abate, 2018). This study focused on building construction projects in the case of grade one contractors. According to Ethiopia Ministry of House and urban development there are 106 general and construction contractors who have registered in Ethiopia. The Addis Ababa City Administration, on the other hand, has only 96 contractors registered. As a result, the study concentrated on construction firms with a grade of one in building construction in Addis Ababa.

3.3.2 Sample Design

This study used a sample of respondents from several grade one building contractors in Addis Ababa who were convenient for the researcher's sampling method. The convenient sampling method of respondents has been used in this study, which is a non-probability sampling strategy whereby the researcher selects sample members based only on their availability.

3.3.3 Sampling size

The sample size is defined as the number of observations utilized to estimate a particular population. The population was used to determine the size of the sample. The process of selecting a group of people from a population to estimate the characteristics of the entire population is known as sampling. For analysis, the number of entities in a subset of a population is chosen. For this research the researcher used Glenn tables to determine the population sample size. For a particular combination of accuracy, confidence level, and variability, certain requirements must be satisfied throughout the sampling process. As a

result, Glenn (1992) produced two tables for population sampling: Table 1 contains samples for populations of 500 to >100,000, and Table 2 has samples for populations of 100 to 450. The sample size would be 81 because the overall population is 96, which is close to 100.

Table 1: sample size determination fort

**Table 2. Sample Size for $\pm 5\%$ and $\pm 10\%$ Precision Levels
where Confidence Level is 95% and $p=0.5$.**

Size of Population	Sample Size (n) for Precision (e) of:	
	$\pm 5\%$	$\pm 10\%$
100	81	51
125	96	56
150	110	61
200	134	67
250	154	72
300	172	76
350	187	78
400	201	81
450	212	82

Source: Glenn, 1992

As a result, the researcher chose a sample size of 81 with a confidence level of 95 percent and a $p=0.5$ for high precision and confidence. The samples were selected at random from several sub-cities.

3.4 Research Instrument and Data Collection

3.4.1 Procedure of Data Collection

Primary data has been used to collect data from selected building construction projects in Addis Ababa that are currently in the implementation phase. Questionnaires have been used to obtain primary data. Project managers, safety and health officials, project engineers, contract administrators, and site supervisors were involved in responding to the questionnaire. The information has been obtained through direct observation and investigation at various construction sites, as well as through examining the safety management methods used on construction sites.

3.4.2 Questionnaire Design

A questionnaire is a written set of questions that are answered by a respondent so that information may be gathered from the responses. The questionnaire was created using the studied literature to properly answer the research question and satisfy the research aim.. For this study, data on OSH law and enforcement practice in Ethiopia is collected via a questionnaire. The Questionnaire is based on (Fasil, 2017)'s design (Zekri, 2013).

3.5 Method of Data Analysis

The researcher decoded the obtained data into Excel and examined it using various data analyzing methodologies such as statistical and verbal description following on-site observations and questionnaire collection from multiple construction sites. Because the questionnaire contains largely Likert scale items, the results have been assessed in terms of frequency and mean for each feature. To analyze the data, the researcher used MS Excel-2013 and IBM SPSS STATISTICS 20.

3.6 Scale Reliability and Validity

The research was put to the test to see if the study was valid and reliable. The design of the study questionnaire and research methodology, as well as sampling and data collecting, were all carefully evaluated. A comprehensive literature analysis has been conducted utilizing both international journals and safety guides created by international institutes in order to examine the safety management methods used. Following the analysis of the data, the study's conclusions were compared to earlier findings and determined to be consistent. The researcher has also emphasized the significance of creating questionnaire design guidelines.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRATON

4.1 Introduction

This chapter gathers and analyzes the data obtained from respondents in order to achieve the research objectives. The questionnaire findings have also been interpreted. This chapter includes the response rate, basic information on the contractor and study participants, and a summary of the data obtained utilizing data presentation techniques such as frequency, mean, and percentages. Tables and charts are also used to present ordered data since they make the information easier to grasp and observe.

4.2 Response Rate of Respondents

4.2 Rate of questionnaire response from the respondents

In the previous chapter the researcher identified the sample size of the research to be eighty one (81). Hence, the researcher distributes eighty one (81) questionnaire to selected grade one construction firms in Addis Ababa. From the distributed eighty one questionnaires, the researcher collected only seventy seven (77) questionnaire which are fully complete and eligible for further analysis. Therefor all the seventy seven (77) questionnaires were analyzed and discussed to get the desired output and answer the research question. This shows that the Rate of questionnaire Response is more than ninety five percent (95%).

Table 2: Rate of questionnaire Response

No	Respondents	population	Number of sample size	Response	Rate of questionnaire Response (percentage)
1	Contractors	<i>Ninety six</i> (96)	<i>eighty one</i> (81)	<i>seventy seven</i> (77)	<i>Ninety five percent</i> (95.06 %)

Source: Own Survey, 2022

4.3 Information about the company and the respondent

From the two section of the questionnaire, the first one covers general question about the company profile such as address, number of workers in the site, contractor category and the status of the respondent profession, work experience & level of education.

4.3.1 Company profile

4.3.1 Profile of the Construction Company

From the seventy seven (77) respondent, 45(58.4%) of the respondent were working in the Building Construction company and the rest 32(41.6%) were working in General Construction company which involve in both building and road construction projects.

Table 3: Category of the construction firm

Category	Freq uency	Percent
Building Contractor	45	58.4%
General Contractor	32	41.6%
Total	77	100.0%

Source: Own Survey, 2022

From the collected data most of the construction companies eighty seven percent (87%) are local based grade one construction firms and the remaining 13% of companies are foreign construction companies which are led by china's people.

Table 4: Company's origin

Origin of the company	Frequency	Percent
Local	67	87.0%
Foreign	10	13.0%
Total	77	100.0%

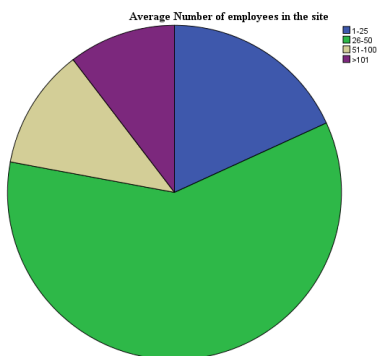
Source: Own Survey, 2022

Table 5: Number of workers

Number of workers (average) in the given site		
	Frequency	Percent
1-25	14	18.2%
26-50	46	59.7%
51-100	9	11.7%
>101	8	10.4%
Total	77	100.0%

Source: Own Survey, 2022

Figure 1: Number of employees in the site



Source: Own Survey, 2022

Table 6: location of the projects

Table 7: Address of the construction sites

Address: Addis Ababa Sub city	Frequency	Percent
Addis Ketema	3	3.9%
Arada	27	35.1%
Bole	14	18.2%
Gulele	1	1.3%
kirkos	11	14.3%
Ledeta	1	1.3%
Lemi kura	10	13.0%
Lideta	6	7.8%
Nifas silk	1	1.3%
Yeka	3	3.9%
Total	77	100.0%

Source: Own Survey, 2022

The collected data shows that all the respondents of the questionnaire are from different eleven (11) sub cities of Addis Ababa City Administration. Since the data is collected from 11 sub cities, it is believed to represent and demonstrate all the city safety management practice.

4.3.2 Respondents general information

Table 8: Respondent profession (Work status)

Profession (Work status)	Frequency	Percent
Project Manager	22	28.6%
Project Engineer	35	45.5 %
Forman	19	24.7%
Safety Engineer	1	1.3%
Total	77	100.0%

Source: Own Survey, 2022

Based on the Profession (Work status) of the respondents, most of them forty five percent (45.5%) were Project Engineers followed by 28.6% of Project Managers, 24.7% of Forman and lastly 1.3% of Safety Engineers. Since the respondents of the questionnaire highly affect the findings and result of the research, a balance of respondents was considered to get information from each construction site profession.

Table 9: Educational level of respondents

Educational status		Frequency	Percent
	PhD	3	3.9%
	MSc/MA	43	55.8%
	Degree	30	39%
	Diploma	1	1.3%
	Total	77	100.0%

Source: Own Survey, 2022

Table 10: Respondents work experience (years)

Site work experience (years)		Frequency	Percent
	0 -3	11	14.3%
	4-6	15	19.5%
	7-9	23	29.9%
	10-15	15	19.5%
	>15	13	16.9%
	Total	77	100.0%

Source: Own Survey, 2022

Based on the above response tables, majority of the respondents or twenty nine percent (29.9%) of respondents have seven to nine (7 to9) years of Site work experience in construction firms. The remaining nineteen point five percent (19.5%) have four to six (4 to 6) and 10-15 years of Site work experience of experience. 16.9% of the workers have more than 15 years of Site work experience, and the rest 14.3% have less than 3 years of construction Site work experience. In terms of education level the highest fifty five point eight percent (55.8%) number of respondents have MSc/MA degree and 39% of the respondents holds first degree.

4.4 Construction Project Site Safety Management Practice

4.4.1 Information about the project site safety management

Review of related literature shows different Causes of construction Accidents. Here in this study it was found that the major causes of construction accidents in there order are:
 1. Workers Ignorance & Carelessness with mean value of 3.3
 2.Lack of communication

with mean value of 3.17 3.Lack of training and knowledge with mean value of 2.84 & the last Working conditions and environment are in poor shape with mean value 2.09. Since the average cut point mean is 3, mean values that are above three are considered as repeated causes of most accidents.

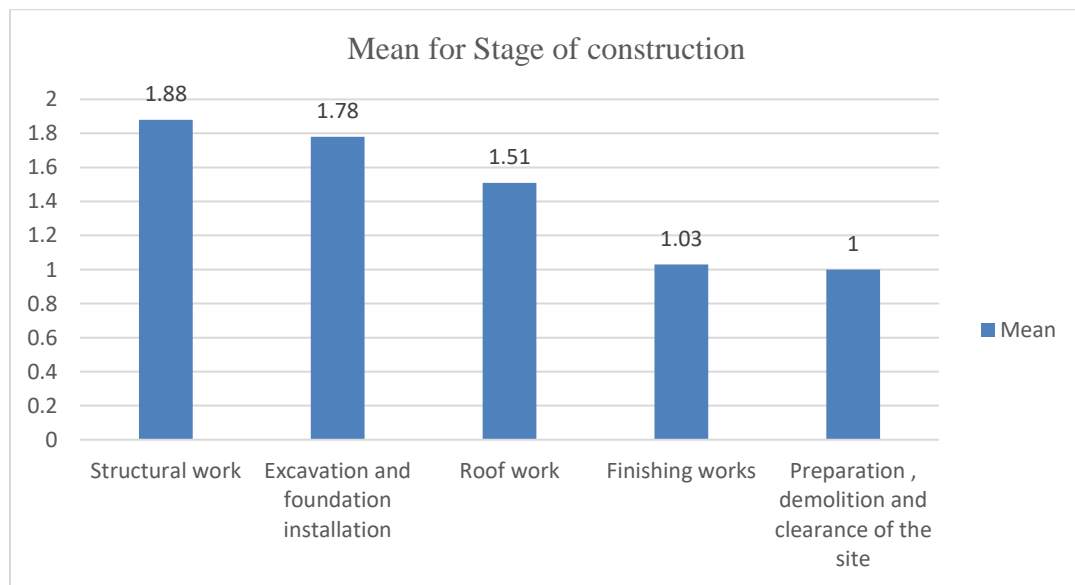
Table 11: Causes of construction Accidents

Descriptive Statistics			
Causes of construction Accidents	N	Mean	Std. Deviation
Ignorance	77	3.30	.844
Carelessness	77	3.30	.779
Lack of Communication	77	3.17	.637
Lack of training and knowledge	77	2.84	.586
Working conditions and environment are in poor shape	77	2.09	.611

Source: Own Survey, 2022

4.4.2 Execution Stage of construction project where majority of accidents occurs

Figure 2: Stage where majority of accidents occurs



Source: Own Survey, 2022

Construction projects have different Stage of development ranging from site clearance to finishing work and each of them are expected to result different amount of safety problems and causes numerous accidents. In this study, it is found that the structural work

(Mean value-1.88) results most of the accidents. Following structural work, Excavation and foundation installation (Mean value-1.78), Roof work (Mean value-1.51), finishing works (Mean value-1.03) results most of the accidents. The preparation, demolition and clearance of the site is believed to result fewer number of accidents (Mean value-1). All of the stage have minor to moderate impact.

4.4.4 Types of Personal protective equipment (PPE) that is provided freely for the workers

Table 12: Types of Personal Protective Equipment

NO	Personal protective equipment	YES (%)	NO (%)
1	Provide Vest	76 (98.7%)	1 (1.3%)
2	Provide Eye goggles	11(14.3%)	66(85.7%)
3	Provide Safety helmet	47(61)	30(39)
4	Provide Protective gloves	38(49.4)	39(50)
5	Provide Safety shoes	48(62.3)	29(37.7)
6	Provide Ear protective	8(10.4)	69(89.6)
7	Provide soap, water, and paper towels	67(87)	10(13)
8	Respiratory Protection	6(7.8)	71(92.2)

Source: Own Survey, 2022

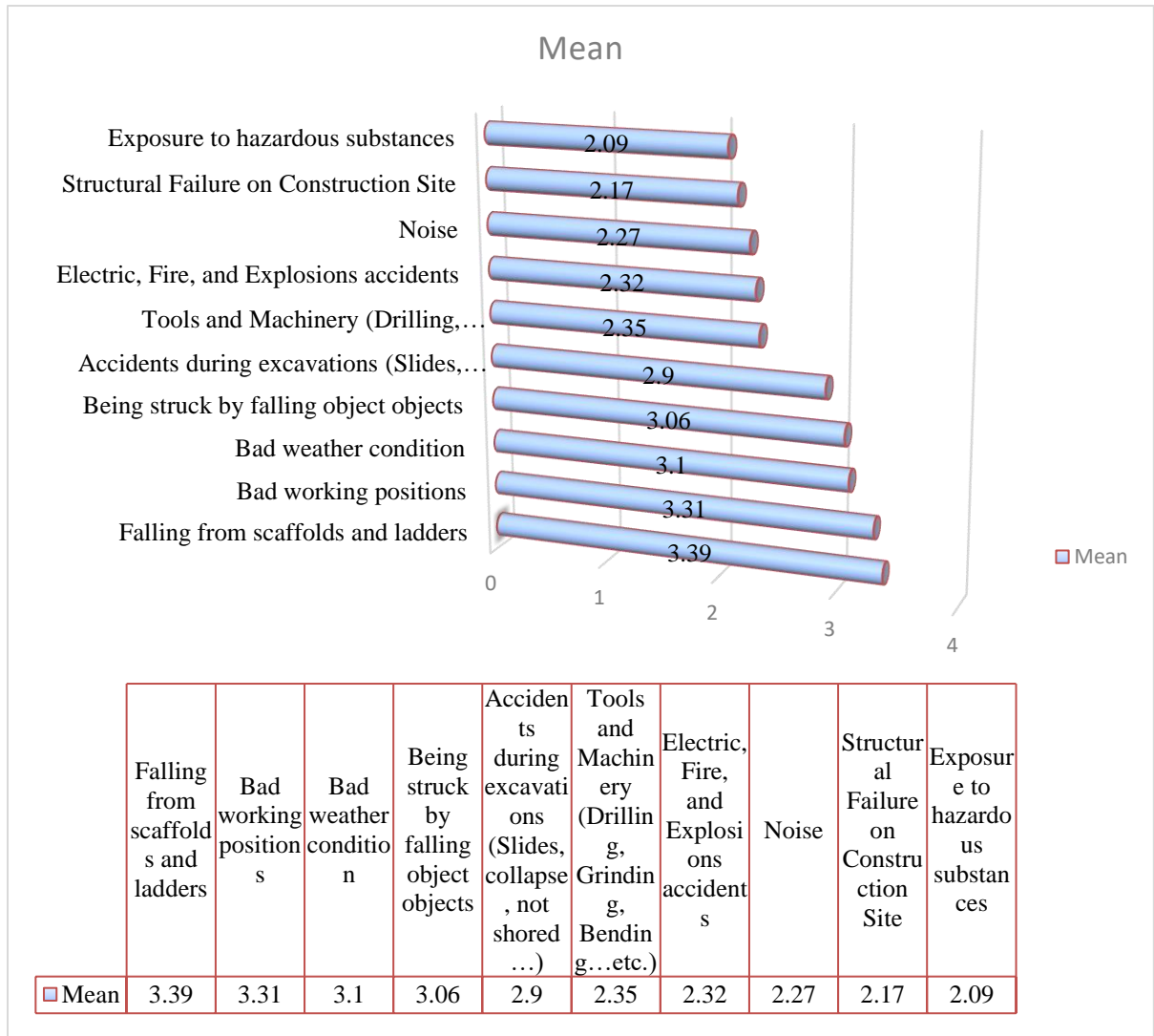
Jannadi & Bu-Khamsin (2002) divided PPE in two groups of category. The category is based on the type of the job the employee involved. In the 1st category, there are safety shoes, safety helmet and proper apparel. In the 2nd category, there are protective gloves, eye protection, ear protectors, and a safety harness.

The following table demonstrates different types of Personal protective equipment that are necessarily to keep the safety of construction workers. From the listed eight Personal protective equipment (98.7%) of the company provide Vest, 87% of the company Provide soap, water, and paper towels, 62.3% of the company Provide Safety shoes. Whereas 89.6% of the company doesn't provide Ear protective and 85.7% of the company don't provide Eye goggles.

If construction workers are dissatisfied with the PPE they have been given because it is uncomfortable, hazardous, or hinders productivity, they are less likely to use it, which raises the risk of accidents and illnesses considerably (Kenrick, 2012).

4.4.5 Type of accidents which happen frequently in construction sites

Figure 3: frequently happening construction sites accidents



Source: Own Survey, 2022

The above chart illustrates the mean value of frequently happening construction sites accidents. Since this questionnaire uses 5 point Likert scale the cut point mean value is three (3). Based on the mean the top three frequently happening accidents are: 1st. falling

from scaffolds and ladders with mean value of 3.93. 2nd. Bad working postures with mean value of 3.31 3rd. bad working condition and being stuck by falling objects with mean value of 3.1 & 3.06. These accidents are categorized to “Sometimes – Often” happening construction sites accidents. The remaining accidents happened rarely.

4.4.6 Major safety measures that are currently in use

To assess the strengths and weaknesses of safety management practice in grade one contractors the following questions were administered.

Table 13: Safety Measures taken in the construction site

NO	Safety Measures	YES (%)	NO (%)
1	Does the site have a safety officer?	45 (58.4%)	32 (41.6%)
2	Is the layout of the site safe for workers?	75 (97.4%)	2 (2.6%)
3	Is there a formal written safety guideline on the construction site?	66 (85.7%)	11 (14.3%)
4	Is a budget for a safety system allocated by top management?	59 (76.6%)	18 (23.4%)
5	Is your project's safety-related work being audited on a regular basis while it's being built?	59 (76.6%)	18 (23.4%)
6	Is your building project site equipped with first aid kit and first responders?	75 (97.4%)	2 (2.6%)
7	Is proper supervision by safety-trained workers carried out on your project?	65 (84.4%)	12 (15.6%)
8	Are all injuries and fatalities been documented and reported to the construction company?	70 (90.9%)	7 (9.1%)
9	Is there any follow-up or contribution from a governmental or non-governmental entity to improve safety in building projects?	68 (88.3%)	9 (11.7%)

Source: Own Survey, 2022

The existence of the above nine safety management factors demonstrates the strength in safety management and there absence in implementation shows a weakness in safety management. In the above table the “Yes” response shows the implementation of that particular activity and “No” shows the activity is not implemented. Based on the response it was found that some of the strengths of safety management practice were: 97.4% of the layout of most sites was safe for workers, 97.4% of building project site were equipped

with first aid kit and 90.9% of all injuries and fatalities had been documented and reported to the construction company. The above three factors are the highest strength of the construction firms. In contrast, the weakness are 41.6% of the sites did not have a safety officer, 23.4% of the sites did not have proper budget for a safety system allocated by top management and the project's safety-related work was not being audited on a regular basis while it's being built.

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CHAPTER FIVE:

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This study's last chapter contains a summary of the findings gathered from the responses to the research questionnaire. The research question's conclusion based on the data, as well as the recommendation for current safety measures, is presented along with future study proposals.

5.2 Summary of findings

Construction has a reputation for being a hazardous industry. According to empirical studies revealed that when compared to other industries throughout the world, the industry has a dismal safety record. The major conclusions of the study are summarized below.

From the mean response, accidents in Addis Ababa are caused by management/employee ignorance (3.3), carelessness (3.3), followed by lack of communication (3.17), lack of training and education (2.84), and finally bad working conditions and environment (2.09), according to one responder.

According to the data obtained from construction projects,

- Half of them lack a safety engineer to guide and mobilize the entire team in terms of safety precautions.
- All projects are doing well in terms of having a proper first aid kit in case of an accident, more than half of them are providing Personal Protective Equipment (PPE) to their employees.
- Falling from scaffolds and ladders (3.93), Bad working positions (3.31), Being struck by falling objects (3.06), and falling from working height (3.1) are common workplace injuries. Fallings account for a large number of accidents on building sites, as shown in this figure.

- Crush injuries in excavation work
- Noise (2.27), exposure to hazardous substances (chemical and biological) (2.09), and structural failure on construction sites are the three most common accidents (2.17).

5.3. Conclusions

The safety management practice in Addis Ababa building projects was examined using a discussion of the findings, the findings of this research, and a survey of related literature. The questionnaire aided in answering each research question and fulfilling the general and particular objectives of the study.

According to construction site data gathered from the questioner, 58.4 percent of contractors do not have a safety engineer on staff, and the majority of them do not perform on-site clinics. This indicates that the majority of the firm does not prioritize worker safety. The primary causes of construction site accidents include carelessness, ignorance, bad working conditions and surroundings, and a lack of knowledge and training. This illustrates that most accident causes may be reduced by implementing appropriate safety measures by both the building business and individual personnel. The workplace environment and the availability of first-aid supplies for safety inspections have a major influence on safety.

5.4. Recommendation

Given that the construction industry is risky and complex, it is reasonable to assume that these risks will affect and influence the productivity of construction. The research identified inadequate safety practices in grade one construction projects in Addis Ababa City. The recommendations below are intended to assist construction companies in implementing safety measures and reducing accidents.

- ❖ Construction companies are responsible for informing, educating, teaching, and raising awareness among their workforce about the causes and consequences of on-the-job accidents to themselves, their families, the project, and society as a whole.

- ❖ This study recommended protected edges, safe access, and secure edge protection, as well as the use of adequate scaffolding with good edge protection, to decrease falls from height.
- ❖ Construction companies should pay close attention to issues that have a significant impact on the project's safety performance.
- ❖ Because overhead and underground power transmission lines are seriously dangerous, it is critical that the construction crew keep a safe distance from them, that all lines are grounded, that all construction electrical products are insulated with sleeves, and that all heavy equipment is de-energized when not in use.
- ❖ A documented safety plan may also motivate employees to achieve and maintain your organization's safety objectives. When you create a safety and compliance culture, you may not only save money on missed work time and insurance claims, but you may also experience an improvement in productivity since less time is spent resolving safety-related issues.
- ❖ When completed effectively, an audit may assist in identifying and correcting regulatory shortcomings, which can enhance workplace safety and help decrease liability. Audits may be used to raise employee knowledge and comprehension of environmental and safety standards, as well as to demonstrate your company's commitment to compliance. Regulatory bodies may regard workplace audits positively. A comprehensive audit with appropriate follow-up might indicate that your organization is making a good-faith attempt to comply with applicable regulatory obligations. Thus, companies should audit their safety related work.
- ❖ Health and safety managers can gain a better understanding of the risks posed to workers and the strategies that must be implemented to prevent construction accidents by taking a proactive and thorough approach to audits and reporting.
- ❖ Contractors should consider about the financial, social, and political advantages of incorporating safety management into their projects.
- ❖ Contractors must keep accident records on the worksites and keep track of all types of accidents, from small scrapes to severe and deadly accidents, and submit reports to the top-level managers. When new workers begin work, they must get safety training, which should include topics such as first aid and fire safety. If

hazards alter, new training must be offered, as well as refresher training if skills are not utilized regularly.

- ❖ The contractor must ensure that all personnel are using personal protective equipment (PPE).
- ❖ Contractors should train personnel, develop a safety culture in them, and educate them on how to avoid risk and safely operate construction equipment. They should also use proactive and continuous learning ways to manage project workers' safety. Furthermore contractors should continuously brief their labor Force to maintain proper safety procedures on sight and this can be achieved through repetitive teaching.
- ❖ Contractors should train employees, develop a safety culture in them, and teach them how to avoid danger and operate construction equipment properly. They should also employ proactive and continuous learning methods to manage the safety of project personnel. Additionally, contractors should continually train their labor force to ensure that correct safety protocols are followed on the job, which may be accomplished through repeated training.
- ❖ During the construction process, contractors should conduct a regular safety meeting.
- ❖ The government should create the safety administration, with penalties for anyone who violate safety regulations. The government should monitor construction site safety by visiting the site and analyzing the safety performance throughout the project. The government should offer yearly safety training on how to improve safety performance on construction sites for personnel in charge of safety in construction projects.
- ❖ On a regular basis, the government should establish a mechanism for monitoring the competency of inspectorate from the labor office and empowered related ministry personnel.
- ❖ The government should take the lead in enacting and implementing applicable laws by allocating adequate resources.

5.5 Future work

- ❖ It is possible to do research into how safety-related issues affect the cost, schedule, and quality of a construction project
- ❖ Various safety management researches may be undertaken in other construction industries such as highways and dams.
- ❖ Research can also be conducted on other grades.

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Appendix I

ADDIS ABABA UNIVERSITY

Faculty of Business and Economics

School of Commerce MA Thesis Questionnaire

Dear Participants;

My name is Samuel Wagaye. I am an MA student in project management at Addis Ababa University School of Commerce. The purpose of this questionnaire is to gather information on "Assessment of Safety Management Practices in Building Construction: The Case of Grade 1 Contractors in Addis Ababa." The questionnaire invites you to respond to questions based on your own experience and knowledge.

As a result, I kindly ask that you complete the questionnaire, which will greatly aid my research. I guarantee you that this is a strictly academic study, and your comments will be kept private. Please provide the requested information as soon as possible. Your knowledge of the construction business and education would be extremely valuable to the success of my research, and I feel that this type of research will be beneficial to the development of the Ethiopian construction sector. As a result, I respectfully urge that you respond to each and every question.

Thank you for your invaluable time and cooperation in advance.

Regards,

Samuel Wagaye

Tel: 0911-603746

E-mail: samuelwagaye@gmail.com

May, 2022 - Addis Ababa

Part One: General Information

Mark “√” on the space provided

Code -----

Company profile

1. Name of the company

2. Origin of the company:

Local Contractor Foreign Contractor

3. Grade One Contractor Category:

Building Contractor General Contractor

4. Workers on the site on average

1-25 25-50 50-100 >100

5. Site Sub city: _____

Information about respondent

6. Which of the following best describes your job?

Safety engineer Project Manager Forman Project Engineer

Others.....

7. Respondent's educational background

PhD MSc/MA Degree Diploma Others.....

8. How many years of working experience do you have?

1 -3 4-6 7-9 10-15 >15

Part Two: Questions related to safety

9. Which of the following accident reasons adds the most to the occurrence of accidents?

Legend: 1=Never, 2=Rarely, 3=Sometimes, 4= Often and 5= Always

No	Root causes of accident	1	2	3	4	5
1	Working conditions and environment are in poor shape					
2	Lack of training and knowledge					
3	Lack of Communication					
4	Carelessness					
5	Ignorance					
6	Working conditions and environment are in poor shape					

10. In which stage of construction do you think the majority of accidents happen because of a lack of safety?

Legend: 0 = No accident, 1 = Minor Impact, 2 = Moderate Impact, 3 = High Impact

No	Stages of construction	0	1	2	3
1	Preparation , demolition and clearance of the site				
2	Excavation and foundation installation				
3	During Structural work				
4	During Roof work				
5	During Finishing works				

11. Does your firm offer free personal protection equipment to employees or workers?

No	Personal protective equipment (PPE)	Yes	No
1	Provide Vest		
2	Provide Eye goggles		
3	Provide Safety helmet		
4	Provide Protective gloves		
5	Provide Safety shoes		
6	Provide Ear protective		
7	Provide soap, water, and paper towels		
8	Respiratory Protection		

12. Rate the level likely causes of accidents that occur regularly.

Legend: 5=major cause of accident). Please list and rank other cause which you feel are left out. 1=Never, 2=Rarely, 3=Sometimes, 4= Often and 5= Always

No	Frequency of accidents	1	2	3	4	5
1	Accidents during excavations (Slides, collapse, not shored...)					
2	Falling from scaffolds and ladders					
3	Electric, Fire, and Explosions accidents					
4	Exposure to hazardous substances					
5	Being struck by falling object objects					
6	Tools and Machinery (Drilling, Grinding, Bending...etc.)					
7	Structural Failure on Construction Site					
8	Bad working positions					
9	Noise					
10	Bad weather condition					

13. Strengths and weaknesses of safety management in grade one contractors.

No		Yes	No
1	Does the site have a safety officer?		
2	Is the layout of the site safe for workers?		
3	Is there a formal written safety guideline on the construction site?		
4	Is a budget for a safety system allocated by top management?		
5	Is your project's safety-related work being audited on a regular basis while it's being built?		
6	Is your building project site equipped with first aid kit and first responders?		
7	Is proper supervision by safety-trained workers carried out on your project?		
8	Are all injuries and fatalities been documented and reported to the construction company?		
9	Is there any follow-up or contribution from a governmental or non-governmental entity to improve safety in building projects?		