STUDY OF SAFETY PRACTICE AT CONSTRUCTION SITE IN AFGHANISTAN

BY

SAMIULLAH GHAFURI

A dissertation submitted in fulfilment of the requirement for the degree of Master of Science in Building Services Engineering

Kulliyyah of Architecture and Environmental Design
International Islamic University Malaysia

MAY 2022

ABSTRACT

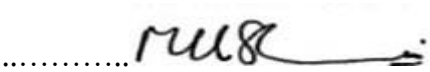
The importance of a safe construction strategy at Afghanistan building sites is not an overstatement. It plays a critical role on project delivery timeliness. Although good construction safety management is vital, the literature reveals that safety lacks serious attention in the Afghanistan construction industry. As a result, the goal of this study was to evaluate safety practices in building construction sites in Kabul. Its objectives include determining the current safety practices at construction sites, investigating the level of safety performance in the construction industry, identifying the types of accidents that occur in the industry in Afghanistan, and identifying areas which can improve safety practices. The survey questionnaire and case study were used to obtain data. A total of 55 questions were asked from 120 contractors, with 12 building companies' construction sites in Kabul targeted. However, only 52 individuals responded to the survey. The quantitative descriptive statistics in Microsoft Excel and the Statistical Package for the Social Sciences (SPSS) were used to analyse the data. The findings show that Kabul's safety practices in building construction sites fall short of expectations, as the current safety practices in Afghanistan's construction industry is deplorable. Most of the companies do not practice effective safety management, and although the majority of contractors are informed and aware of safety concerns, they do not apply safety practices in building construction. This is due to the lack of upper management control and monitoring. The absence of any safety training as well as policy is absent in some companies. Similarly, meetings held at construction sites rarely touched upon the matter of safety. This study further finds that the effect of the natural environment, illiteracy, and a lack of skilled labour on safety and three other vital aspects influence safety performance throughout construction. Additionally, the study identifies the types of accidents in construction sites. They are deaths, permanent inability, partial inability, and light injury. The result shows partial inability recording the highest percentage of calamity in construction sites by 69.2%. This is attributed to the lack of safety training, lack of skilled labour, lack of the employment or presence of a safety officer, lack of safety policies, lack of personal protective equipment, and lack of experience in using the equipment. Therefore, practical safety training, allocating funds for safety management, and imposing penalties on workers who violate safety rules and regulations are the suggested measures to improve safety in construction sites in Afghanistan.

خلاصة البحث

إن أهمية وجود استراتيجية بناء آمنة في مواقع البناء في أفغانستان ليست مبالغة في تقديرها. بل إنها تلعب دورًا مهمًا في توقيت تسليم المشروع. على الرغم من أن الإدارة الجيدة لسلامة البناء أمر حيوي ، إلا أن الأدبيات تكشف أن السلامة تفتقر إلى الاهتمام الجاد في صناعة البناء في أفغانستان. نتيجة لذلك ، كان الهدف من هذه الدراسة هو تقييم ممارسات السلامة في مواقع تشييد المباني في مدينة كابول. وتشمل أهدافها تحديد ممارسات السلامة الحالية في مواقع البناء ، والتحقيق في مستوى أداء السلامة في صناعة البناء ، وتحديد أنواع الحوادث التي تحدث في الصناعة في أفغانستان ، وتحديد المجالات التي يمكن أن تحسن ممارسات السلامة. تم استخدام استبانة المسح ودراسة الحالة للحصول على البيانات. تم طرح مجموعه من الاسئلة مكونة من ٥٥ سؤالاً موجها الى ١٢٠ مقاولاً ، مع استهداف ١٢ موقع بناء لشركات البناء في كابول. ومع ذلك ، استجاب ٥٢ فردًا فقط على الاسئلة. تم استخدام الإحصاء الوصفي الكمي في برنامج Microsoft Excelوالحزمة الإحصائية للعلوم الاجتماعية (SPSS) لتحليل البيانات. تظهر النتائج أن ممارسات السلامة في كابول في مواقع تشييد المباني لا ترقى إلى مستوى التوقعات ، حيث أن ممارسات السلامة الحالية في صناعة البناء في أفغانستان مؤسفة جدا. لا تمارس معظم الشركات إدارة فعالة للسلامة ، وعلى الرغم من أن غالبية المقاولين على علم ودراية بمخاوف السلامة ، إلا أنهم لا يطبقون ممارسات السلامة في تشييد المباني. ويرجع ذلك إلى عدم وجود رقابة ومراقبة من الإدارة العليا. غياب أي تدريب على السلامة وكذلك السياسة غير موجود في بعض الشركات. وبالمثل ، نادراً ما يتم التطرق إلى الاجتماعات التي تُعقد في مواقع البناء بشأن مسألة السلامة. كما توصلت هذه الدراسة إلى أن تأثير البيئة الطبيعية والأمية ونقص العمالة الماهرة على السلامة وأخرى الحيوية التي تؤثر على أداء السلامة في جميع مراحل البناء. بالإضافة إلى ذلك ، تحدد الدراسة أنواع الحوادث في مواقع البناء. إنها حالات وفاة وعجز دائم وعجز جزئي وإصابة طفيفة. وأظهرت النتائج عدم قدرة جزئية مسجلة أعلى نسبة كارثة في مواقع البناء بنسبة ٦٩.٢٪. ويعزى ذلك إلى نقص التدريب على السلامة ، نقص العمالة الماهرة ، نقص التوظيف أو وجود ضابط سلامة ، نقص سياسات السلامة ، نقص معدات الحماية الشخصية ، ونقص الخبرة في استخدام المعدات. لذلك ، فإن التدريب العملي على السلامة ، وتخصيص الأموال لإدارة السلامة ، وفرض عقوبات على العمال الذين ينتهكون قواعد وأنظمة السلامة هي التدابير المقترحة لتحسين السلامة في مواقع البناء في أفغانستان.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Science in Building Services Engineering.



Mohd Shariffudin bin Ibrahim
Supervisor

……
Azrin Bin Mohd Din
Co-Supervisor

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Science in Building Services Engineering.

……
Julian Binti Osman
Internal Examiner

This dissertation was submitted to the Department of Quantity Surveying and is accepted as a fulfilment of the requirement for the degree of Master of Science in Building Services Engineering.

……
Sharifah Mazlina Syed Khuzzan
Head, Department of Quantity Surveying

This dissertation was submitted to the Kulliyyah Architecture and Environmental Design and is accepted as a fulfilment of the requirement for the degree of Master of Science in Building Services Engineering.

……
Abdul Razak Sapian
Dean,
Kulliyyah of Architecture and Environmental Design

DECLARATION

I hereby declare that this dissertation is the result of my own investigation, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at the International Islamic University Malaysia or other institutions.

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ACKNOWLEDGEMENTS

In the name of Allah, The Most Gracious. The Most Merciful. All praises be to Allah (SWT) who gave me chance, time, strength, courage and patience to complete this dissertation successfully.

My sincere appreciation goes to my supervisor, Ir. Mohd Shariffuddin bin Ibrahim for his guidance, encouragement as well as for the academic and moral support. His invaluable help of constructive comments and suggestions have contributed to the success of this research. I am extremely indebted to him who willingly devoted so much time in giving guidance to me.

I wish to express my appreciation and thanks to those who provided their time, effort and support for this project. To the members of my dissertation committee, thank you for sticking with me.

Lastly, my gratitude and sincere thanks goes to my love (the light of my two eyes) and family members, especially my lovely mother for her prayer, support and encouragement, and also not to forget – my brothers who encouraged and helped me tremendously to accomplish this goal.

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LIST OF ABBREVIATIONS

DOSH	Department of Occupational Safety and health
H&S	health and safety
HSE	Health and Safety Executive
hse	health, safety, and environment
ILO	International Labour Organisation
ISO	International Organisation for Standardisation
MUDA	Ministry of Urban Development Affairs
OSH	occupational safety and health
PPE	personal protective equipment
SHO	Safety and Health Officer
SP	safety practice

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This study focuses on safety practices in Afghanistan's construction project sites. The construction industry is an entire sector that helps grow the country's GDP (Gross Domestic Product). More construction projects have been completed over time to facilitate the development and expansion of the human population. However, in the construction sector, unforeseeable accidents can occur during the construction process. Thus, the lives of the labourers are at risk. According to the International Labour Organisation (ILO), the activity in question should be safe. Labour environment on the building site should not jeopardise the life, health, or professional skills (International Labour Organisation, 1995). Unfortunately, in most developing countries, safety practice in construction has not received much attention from the management level (Le, Shan, Chan, and Hu, 2014). This because such countries lack safety regulations. In China, for example, the building business has a higher death toll than coal mining (Shuai & Li, 2013). General safety practice is one of the massive issues facing Afghanistan's construction industry. Construction workers can be injured or killed due to inadequate safety management and a failure to control safety during construction activities. As a result, good safety management is essential to avoid injuries and deaths.

The research will describe the research aims and objectives and the methods used in a later chapter. The scope and limitations of the research have been established in this research to guarantee a comprehensive study direction on a well-defined

methodological approach. In this study, the researcher looks at safety procedures in the building construction project in Afghanistan. The research therefore illuminates construction safety practices, types of construction events, and essential aspects that influence safety performance at construction sites in Afghanistan. This chapter will be ended with reasonable conclusions and recommendations.

1.2 BACKGROUND

Construction projects are the various processes that involve during constructing a building or infrastructure. It begins with project preparation, structure, and funding and ends with project completion. Dams, bridges, refineries, highways, and power plants all require diverse engineering skills that include:

- infrastructure design and implementation
- environmental effects on the local area
- project scheduling
- construction-site protection

Indeed, safety practice remains a problem and a challenge for scholars and scientists. Because of the construction industry's dismal record on safety, both society and the economy in Afghanistan have suffered human and financial losses. The Guide to the Project Management Body of Knowledge recognises safety practice as fundamental knowledge in the project management field (PMBOK Guide, as cited from Cretu et al., 2011)

Incidents and situations that could put project personnel in danger must be considered by health and safety management. However, in hazardous situations, such as the construction industry, where everyday tasks are dangerous, H&S plays a vital

role. As a result, it is critical to define appropriate safety practices and strategies, considering the possibility of significant H&S issues (Twort & Rees, 2011).

According to Khalid (1996), robust safety systems would undoubtedly aid in the reduction of accidents on construction sites. It will also reduce construction costs, boost efficiency and benefit, and, most importantly, it can save workers' lives. As a result, it would positively impact the construction industry and the country as a whole.

Construction sites are typically complex and often dangerous to staff and the community. Because of the high amount and diversity of injuries, it is among the most dangerous workplaces (Guo, Li and Li, 2013). As a result, construction safety accounts for the most critical performance in the construction industry worldwide, particularly in massive undertakings. This is due to the project's large workforce, modern construction techniques, several techniques and expensive factories, a large number of materials and equipment used, complex construction activity, multi-interface, and multiple disciplinary aspects, as well as the project's large workforce and modern construction techniques (Guo, Li and Li, 2013). All of these factors contribute to a higher rate of construction-related accidents (Guo, Li and Li, 2013). Falling workers from the top floor crash collapse and electric shock are among the most common types of injuries, falling from great heights and collisions being the most common (Guo, Li and Li, 2013).

The lack of safety practice in the workplace is the leading cause of injuries and accidents, especially in high-risk sectors such as construction (Choudhry, Fang, and Mohamed 2007; Cooper, 2000). Scholars have been paying more attention to the idea of safety culture in recent years, owing to its critical position in reducing injuries and deaths on construction sites (Choudhry, Fang, and Mohamed 2007; Cooper, 2000). In

hazardous areas, such as construction sites, safety practice is linked to accidents and injuries.

1.3 PROBLEM STATEMENT

Safety practice in Afghanistan has become a focal point for all industries and has gotten much attention in recent years, especially in the construction industry. According to Choudhry et al. (2007), safety practice is the most critical factor that affects employee attitudes and behaviours in terms of an organisation's overall safety efficiency. Since safety practice is inextricably linked to the organisation, it has attracted a diverse range of industries.

Afghanistan has had the misfortune of living through decades of civil war, which resulted in tragedies and badly harmed the country's infrastructure. The building construction sites have been insufficiently steady to support sustained growth. Regrettably, the building construction project in the country has been severely wounded by violence and a lack of authority. Nevertheless, the construction industry began to re-establish itself gradually following the formulation of a new government in 2002.

The problem with construction sites in Afghanistan is that although many contractors are supposed to follow the contract safety rules, they infrequently do so, causing widespread injuries and fatalities among construction workers. Worse, there is an absence of government records to document statistics on severe injuries and deaths. Companies tend to persuade wounded workers not to file claims as it will jeopardise their chances of landing a new contract Amiri and Hamidi (2015). In this case, the contractors will pay the workers a small amount of money as a bribe. As most workers

are poor, they always would accept the offer Amiri and Hamidi (2015). Assessing the safety practices at construction sites in Afghanistan is an essential step in identifying possibilities for enhancing safety efficiency and, as a result, enhancing an organisation's potential success. There is a significant need to recognise how safety practice affects construction safety efficiency, including their safety behaviours (Ibrahimkhil, 2017). Construction sites in Afghanistan is regarded as one of the most dangerous places to operate.

Special Inspector General for Afghanistan Reconstruction (SIGAR) identified multiple violations of safety requirements during the construction of a high school in Kapisa province in 2009. Workers reported the absence of Personal Protective Equipment (PPE) such as head, eye, and hand protection, despite safety standards explicitly specified in the contract. The simple use of PPE within working hours was frequently ignored, resulting in a slew of safety issues for numerous projects in terms of time, money, and human lives lost (Mittal, 2016).

It will take time and effort to efficiently monitor the safety output of employees who conduct challenging and hazardous work. Studying safety practices as a significant indicator of safety success will add to our understanding of construction health and safety practices. Studies have shown that promoting safety practices fosters management processes and reduction strategies focused on increasing organisational engagement and awareness of safety, contributing to improved preparedness for unsafe situations (Pidgeon, 1998).

Safety concerns are only addressed once an incident happens at a construction site, with subsequent initiatives to enhance the workplace, particularly in the developing world. Therefore, proper and effective safety practice in the construction industry is critical. Similarly, it is important to identify a method for assessing

construction safety practice using a proposed practical safety assessment. A survey of people involved in construction projects will investigate essential factors that influence construction safety performance. The purpose of this work is to look at how building construction site management can improve protection. Essentially, the proposed structure could aid construction safety practices. The number of accidents can minimise when safety factors are well-handled. As a result, this study aims to evaluate safety practices within construction project sites in Afghanistan to set goals for safety practices growth and shed more light on areas where safety improvements are required.

1.4 SIGNIFICANCE OF STUDY

Many construction companies do not follow a systematic approach to construction safety. As a result, building site injuries continue to be in the news. In this case, the seriousness of the problem threatens human life by failing to adopt appropriate safety practises in Afghanistan's construction industry.

1.4.1 Towards the Construction Industry in Afghanistan

The conclusions of this research assist for the government and organisations associated with building construction safety projects and improving safety practices in the construction industry. The research findings could also assist Afghanistan's construction companies in properly managing safety during construction projects, which encourages them to create guidelines and restrictions to practice safety in the right way.

1.4.2 Towards Society and Community

This project will increase community awareness of the reasons for the poor safety practices on construction sites, encouraging them to reduce the issue. Furthermore, this will increase public perception of the activities in the environment and safety practices on the project site.

1.5 RESEARCH AIM AND OBJECTIVES

The aim of this thesis is to assess the safety practice of construction of building in Afghanistan.

The objectives of this research are:

1. To determine the current safety practices at construction sites in Kabul, Afghanistan.
2. To identify the types of accidents in the construction industry in Afghanistan.
3. To examine the factors influencing safety performance in Afghanistan's construction industry.
4. To suggest areas to improve safety practice in the country's construction industry.

1.6 RESEARCH QUESTIONS

1. What are the current safety practices at construction sites in Kabul, Afghanistan?
2. What are the types of accidents in the construction industry in Afghanistan?
3. What are the factors affecting safety performance in Afghanistan's construction industry?

4. What are the strategies to improve safety practice in the country's construction industry?

1.7 SCOPE OF STUDY

The focus of this research is on building construction site safety practices. This research will attempt to place safety practices in building construction projects as a critical component of project performance and progress. The focus of the research will be on a case study on building construction project sites in Afghanistan.

1.8 STRUCTURE OF THE DISSERTATION

This research report has five chapters. Thus, as a result, the structure is described below, along with a brief overview of the research.

Chapter One: Introduction

The introduction, historical background, statement of the problem, research questions, study objectives and goals, and other related analytical issues are covered in the first chapter.

Chapter Two: Literature Review

The second chapter focuses on the literature review. In this chapter, different perspectives will be analysed from the literature on construction project sites.

Chapter Three: Research Methodology

The research methods used in the data collection and analysis process will be discussed in the third chapter.

Chapter Four: Findings and Analysis

The data gathered are thoroughly explained in this chapter in order to solve the research questions. The collected data will be analysed to find the cases of improper safety practices at construction sites in Afghanistan.

Chapter Five: Conclusion and Recommendation

The study's overview of results, conclusion, and recommendations are all contained in the last chapter. There will be possible solutions and suggestions to eliminate or minimise accidents during the construction at project sites in Afghanistan.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

Safety is the state of not being in danger or at risk or the practice of taking safety precautions or actions to guarantee that something is safe (Dictionary of Human Resource and Personnel Management, 2003).

The primary purpose of conducting a literature review is to gather data about the research subject. The word ‘safety’ is a regular terminology in many construction projects in any country. As a result, safety practice stresses the importance of ensuring the implementation and enforcement of safety at worksites are carried out with significant commitment by all construction practitioners. It is therefore not just a term. Workplace injuries are typically caused by a lack of expertise and monitoring, a shortage of means to perform a task safely, mistakes in judgment, carelessness in decision-making, or absolute lack of responsibility (Wang, Zou and Li, 2016). Furthermore, the lack of a regulated working atmosphere and the complexity and variety of organisational sizes have impacted companies’ safety efficiency (Muiruri & Mulinge, 2014). Also discovered are insufficient safety procedures, non-compliance with laws, a lack of experience, and unskilled employees which contribute to unforeseen construction project incidents.

Construction has the highest rate of incidents, including fatalities and disabling injuries, of any industry in the world(Priyadarshini, 2013). Many attempts have been made to mitigate the issue, but the results are far from acceptable, as construction

accidents remain the most common cause of death and injury (Priyadarshani, 2013). Despite numerous national federal programmes and private sector initiatives, the majority of construction incidents stay shockingly high. These efforts are insufficient to reduce the number of dangerous activities and unsafe working conditions at work sites.

The distinction between appropriate and unacceptable actions on construction sites must be spelt out and recognised for safety culture practices to be successful. An effective safety culture programme should concentrate on reducing site injuries by having practical engineering of vital elevator lifts, stopping falls from heights, being hit by a moving vehicle, trench collapse, and being exposed to hot or hazardous substances, among other items (Reason, 1998).

According to Idoro (2004), construction site damages and incidents are substantially greater in developing countries than in European nations. In many other developing nations, safety does not prioritise construction projects, and enforcing safety measures on the job is a burden (Mbuya, 1996).

2.2 CONSTRUCTION SAFETY RESEARCH IN AFGHANISTAN

After creating a new regime in 2002, several scholars from various fields have begun publishing their research in international journals. While these research studies cover a wide range of subjects, only a few are essential to safety performance. As a result, the following are the minimal significant research related to safety in the Afghan construction industry that has been found to date.

Amiri, Darvish, Akbar, and Sarafrazi (2016), investigated construction site safety and health management. This study surveyed a total of 80 contractors. According to the report, construction managers and engineers are ignorant of safety management, and two-thirds of construction workers do not attend safety training workshops. In

another study, a standard safety manual in the Afghan construction industry was investigated by Amiri and Hamidi (2015). The research focused on an analysis of contract documents and interviews with several construction professionals in the provinces of Kabul and Herat. According to the study's finding, the country has yet to produce a standard safety manual.

Amiri and Hamidi (2015) conducted a report on the infrequent use of Personal Protective Equipment (PPE) on construction sites by construction workers. In the province of Herat, the answering community consisted of 64 labourers. The study's results indicate that employees seldom use PPE due to a lack of a dedicated budget, the owner's lack of dedication to provide it, labourers' lack of interest, and poor safety culture.

2.3 IMPORTANCE OF SAFETY AT CONSTRUCTION SITES

The construction team should make safety a top priority on the job site. Each group member must take responsibility for ensuring that the safety and health rules are followed. The importance of construction site protection is expected to be a significant concern for all key stakeholders who are directly involved in the construction industry.

The Department of Labour's Office of Safety and Health Malaysia (DOSH) (2008) emphasises the importance of strong safety culture at construction sites. Consistency is the most critical consideration. Better work methods, lower absenteeism, and increased organisational efficiency are all benefits of safety. Following that, protection would increase by reducing the likelihood of human error and implementing a better monitoring and feedback system. Aside from that, workplace safety has a positive effect on employee commitment and loyalty.

Accident prevention is one of the essential parts of construction site security. Site protection is the prevention of accidents. According to Holt (2001), the advantage of accident prevention is that it strengthens the workers' attitude by active involvement in the accident programme. In addition, workers' efficiency and cost savings can also benefit from increased protection (Ahmad, 2008). When the staff is conscious that the construction site is secure and comfortable to work in, they will be more motivated to work harder, which will reduce construction costs and heightening the probability for the work to finish on time.

2.4 SAFETY PRACTICES IN CONSTRUCTION INDUSTRY

The construction industry had a relative higher number of injuries compared to other industries. This problem is faced by many countries in the world. Based on current statistic released throughout the world and also from the past historical perspective it is clear that safety in construction always been a matter of concern (Paringga 2010). Therefore, it is important to review the safety practice at construction site.

There are several researchers who have done studies on the construction safety practice. Below are the following practices.

2.4.1 Organisational Safety Policy

At the company, there is a code of conduct that is specific to its operations and activities. The executive board of each corporation will determine the contents of the safety policy. Different organisations typically have additional safety measures, but the overall content is the same. The contents of all the company's safety policies stress the leading players' duties to prevent incidents from occurring. Both construction

firms aim to maintain a safe and incident-free workplace. The safety policy aims to highlight the organisation's mission concerning safety issues (Keng & Razak, 2014).

2.4.2 Safety Training

Safety training is one of five high-impact zero-accident strategies defined by (Liska, Goodloe and Sen, 1993). An effective safety policy can accomplish if all workers are provided with frequent instructional and training programmes to develop their awareness and skills in workplace safety. Various approaches, such as worker orientation, safety induction, toolbox talks, and communication systems, may be used to perform these training sessions. Worker rights and obligations, fall from height in bridge building, box or slab culverts, personal protective equipment, first aid and emergency measures, confined space entry, and other topics may be covered. They may be updated information or simply a refresher on the subjects. They additionally include equipment teaching on visibility in moving around equipment and vehicles, taking all precautions for their own and others, and various other subjects (Hinze & Gambatese, 2003).

2.4.3 Safety Incentive and Penalties

According to Hinze and Wilson (2000), rewards aim to provide positive attention to a positive goal. Safety rewards intend to influence worker behaviour by encouraging and rewarding safer worker efficiency. According to Hinze and Gambatese (2003), among the different protection measures that businesses use to promote workplace safety, safety rewards are the most commonly implemented.

2.4.4 Safety Awareness

Security and health awareness are essential for raising consciousness about the significance of safety procedures. awareness is described as work designed or programmed for a specific behaviour's learning process (McIlwraith, 2021). Jobs are exposed to awareness of danger and the possibility of causing an accident through training and education. Workers would be aware of the measures to prevent injuries and practice a positive workplace environment indirectly. Safety awareness is one of five high-impact zero-accident strategies defined by Liska et al. (1993). According to Hinze and Wilson (2000), all of the respondents in their study agreed that worker training was critical for improved safety efficiency.

2.4.5 Workers' Attitude toward Safety

Attitude is the propensity to react positively or negatively to specific people, objects, or circumstances. Individuals vary in how they view threats and how willing they are to take them. If workers' attitudes toward safety are changed, adequate safety measures can be introduced (Aksorn & Hadikusumo, 2008).

2.4.6 Availability of Safety Equipment

Some construction accidents occur due to a lack of safety equipment required to conduct the job safely at the worksite (Toole, 2002). Duncan and Bennett (1991) examined the effectiveness of various fall prevention mechanisms. They concluded that both active (those preventing workers from falling, such as guardrails) and passive (those that protect workers after they have dropped, such as safety nets) effectively minimised fall injuries. In another study, Chi, Chang, and Ting (2005) looked at the causes of 621 fatal occupational falls. There were significant correlations

between the causes of falls and the occurrence of accidents. Falls are brought about by an absence of consistent frameworks, uneven spaces, lacking safeguards, the expulsion of security, and the inappropriate utilisation of Personal Protective Equipment (PPE) at the building site.

2.4.7 Personal Protective Equipment (PPE)

According to Ahmad (2008), providing personal protective equipment (PPE) for construction projects is essential. Correspondingly, Paringga (2010) accepted that providing PPE to construction workers is necessary to maintain a secure and stable working environment. Staff on the construction site require various personal protective equipment (PPE), including head, face, eye, ear, hand, and foot protection.

2.4.7.1 Head Protection Equipment

The chance of injury from falling objects exists at almost every job site. The protection helmet and the scalp protector, according to Paringga (2010), are the two styles of head protectors available. Both head protectors are designed to protect the head from elements such as the sun, rain, and impact. According to Ahmad (2008), a safety helmet aims to protect against both the impact of falling objects and eliminate the amount of high voltage pressure and burn. Aside from that, a scalp protector will shield people from bruises and bumps in confined spaces.

2.4.7.2 Face and Eyes Protection Equipment

Clear safety lenses, helmets, face shields, and full-face welding masks are examples of the face and eye defence equipment (Ahmad, 2008). These are essential to defend

against airborne objects because when using a nail gun and UV radiation from welding and chemical splashes.

2.4.7.3 Ear Protection Equipment

Ear protection is necessary when personnel are made public to on-the-job noise that could permanently damage their hearing. When working with noisy equipment like air nailers, chop saws, chainsaws, circular saws, routers, screw weapons, drills, and power belt sanders, staff must wear hearing protection. Moreover, the ear defender's device must be examined at least once a year to ensure that it is still reliable (Dorji & Hadikusumo, 2006).

2.4.7.4 Hand Protection Equipment

Contact with skin is a possible source of hazardous material exposure. It is thus essential to take the necessary precautions to avoid such contact. Gloves should be chosen based on the substance to treat, the specific danger involved, and their suitability for the procedure at hand. In some instances, only one form of glove should suffice. Chemicals, abrasions, cutting, and heat are the four primary hazard types for injuries involving hands and arms (Protection, 2012).

To care for the hands during construction, people need to consider some critical points, as follows:

- Do have guards in place and use them.
- Before making repairs, always lockout machines or equipment and switch off the gas.
- Do not wear rubber gloves around moving equipment such as belt presses, mills, lathes, and grinders if there is not a guard on the machine.

2.4.7.5 Foot Protection Equipment

In stores, warehouses, repairs, cagewash, glassware, and other safety and health manager areas, one must wear safety shoes (Protection, 2012). Safety shoes and socks are two types of foot security equipment. The safety shoes protect the feet from falling, injury from heavy object impact, and walking on a sharp object. Safety socks must also be worn to prevent sparks from entering the foot (Ahmad, 2008).

2.4.8 Safety Meeting

A safety meeting is a group at work that brings together all construction company members to discuss health and safety issues. The press conference aims to ensure that everyone in the building company knows the hazards (Holt, 2001). All construction companies can hold monthly or weekly safety meetings to raise safety awareness on the job site. Keng and Razak (2014) posit that all key players, including the contractor, architect, engineer, quantity surveyor, site supervisor, and all safety committee members, are required to attend this meeting. The briefing is usually chaired by a safety committee member, such as a Health, Safety, and Environment (HSE) Department representative. They will discuss current safety matters such as recent safety injury figures during the safety conference introduction to site safety procedures, activities and tasks to be performed, and other safety-related information.

In conclusion, this section discusses an illustration of a planning meeting and its objectives. If everyone on the construction team understands the purpose and critical goals of the safety meeting, everyone will benefit.

2.4.9 Safety Planning

Construction accident prevention requires careful safety preparation and worker actions geared toward improving their safety. Safety preparation is a personalised, actionable method for avoiding dangerous conditions and determining the best course of action when confronted with risk. Adequate training interventions, provision of personal protective equipment, and deliberate efforts by staff to ensure protection are all part of the safety planning process. Managerial principles mediate the majority of safety preparation on set criteria in ensuring that the rules are followed to provide a secure working atmosphere (Bahn & Barratt-Pugh, 2013).

2.5 CHARACTERISTICS OF THE CONSTRUCTION INDUSTRY

According to Hallowell (2008), the construction industry has three main features that directly impact construction safety. Each characteristic is discussed in the following subsections.

2.5.1 Fragmentation

The building industry's fragmentation is one of its distinguishing characteristics. Design-Bid-Build (DBB) has been the most used delivery technique in the United States. The construction manager is directly responsible for safety procedures in this technique. Designers have traditionally neglected to include safety culture because they lack appropriate training (Gambatese, 1998). According to Thomas et al. (2002), there is a difference in project and safety performance between Design-Build (DB) and Design-Bid-Build (DBB) projects, with DB projects having higher safety and project performance. In general, fragmentation within the construction safety industry arises from two areas within the traditional construction process. The construction

work process where the most significant division is in the separation of the design and construction phase, and the construction structure itself.

2.5.2 Dynamic Work Environment

Construction jobs are not as repeatable as industrial jobs. Building work is dynamic because each job site has its unique features. Construction workers are responsible for a wide range of assignments, and their next task will be on a different project. In a study, Hallowell (2008) compared the work conditions in manufacturing and construction. Hallowell found that repetition, task predictability, and task standardisation were high in manufacturing but low in building, explaining the differences in the fatality exchange rate between the two industries.

2.5.3 Safety Culture

According to Choudhry et al. (2007), following the Chernobyl disaster in 1986, a post-accident review meeting used the term "safety culture." Poor safety culture is widely recognised as an essential factor in accidents (Dester & Blockley, 1995). Although different researchers and organisations have characterised safety culture differently, the fundamentals are the same (Cooke & Rousseau, 1988). Furthermore, all agree that a safety culture is critical for companies to maintain operational safety (Glendon & Stanton, 2000).

2.6 ELEMENTS OF SAFETY MANAGEMENT IN ORGANISATIONS

In implementing safety management systems, each company has its concept and elements. By contrasting high and low injury firms, researchers have drawn the characteristics of a safety management framework (Eyssen et al. 1980; Smith et al.

1978). Many research studies have used accident analysis to remove effective safety management systems (Hurst et al., 1991). According to Choudhry et al. (2007).

By preventing and controlling occupational hazards, the number of injuries to personnel and operators can be reduced. Reducing the likelihood of significant injuries and managing workplace threats increase employee morale and boosts efficiency. Keeping output interruptions to a minimum and minimising material and equipment harm lower premium costs as well as the cost of employee absences. It further minimises the civil costs of injury lawsuits, fines, and emergency supply costs. The time needed to investigate accidents is also reduce, supervisor time reallocated, administrative work increased, and skills and experience reduced (Choudhry et al., 2007). The three critical parts of a safety management framework are as follows:

- Elements of administrative control
- Technical aspects of the operation
- The factor of culture and action.

According to the Overseas Territories Aviation Circular (OTAR), the expansive elements of a site safety framework include a safety policy, a clear statement of the management's proposal and purpose, and strategies for ongoing quality assurance at the operational level (Park & Kim, 2013).

2.7 ISSUES WITH SAFETY PROCEDURES

According to Charehzehi and Ahankoob (2012), any protective programme is focused on a strategy that emphasises employee safety. The proposal covers workplace safety as well as all other employment-related issues. The mindset of the employees is the biggest issue when it comes to construction site safety (Zuhairi et al., 2008). Because of ignorance, incompetence, carelessness, and impulsiveness, Krishnamurthy (2006)

discovered that most staff did not adequately wear Personal Protective Equipment (PPE). In addition, Mahalingam and Levitt (2007) researched safety issues in global projects. They discovered that one of the most critical safety issues in international projects was local contractors' and labourers' attitudes toward safety.

2.8 TYPES AND CAUSES OF ACCIDENTS

All hazards and mishaps that could potentially put project employees at risk are expected to be considered in safety procedures. Any workplace's health and safety (H&S) is critical to reducing such hazards legally and ethically, but in particularly risky environments, such as the construction industry, HS takes on a life-threatening relevance because the business's daily operations are extremely dangerous. As a result, it's critical to develop appropriate safety activities and strategies, considering the possibility of major H&S issues (Twort and Rees, 2011).

Construction projects pose a significant risk to employees' lives, according to previous study, and serious injuries and fatalities are common in the construction business.

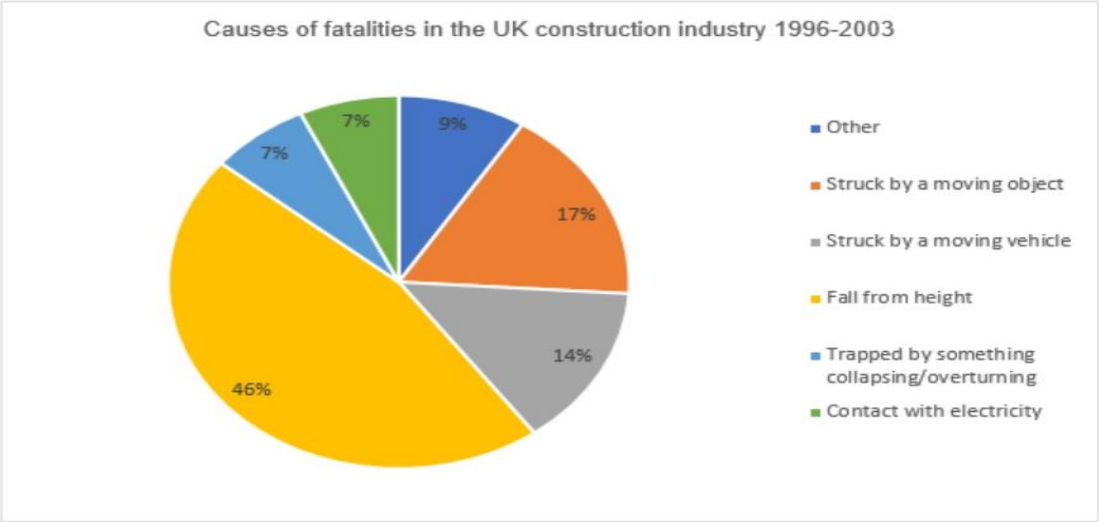
As a result, building site accidents are mostly caused by hazardous human conduct (i.e. individual variables) and/or risky working environment (i.e. system factors). Furthermore, it is evident that there is a severe problem with falls, which is a concern that affects the entire building sector worldwide.

Accidents in the construction business have resulted in injuries and fatalities, and the industry continues to hold the unenviable position of being the industrial sector with the highest number of occupational accidents. As a result, improving H&S in construction is still an important priority for all participants in the construction process. To limit such risks, safety management is likely to consider all hazards and

incidents that could reasonably be considered to put project employees at danger. As a result, it's critical to establish appropriate safety actions and methods to address any major H&S issues.

2.8.1 Types of Accidents

An unanticipated incident that causes physical harm to a person or property damage," Peyton and Rubio (1991, p. 162) define accidents. Accidents can occur throughout the building and demolition process, resulting in injury to workers. During the site inspection and survey phase of a project, as well as the execution of project pieces, accidents might occur. From 1997 to 2003, Figure 2.1 shows the causes of fatal construction accidents in the UK in percentage terms. According to this pie chart, falls from large heights were responsible for half of the fatalities, while moving cars and objects were responsible for a third of the deaths. More people died as a result of electric shocks, collapsed buildings, and other causes (Sherratt, 2014).



Adapted from Howarth & Watson (2009)

Figure 2.1 Fatalities in the Construction Business in the United Kingdom (1996-2003)

2.8.2 CAUSES OF CONSTRUCTION ACCIDENTS

According to Scharffenberger and Lin (2014), unsafe work site circumstances were the primary cause of 10% of construction site accidents, with 90% of those incidents resulting from unsafe activity. Similarly, the HSE stated that human error is responsible for around 80% of all incidents in the UK (cited by Li and Poon, 2013). Furthermore, Peyton and Rubio (1991) stated that work-related accidents are caused by two basic mechanisms: unsafe working environments and risky conduct. In addition, a worker's state of mind, weariness, stress, or physical condition can all contribute to risky behaviour (Schaufelberger and Lin, 2014). In addition, according to Cheng et al., various factors such as insufficient and poor communication, subcontracting to irresponsible enterprises, lack of H&S training, and low educational level of construction crew members contribute to accidents (2004).

Some instances of accident causes identified by Schaufelberger and Lin (2014) include:

When a worker observes a potentially hazardous situation, he or she does nothing to address it (e.g. use of defective equipment such as a ladder).

Due to a lack of sufficient training, an employee may do work incorrectly or in a dangerous manner.

An accident could occur if a worker disregards the safety conditions. "Generic accident process models," "human mistake and dangerous behaviour models," and "human lesions mechanism models," according to Lehto and Salvendy (1991).

2.8.3 Falls accidents and injuries

The leading causes of deadly scaffolding erection and disassembly incidents, according to Griffith and Howarth, 2001, are platforms that lack edge protection. As a result, additional scaffolding studies are required to reduce and control the height number of incidents Rubio Romero et al (2013).

2.8.4 PROTECTIVE CLOTHING AND SAFETY EQUIPMENT

Protective clothes and the usage of personal protective equipment are vital for reducing the risk of on-site accidents. Employers are required by law to provide all employees with safety equipment and protective clothes, and employees have a responsibility to safeguard their own health and safety (Davies and Tomasin, 1990). Furthermore, employees on the building site must be overseen (by law) by a competent H&S supervisor to ensure that they follow the safety instructions to wear protective clothes in order to keep workers safe (Zin and Ismail :2012).

2.8.5 Emergency Support and Safety Measuring Devices

According to Ahmad (2008), an emergency test should be held only once in three months. A report on the emergency plans will be provided to all employees. When an emergency siren sounds, people are advised not to relax and are forced to leave their office. They must assemble in allocated safe areas, while withstanding wardens will register their participation, and the chief warden will brief them. Individuals are allowed to return to their workplace and continue work after the unexpected event has passed.

According to Permana (2007), emergency assistance and safety measuring devices include work injury records, medications and first aid, additional medical care, and protection systems, including smoke detectors, worker protections, and water tanks. All of these things are necessary for construction projects in the event of an emergency. It will lessen the dangers that can arise at building sites.

2.8.5.1 Safety Nets

Horizontal and vertical nets make up the structure of safety nets. Horizontal trapping is a net that stretches horizontally outward from the building for at least 10 feet to shield staff and the workplace from falling debris. It is mandatory for all construction areas that are taller than 75 feet or six floors. It replaces concrete structures that have been stripped and steel structures that have had their last foundation poured. To avoid material or debris from falling, vertical netting is erected around the perimeter of open-floor building sites. It is mandatory for all structures that are more than 40 feet tall and four stories tall (Padin, 2010).

2.8.5.2 Handrails and Guardrails

Handrails aid balance, and guardrails are needed to prevent falls through existing roof openings (Chi et al., 2005). On work platforms, there are three rails: the top rail, the mid-rail, and the toe track. These three railings aim to keep staff, debris, and materials from dropping (Padin, 2010).

2.8.5.3 Hole Cover

It is necessary to secure over holes at building sites, as Padin (2010) highlights. The most popular material for hole covers is a piece of cardboard. To keep all the workers safe during the construction, holes in the ground must be sealed. During construction and demolition, all voids must be filled.

2.8.5.4 Safety Belts

Safety nets, handrails and guard rails, hole covers, and safety belts are among the fall security systems discussed by Padin (2010) in his paper. Furthermore, fixed protections such as railings, guardrails, and hole coverings are categorised as primary standard precautions, while safety nets classify as secondary security measures (Chi et al., 2004).

Generally speaking, all of the safety equipment listed above are critical in preventing falls at building sites, particularly in the high-rise construction industry.

2.9 Factors Affecting Construction Safety Performance

In many nations (Muiruri and Mulinge, 2014), safety measures relating to the construction industry or project sites have been designed to ensure that construction sites or the industry do not provide an immediate threat to the public or project

personnel. Construction safety laws are also beneficial in ensuring that all finished products fulfil the required safety standards.

Several scholars have studied the construction industry's safety and discovered elements that contribute to poor project performance (Jazayeri and Dadi, 2017). For example, Liu, Jazayeri, and Dadi (2017) developed a weighted rating model to study the impact of construction clients (independent of the kind of project) on project site safety performance. The findings reveal that construction clients are not free from safety responsibilities, and that their involvement clearly adds to the overall safety performance of the construction industry.

Jannadi and Bu-Khamsin (2002) investigated the important aspects of safety performance in Saudi Arabian construction projects from the perspective of contractors. Management participation, personal protective equipment, emergency/disaster planning and preparation, ionisation radiation, scaffolding and ladders, crane and lifting equipment, fire prevention, electrical equipment, excavation, trenching and shoring, and mechanical equipment were the most important factors. Furthermore, Tam, Zeng, and Deng (2004) investigated the factors affecting construction safety performance in China and discovered that poor safety awareness among top executives, a lack of training, poor safety awareness among project managers, a reluctance to invest in safety resources, and reckless operations were the most pressing concerns. Furthermore, Abdul-Rashid, Bassoni, and Bawazeer (2007) found the elements influencing large contractors' construction safety performance in Egypt, including top-level management safety awareness, project manager safety awareness, and safety inspections by safety supervisors.

Furthermore, Hinze, Hallowell, and Baud (2013) examined 22 safety strategies used on construction sites in order to improve safety performance.

According to the findings of an empirical data analysis, the following safety actions distinguish safety performance: Worker observation programmes, employee safety perception surveys, first-aid injury tracking, supervisor involvement in policy development, active owner involvement in safety, site-specific safety training for managers, proper safety personnel, and other measures are all recommended.

Several research from diverse viewpoints have reported elements of a poor construction safety performance, according to a study of related literature.

Table 1.2 Factors Affecting Construction Safety performance

No	Factors
1	Lack of training
2	Lack of skilled labour
3	Poor equipment
4	Low-educated workers
5	Lack of technical guidance
6	Management dedication to safety systems is missing
7	Lack of experienced project managers
8	On-site inspection processes are lacking
9	There isn't a safety supervisor on site
10	There is no emergency plan or protocol in place
11	There is no way to tell if safety measures are being implemented
12	Activities that overlap
13	The system for maintaining and monitoring injury records is ineffective
14	There is a lack of a healthy working environment at building sites.

2.10 Strategies to improve safety practice in construction industry.

Each essential player must understand their role in completing their tasks. This is necessary to prevent unwelcome events, such as accidents, from occurring during the construction stage. As a result, they must adhere to all construction-site safety

procedures. However, there are various issues that could prevent the safety practices from being implemented. As a result, this section will explore techniques that can be used to address issues that prevent the application of safety measures at construction sites.

2.10.1 Enhancing the Law and Enforcement

Continuous enforcement against rogue contractors and personnel is necessary. It was discovered that in order to deter workers from repeating their wrongdoings, they should be punished (Mohd Khairolden et al, 2008). Warnings, charges of correction, seizure of legal revenue, charges to suspend production, temporary imprisonment, or even detention, according to Zhou et al (2011), should be applied on the organisation or any individual in control.

Furthermore, Chaikittiporn (2002) advocated the creation of an Occupational Safety and Health (OSH) certification system to improve the enforcement of OSH rules. As a result, all of the techniques examined can be adopted to address the issues with the authority's lack of enforcement. Furthermore, Abudayych et al (2006) recommended that workers participate in the development of safety policies with their coworkers. This is because employees will be more motivated to carry out the policy and enhance it as a result of personal responsibility and ongoing feedback.

2.10.2 Management Commitment

Misnan and Mohammed (2007) emphasised the importance of involving all members of the management team in the safety and health culture in order to promote positive beliefs, practises, norms, and attitudes among all stakeholders. Furthermore,

Abudayyeh et al (2006) stated that safety should be seen as a set of values and a culture, with explicit commitment from all levels of management.

Choudry et al (2008) found that putting safety materials on safety bulletin boards so that workers can read and comprehend them is one of the good practises used by team management to enhance safety and health. Aside from that, project managers might post statistics on project site accidents on safety bulletin boards. This is one of the things that managers may do to enhance worker safety and health.

2.10.3 Allocation of Budget for Safety Practice

The majority of safety procedures have their own budget. As a result, Mohd Khairolden et al (2008) emphasized the importance of contractors allocating funds and resources to organize safety practises. According to Foo (2006), the contractor must provide a complete list of safety and health precautions in the Bill of Quantity (BQ), and these items should be offered as a "provisional sum" rather than being eliminated due to competitive bidding. Moreover. Safety should be a permanent part of any project's BQ, according to OSHA.

2.10.4 Education and Awareness Among Workers

Conducting an efficient toolbox meeting is one of the finest methods for instilling worker awareness. According to Mahalingam and Levitt (2007), toolbox meetings are effective because they show drawings and pictures of what to do and what not to do, as well as a mock-up to point out safety flaws so that they can take corrective action when they perform the actual work. As a result, they will learn from their mistakes and their safety work consciousness will improve naturally.

Alternatively, Loosemore and Andonakis (2007) proposed better integrating Occupational Safety and Health (OSH) training with general skills, smoothing subcontractors, involving the tertiary educational sector in OSH training, and company subsidisation of training expenses. As a result of this plan, effective safety training will be provided.

Apart from all of the aforementioned, it can be concluded that safety and health management is a critical issue that must be addressed. Enhancing and enforcing the law through awards and penalties are only a few of the ways that can be used to address the issues at hand. Management should promote safety through enhancing the way education and training is delivered to workers, allocating cash for safety and health programmes, and organizing Personal Protective Equipment (PPE) programmes.

2.11 CHAPTER SUMMARY

The literature evaluation shows that workplace health and safety measures are necessary to ensure worker safety and well-being. They maintain and improve job efficiency and quality, eliminating indiscipline and crashes as well as unemployment and labour turnover. To summarise, the information gathered in this chapter was thoroughly examined to discover the source, impact, and preventative measures of safety practices during construction at the site's building. According to the conclusion of the literature review on construction safety management, labour behaviour was the most significant contributor to safety practice on the job site. The majority of academics agree on the factors listed in the literature.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The literature review in the previous chapters has allowed us to obtain a good understanding of the subject, and now it is essential to have a good overview of the research. This study was carried out to create and maintain a safety management system for construction projects in Afghanistan. It also serves as a starting point for analysing the safety plan and the factors contributing to construction site safety mishaps. This research has been divided into five phases: the preliminary study phase, literature review, research methodology phase (research approach data collection and resource), finding and analysis (quantitative, qualitative and approach), and ends with a discussion on strategies and recommendation as well as a summary.

3.2 PROJECT ACTIVITES

For this study, the literature review approach was adopted, followed by data collection via the questionnaire. The research began with a survey of the literature on Afghanistan's building project safety practices. A pilot survey was conducted in this research to determine the validity and reliability of the survey questionnaire. Following that, the actual data collection commenced based on the pilot survey.

3.2.1 Project Flow Diagram

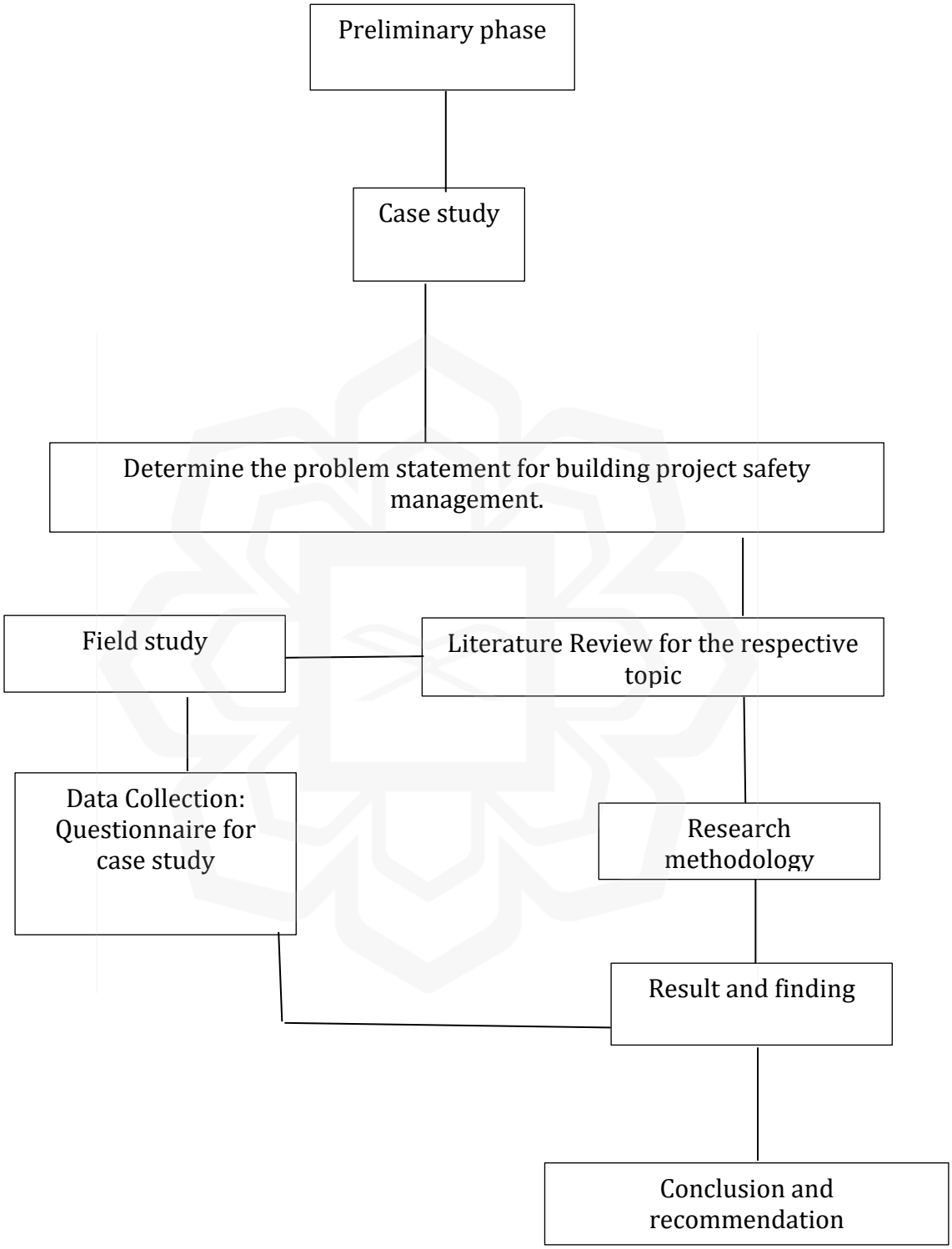
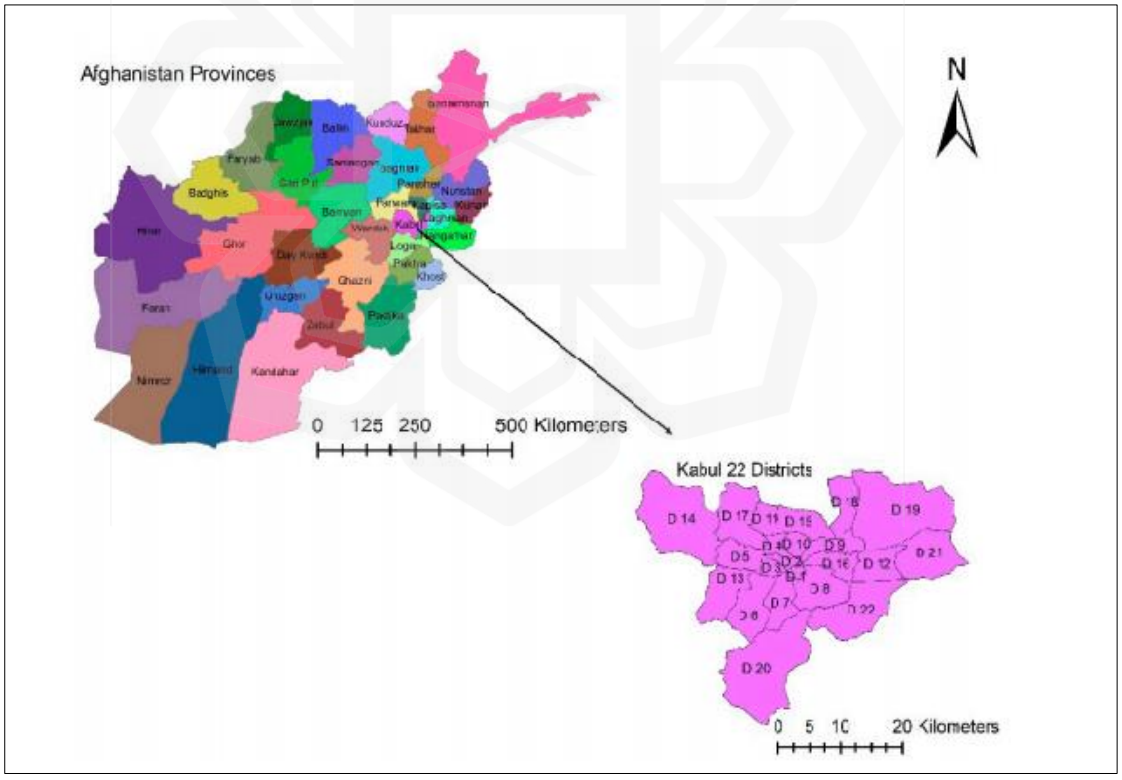


Figure 3.1 Project Flow Diagram

3.3 CASE STUDY AREA

Safety is one of the most severe problems in Afghanistan's cities, especially in Kabul. There appears to be a pressing need for safety analysis in Kabul to assess the safety volumes in buildings during construction. The case study chosen was Kabul, Afghanistan. Kabul is one of the fastest-growing cities with more than six million residents. It is a multi-racial, multi-ethnic city with a diverse social, cultural, and economic climate. It is widely regarded as Afghanistan's primary destination for rural-urban migration, resulting in high demand for housing and other infrastructure Amiri, Darvish, Akbar, and Sarafrazi (2016). In terms of building, Kabul has undergone a significant transformation from single-story to multi-story structures. Hence, Kabul serves as an extremely profitable research field.



Source: State of Afghan Cities (2015)

Figure 3.2 Geographical Location of the City of Kabul

3.4 RESEARCH APPROACH

A systematic and logical method for solving a problem with facts is described as a research approach (Yin, 2003). According to Patton (2002) and Stake (2000), research entails knowledge diagnosis and collecting specific interrelated variables for which accurate and reliable data is collected, registered, and analysed. There are two main ways to research (Fellows & Liu, 2003), and they are qualitative and quantitative methods (Creswell & Creswell, 2017). A third method is proposed, and it is referred to as the mixed-method approach. Because of the nature of this research subject, a combination of qualitative and quantitative methods of analysis was needed. The mixed-method system is considered as the most important method for determining relevant data for research questions. It can be described as a study that includes data collection, analysis, and interpretation. Mixed-method research incorporates quantitative and qualitative approaches into a single research to provide a more comprehensive view. The ultimate goal of mixed-method research is to enable researchers to create designs that accurately answer their research questions.

There are two types of research strategies which are quantitative and qualitative method. The goal of this study is to gather information from contractors on existing safety practices on construction sites, the types of incidents that occur on construction sites, the factors that influence the performance of safety practices, and strategies for improving construction site safety. As a result, the researcher used both quantitative and qualitative research methods in this study.

The justification for using mixed modes instead of both quantitative and qualitative methods is that it has more strengths the following are the reasons why researcher used mixed method approach.

1. Numbers can be given more meaning through the use of words, visuals, and narrative.
2. Numbers can be utilized to make words, pictures, and tales more precise.
3. Can conduct both quantitative and qualitative research.
4. A grounded theory can be developed and tested by researchers.
5. Because the researcher is not limited to a specific method or strategy, they can address a broader and more comprehensive range of research topics.
6. By combining the strengths of two methods in a research study, a researcher can leverage the strength of one to compensate for the deficiencies of the other.
7. Convergence and verification of findings can provide more evidence for a conclusion.
8. It can be used to make the outcome more generalizable.
9. When quantitative and qualitative methods are combined, they create more comprehensive knowledge that may be utilized to inform theory and practice.

3.4.1 Quantitative Research Approach

Actual data such as counts, weight, mass, and other physical parameters characterise the quantitative analysis approach. It takes a deductive and analytical approach (Fellows & Liu, 2003). It typically involves looking at frequencies and various observable variables to describe a particular phenomenon. The quantitative method offers the advantage of examining the replies of many people to a limited number of questions, allowing for more superficial comparisons and statistical aggregation of data and generalisation of the findings.

In order to meet the goals of this study, the researcher used a quantitative approach by conducting a questionnaire survey to gather information about current building site safety practises. The questionnaire survey was then tweaked to archive the research's second, third, and fourth goals.

3.4.2 Qualitative Research Approach

Qualitative analysis, on the other hand, takes an inductive and subjective approach to real-world awareness. Direct quotations and a detailed overview of programmes, circumstances, activities, individuals, experiences, and observed behaviours provide depth and information (Cresswell, 2003). According to Yin (2003), the qualitative approach allows the respondent to openly yield valuable information that would not be collected using the quantitative method.

3.5 DATA COLLACTION AND RESOURCES

In this research, data was collected from primary data (online questionnaire) and secondary sources which included books, journals, articles, studies, surveys, working papers, and conference papers. The study expects that the target participants would have a good understanding of construction safety practices. In terms of the research objectives and the study's structure, a systematic questionnaire (structured survey) was chosen as the data gathering approach. A survey guide was created based on the research questions and objectives. It consists of different questions aimed at presenting answers to the questions. Closed-ended questions are included in the questionnaires to allow for a minimum amount of time spent on each item. To note, it was challenging to recruit government employees for the interview due to the country's current political situation.

3.6 PRIMARY AND SECOUNDRY DATA

Throughout the study period, a literature review conducted. The quest for and reviewing potentially applicable theories and literature was a crucial initial phase of this study. Such procedure allows the researcher to give the user a description of the

extent of knowledge and the critical issues concerning the subject and the research done through the reviewed literature (Fellows & Liu, 2003).

The review of the literature was the first step in gathering information and knowledge about a subject. Based on previous research and studies provided by earlier researchers on the subject, safety management in construction projects was established. Only information analysis, such as books, journals, conference texts, agency, project articles, and the internet, will be used at this point. This phase is essential to achieve basic concepts and overviews about the scenario of safety performance in construction projects in the past, present, and future as well as its progress and changes. The literature review focused more on the following:

- To study safety practices at construction sites.
- To identify the types of acidents at construction sites
- To determine the factors affecting on safety performance construction industry.
- To suggest ways of improving safety in the construction industry.

3.7 SURVEY QUESTIONNAIRY

There are several techniques applied by the researcher in order to achieve the objective like Questionnaire Survey, calling so the researcher use the method of questioner survey to get the answer for questions. A questionnaire survey, according to Thomas (2009), is a written type of inquiring. The questionnaire is similar to interviewing by numbers, and it suffers from some of the drawbacks of mass manufacturing and a lack of interpretive opportunities (Wellington, 2000). This study employs the questionnaire as data gathering instrument. The survey is divided into

five sections: Section A, Section B, Section C, Section D, and Section E which are sections of the report.

Section A inquiries about the demographics of respondents, whereas Section B focuses on the importance of safety practice at construction sites. Section C inquiries about safety performance on the job site, while Section D inquiries about the types of events that occur at the work site. Lastly, Section E inquiries about the importance of initiatives to improve safety practices on the job.

Following the feedback obtained, a final questionnaire was formulated and distributed to the respondents. The overall number of questions was 55, and the companies targeted were 12 in number. The survey was sent to 120 contractors who filled it out and returned the survey in Google Forms. The survey asked participants to reply to questions gleaned from their previous engagement in construction projects.

3.7.1 List of Questions and Purposes

The purpose of distributing the questionnaire is to get input from respondents on the subject matter. As a result, when constructing a questionnaire, the researcher should keep several basic considerations in mind, according to Thomas (2009), who states that the questionnaire should be brief, straightforward, exact, and cognizant of prestige bias.

Section A- Particulars of respondent

Section B- Safety practices at construction sites

Section C- Types of accident at construction sites

Section D- Factors affecting on construction safety

Section E- approaches to improve the safety practice at construction sites

Section A: Particulars of Respondent

Section A asks broad questions to elicit responses. This section contains six open-ended questions on the respondent's job title and construction sector experience. Below are the questions.

1. Gender (چیست شما جنسیت):
   ☐ Male (مرد) ☐ Female (زن)
2. Age (شما سن):
   ☐ 20-35 ☐ 36-45 ☐ 46-55 ☐ 55 and above
3. Employment status (اید شده استخدام آنچه اساس بر شما آیا):
   ☐ Part-time (وقت نیمه)
   ☐ Full-time (وقت تمام)
   ☐ Temporary / daily (روزانه موقت)
4. Working experience in construction (ساز و ساخت در شما تجربه):
   ☐ 0-5 years ☐ 6-10 years ☐ 11-15 years ☐ 15 years and above
5. Educational background (تحصیلات زمینه):
   ☐ Primary school (مکتب ابتدایه)
   ☐ Primary school with vocation skill (مکتب ابتدایه شغلی مهارت با)
   ☐ Secondary education (متوسطه آموزش)
   ☐ Bachelor Degree
   ☐ Master's Degree
   ☐ Doctorate Degree
   ☐ Other (specify) (دیگر ای مشخصه)
6. Position in the company (موقعیت در شرکت):
   ☐ Project manager (مدیر پروژه)
   ☐ Safety manager (مدیر ایمنی)
   ☐ Safety officer (مامور امنیت)
   ☐ Worker (کارگر)
   ☐ Engineer (مهندس)
   ☐ Architect (معمار)

Section B: Safety practices at construction sites

Close ended questions make up Section B. The goal of this section is to achieve the first research goal, which is to identify existing construction site safety practises. The researcher starts this part with an inquiry about the project details. The researcher has

also included "yes or no" questions in this part in order to meet the research objectives. The questions are listed below.

1. Do you have any information about safety practice in the workplaces?
   دارید؟ کار محل در ایمنی روش مورد در اطلاعاتی آیا
   ☐ Yes بلی ☐ No نخیر ☐ Don't know نمیدانم
2. If yes, where did you get the information? ید؟ کرده کسب اطلاعات کجا از بله اگر
   ☐ From my studies مطالعه از ☐ From the organisation سازمان از
   ☐ From short training کوتاه آموزش ☐ From my co-workers همکارانم
   ☐ From my supervisor من سرپرست
3. How important do you believe safety is in the construction of buildings?
   است؟ مهم چقدر ها ساختمان ساخت در ایمنی شما نظر به
   ☐ Very important مهم خیلی ☐ Important مهم
   ☐ Somewhat important تا حدودی مهم ☐ Not that important نیست مهم
4. How many construction safety trainings have you attended (on the job)?
   کار؟ حین در اید کرده شرکت ساز و ساخت ایمنی آموزش چند در
   ☐ None یک هیچ ☐ Some مقداری
   ☐ Few کمی تعداد ☐ Many زیاد
5. How often do building construction safety trainings take place on the job?
   شود؟ می انجام یکبار وقت چند هر ساختمان ساز و ساخت ایمنی های آموزش
   ☐ Very frequent مکرر خیلی
   ☐ Frequent زود زود
   ☐ Somewhat frequent تا حدودی مکرر است
   ☐ Not frequent مکرر نیست
   ☐ Not very frequent مکرر خیلی نیست
6. How would you rate the safety culture of the building construction companies where you work on a scale of 0 to 10?
   فرهنگ ایمنی شرکت های ساختمانی سازمانی که در آنها در مقیاس 0 تا 10 کار می کنید را چگونه ارزیابی می کنید؟
   ☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10
7. Have you ever worked for a local or foreign construction firm that prioritises safety performance?
   است؟ ایمنی عملکرد اولویت که اید کرده کار خارجی یا داخلی ساختمانی شرکت یک در حال به تا آیا
   ☐ Yes بلی ☐ No نخیر
8. In a building construction project, what sort of safety equipment is most important to you? (Place them in order of preference)
   در یک پروژه ساخت ساختمان ، چه نوع تجهیزات ایمنی برای شما مهمترین است؟) آنها را به ترتیب اولویت قرار دهید(
   ☐ Safety shoes ایمنی کفش ☐ Helmet ایمنی کلاه
   ☐ Reflector بازتابنده ☐ Safety glass ایمنی شیشه
   ☐ Gloves دستکش ☐ Other (specify) دیگر ای مشخصه
9. What kind of protection devices do you see in construction projects for buildings?
   بینید؟ می ها ساختمان ساختمانی های پروژه در را حفاظتی وسایل نوع چه
   ☐ Safety Shoes ایمنی کفش ☐ Helmet ایمنی کلاه
   ☐ Reflector بازتابنده ☐ Safety glass ایمنی شیشه
   ☐ Gloves دستکش ☐ Other (specify) دیگر ای مشخصه

10. On your building projects/sites, do you have enough personal protective equipment (PPE)?
آیا در پروژه ها / سایت های ساختمانی خود ، تجهیزات محافظت شخصی کافی
(PPE) دارید؟
☐ Yes بلی ☐ No نخیر
11. How likely are you to use protection equipment if it is given to you?
است؟ چقدر شما استفاده احتمال ، شود داده حفاظتی تجهیزات شما به اگر
☐ Very likely محتمل خیلی
☐ Likely دارد احتمال
☐ Somewhat likely دارد احتمال حدودی تا
☐ Unlikely بعید
☐ None یک هیچ
12. What are the reasons for not wanting to use personal protective equipment (PPE)?
چیست؟ (PPE) شخصی محافظ تجهیزات از استفاده به تمایل عدم دلایل
☐ Not provided است نشده ارائه
☐ The climate too warm گر خیلی هوا و آب)
☐ Discomfort to wear/use استفاده / پوشیدن از ناراحتی
☐ Lack of awareness آگاهی نداشتن
☐ Other (specify) دیگر ای مشخصه)
13. Is there a safety policy at construction company?
است؟ شده گرفته نظر در ایمنی سیاست ساختمانی شرکت؟ در آیا
☐ Yes بلی ☐ No نخیر ☐ Don't have the information نمیدانم
14. Is written information about safety measures available at your construction site?
است؟ موجود شما ساز و ساخت محل در ایمنی اقدامات مورد در کتبی اطلاعات آیا
☐ Yes بلی ☐ No نخیر
15. Is there a written circular/brochure on your construction site that informs staff about the risks associated with their job?
با مرتبط خطرات از را کارکنان که دارد وجود شما ساختمانی سایت در ای شده نوشته بروشور / بخشنامه آیا
کند؟ آگاه شغلشان
☐ Yes بلی ☐ No نخیر
16. Do Managers encourage and support worker Safety programs?
کنند؟ می پشتیبانی و تشویق را کارگران ایمنی های برنامه مدیران آیا
☐ Yes بلی ☐ No نخیر
17. Do workers receive initial safety training before starting work on a specific site?
بینند؟ می را ایمنی اولیه های آموزش خاص سایت یک در کار شروع از قبل کارگران آیا
☐ Yes بلی ☐ No نخیر ☐ Don't have the information نمیدانم
18. Is there a safety supervisor on site for the project?
دارد؟ وجود پروژه برای محل در ایمنی ناظر یک آیا
☐ Yes بلی ☐ No نخیر

Section C: Types of accident at construction sites

Section C has ten questions about on-the-job accidents. In order to meet the second objective, the purpose of this section is to identify the types of accidents that occur in construction site safety practises. In this section, the researcher posed questions in

order to determine the circumstances and types of accidents that occur on construction sites, as well as what steps should be taken to limit the number of accidents.

The questions for this section are below.

1. What are the most common causes of accidents on building construction industry?
چیست؟ ساختمان ساختمانی سایتهای در تصادف علل شایعترین
☐ Lack of training آموزش عدم
☐ Lack of skilled labour ماهر کار نیروی کمبود
☐ Lack of personal protective equipment شخصی حفاظت وسایل کمبود
☐ Low educated workers پایین تحصیلات با کارگران

2. In what degree injury will be in construction industry?
بود؟ خواهد ساز و ساخت محل در آسیب از ای درجه چه در
☐ Death مرگ ☐ Permanent inability دائمی ناتوانی
☐ Partial inability ناتوانی حدی تا ☐ Light injury سبک دیدگی آسیب
☐ Other دیگر

3. Is there a health and safety reporting at construction sites?
دارد؟ وجود ایمنی و بهداشت گزارش آیا
☐ Yes بلی ☐ No نخیر

4. High accident rates on construction site are due to:
:دلیل به سازاست و ساخت سایت در تصادفات میزان بودن بالا
☐ Lack of legislation قانون نبود
☐ Lack of safety knowledge ایمنی دانش عدم
☐ Management carelessness مدیریت احتیاطی بی
☐ Careless worker attitudes احتیاط بی کارگری های نگرش
☐ Carelessness of the consulting مشاوره خیالی بی
☐ All reasons دلایل تمام

5. The major reasons of accident on site are that the management is short of:
:شود می انجام کوتاهی نظر از مدیریت که است این محل در حادثه عمده دلایل
☐ Lack employs of safety officer ایمنی افسر کمبود
☐ Lack of safety policy ایمنی سیاست عدم
☐ Lack of safety training ایمنی آموزش عدم
☐ Lack of safety motivation ایمنی انگیزه عدم
☐ The cost of safety ایمنی هزینه
☐ Other دیگر یا

6. The most common causes of accidents on the job site are a lack of:
:است زیر موارد فقدان شغلی سایت در تصادفات علل شایعترین
☐ Lack of training آموزش عدم
☐ Lack of experience in using equipment تجهیزات از استفاده تجربه عدم
☐ Lack of safety culture ایمنی فرهنگ عدم
☐ Lack of safety motivation ایمنی انگیزه عدم
☐ Other دیگر

7. Who, in your view, should be held liable for an industrial accident on the job site?
باشد؟ کار محل در صنعتی حادثه یک مسئول باید کسی چه ، شما نظر از
☐ Workers کاریگر ☐ Government حکومت
☐ Contractors پیمانکاران ☐ Owners صاحبان
☐ Consultants مشاور ☐ All ها این تمام

8. Is there a governmental body that monitors construction projects and helps to improve safety?
   آیا ارگان دولتی وجود دارد که پروژه های ساختمانی را رصد و بهبود به کمک ایمنی کند؟
   ☐ Yes بلی ☐ No نخیر
9. Is it possible to avoid the majority of building construction site accidents?
   آیا می توان از اکثر حوادث سایتهای ساختمانی جلوگیری کرد؟
   ☐ Yes بلی ☐ No نخیر
10. What steps will be taken in your site if minor accidents arise as a result of building construction?
    در صورت بروز حوادث جزئی در ساخت و ساز ساختمان ، چه اقداماتی انجام می شود؟
    ☐ Will be treated by traditional means (با روش های سنتی درمان خواهد شد)
    ☐ Will be taken to the site clinic (به کلینیک سایت منتقل می شود)
    ☐ Will be taken to the nearby clinic. (به کلینیک اطراف منتقل خواهد شد)

Section D: Factors affecting on construction safety

Part D contains 13 statements about the elements impacting safety performance at construction sites. The purpose of this section is to determine the factors affecting the performance of this safety practise during construction in order to fulfil the research's third goal.

The literature review influenced the majority of the statements. As a result, the goal of this part is to see if the respondent agrees or disagrees with the given factors. The questionnaire structure is constructed using a Likert scale type in order to meet the research objectives.

According to Naoum (2007), a Likert scale is a method in which the questions consist of attitudinal statements on the survey issue that range from one extreme to the other. The respondent must rate their level of agreement with each of the statements listed in the table in this section.

1	2	3	4	5
Strongly disagree کاملا مخالف	Disagree مخالف بودن	Neutral متوسط	Agree موافق	Strongly agree کاملا موافقم

The factors affecting safety performance on building sites are listed below.

Factors عوامل	**1**	**2**	**3**	**4**	**5**

The effect of design complexity on protection. تأثیر پیچیدگی طراحی بر حفاظت					
Climate conditions have an effect on safety and health. شرایط آب و هوایی بر ایمنی و سلامتی تأثیر دارد					
The cost of the whole project has an effect on safety. هزینه کل پروژه در ایمنی تأثیر دارد.					
Personnel Protective Equipment (PPE) Limitations. . محدودیت های تجهیزات محافظت شخصی (PPE).					
Planning (site protection plan, responsibility plan for hazard safety management, etc.) برنامه ریزی (طرح حفاظت از سایت ، برنامه مسئولیت مدیریت ایمنی در برابر خطر و غیره)					
Use of warning signals, indications, and barricades استفاده از علائم هشدار دهنده ، نشانه ها و موانع استفاده از موانع					
The effect of using a work area plan on protection. تأثیر استفاده از طرح منطقه کار در حفاظت.					
For safety results, reward (incentive) and warning are used. برای نتایج ایمنی ، از پاداش (مشوق) و هشدار استفاده می شود.					
The government's and engineering societies' roles in construction company protection نقش دولت و انجمن های مهندسی در حمایت از شرکت های ساختمانی					
The psychological environment and human actions محیط روانشناختی و اعمال انسانی					
Illiteracy and a lack of skilled labour بی سوادی و کمبود نیروی کار ماهر					
The effect of the natural environment on protection تأثیر محیط طبیعی بر حفاظت					
The presence of safety and health policies, as well as their effect on safety وجود سیاست های ایمنی و بهداشتی و همچنین تأثیر آنها بر ایمنی					

Section E: approaches to improve the safety practice at construction sites

Section E contains eight strategies for improving construction site safety. The goal of this section is to obtain input from respondents on the degree of important tactics outlined by the researcher, which is the fourth research goal. The majority of the ideas came from a review of the literature. The questionnaire's format is based on a Likert scale. The respondent must rank the importance of the initiatives to improve construction site safety practises as mentioned in the table. The scale ran from "very unimportant" to "extremely significant."

1	2	3	4	5
absolutely not important کاملاً مهم نیست	not important مهم نیست	neutral خنثی	important مهم	most important مهمترین

The following are some suggestions for enhancing construction site safety.

Solutions راه حل ها	**1**	**2**	**3**	**4**	**5**
Strengthen the legislation and the authority's compliance. . تقویت قوانین و انطباق مقامات.					
Impose a penalty on employees who violate safety laws and regulations. مجازاتی را برای کارکنانی که قوانین و مقررات ایمنی را نقض می کنند ، تعیین کنید.					
Reward employees who perform exceptionally well in terms of safety. به کارمندانی که از نظر ایمنی عملکرد فوق العاده خوبی دارند پاداش دهید.					
Offers appropriate safety training (e.g., with the use of photos and videos). آموزش ایمنی مناسب (به عنوان مثال ، با استفاده از عکس و فیلم) ارائه می دهد.					
Offers a workplace safety and wellness strategy. استراتژی ایمنی و سلامتی محل کار را ارائه می دهد.					
Provides safety notice board in different languages on site. تابلوی اعلانات ایمنی را به زبانهای مختلف در محل ارائه می دهد.					
Proposed budget for construction safety. . بودجه پیشنهادی برای ایمنی ساخت و ساز.					
Has a Personal Protective Equipment (PPE) policy (PPE). دارای سیاست محافظت شخصی (PPE) است.					

3.7.2 Selection of Sample

The responders are safety managers, safety officers, safety supervisors, project managers, site supervisors, architects, and engineers from any superior sites who have expertise getting involved in construction sites.

3.7.3 Distribution of Questionnaire

There is a variety of ways to distribute the questionnaire survey. The researcher chooses to distribute the questionnaire by emailing or google form the questionnaire to the respondents and asking them to respond by google form. Therefore, respondents

respond the questionnaire through google form. The questionnaire was distributed to 120 targeted respondent and from 112 only 52 of them responded.

3.8 PROCEDURE FOR ANALYSIS

At this stage, all of the data which has been gathered from the survey questionnaire and other resources was processed and analysed to fulfil this research's requirement faithfully. The researcher used descriptive statistics to analysis that date, as a result, this study's information analysis was carried out using the quantitative and qualitative approaches, as defined above, to address the specified research questions and objectives. Primary data was obtained from remote surveying, while secondary data was gathered from the literature review of newspapers and books, among others.

Following information-gathering from the survey questionnaire, the study proceeds to make suggestions, wherever appropriate, on critical elements based on the findings and observation. Such is the outcome of the research. In the research process, recommendations are made based on the empirical method to resolve the problems in the field. As a result, plans and guidelines are detailed to increase the success rate in resolving the pertinent issues and achieving the objectives and aim of the study.

The researcher analysed the entire questionnaire form using Statistical Package for Social Sciences in order to gather the results from the questionnaire survey approach (SPSS). SPSS is a data management and analysis programme that researchers can use to analyse their findings. For each question, SPSS allows the researcher to calculate the percentage and frequency. Furthermore, descriptive statistics were used to examine the results of the questionnaire survey. Furthermore, the results of the investigation can be presented in a variety of ways, including a bar

chart, a table, a column chart, or a pie chart. As a result, the researcher opts for tables, pie charts, and column charts to portray the information.

3.9 ETHICAL ISSUES

In its ethical consideration, the essence and intent of the study were explained to each respondent before the questionnaire was distributed. It was challenging to secure the participation of female respondents for the survey questionnaire due to the cultural beliefs in Afghanistan. Furthermore, to ensure confidentiality, the participants' names and ethnicities were concealed; otherwise, their responses were restricted. As a result, the characters and nationalities of respondents were not recorded in the survey form. Individuals were also given the option to participate in the survey as it was voluntary in nature.

3.10 CHAPTER SUMMARY

This chapter has provided details of the data collection process, formulation, and implementation. It has explained the research procedures and the guidelines used in selecting the participants. Accordingly, the data collection method embodies a sufficient amount of primary and secondary data needed for the analysis. To minimise the error for the next step, it was deemed essential to collect primary data correctly, and such was observed for the survey questionnaire. As a result, by the time the report is finalised, the researcher should have more apparent suggestions and answers to the issue and problem. This subsequently allows the study to meet its primary goal, and the research question regarding the topic could be answered accurately.

CHAPTER FOUR

FINDINGS AND ANALYSIS

4.1 INTRODUCTION

The collected data is assessed and analysed in this chapter, and analysis of the results will be according to the respondents' responses.

4.2 SURVEY RESPONSES

This chapter will clarify and analyse the data collected from the questionnaire distributed. This chapter requires the research to discover factors contributing to the development of safety practices at construction sites, as defined in Chapter two. This study determines the factors that must be considered when establishing safety practices on construction projects and steps to raise safety performance among labourers. Therefore, plans and methods are chosen to facilitate data delivery and rapid delivery in graphical and descriptive formats. The research was conducted on various construction sites established to achieve this goal. To recap, the total number of questions were 55, and the target companies were 12.

The survey was sent to 120 contractors. However, only 52 responded to the research inquiry and returned the filled-out questionnaire to the researcher. They were mostly workers at construction sites in Kabul. The participants were asked to react to the questions based on their involvement and experience in construction projects. The survey questionnaire was distributed to the intended respondents via Google Forms. In the survey response, the specifics of respondents, information on safety practices at construction sites, safety performance at construction sites, types of accidents in

construction sites, and suggestions to enhance safety practice at construction sites were the major sections of the questionnaire.

4.3 RESPONDENTS' DEMOGRAPHIC PROFILE

This section consists of the respondents' background information, which includes their gender, age, employment status, work experience, educational background, and position in the company.

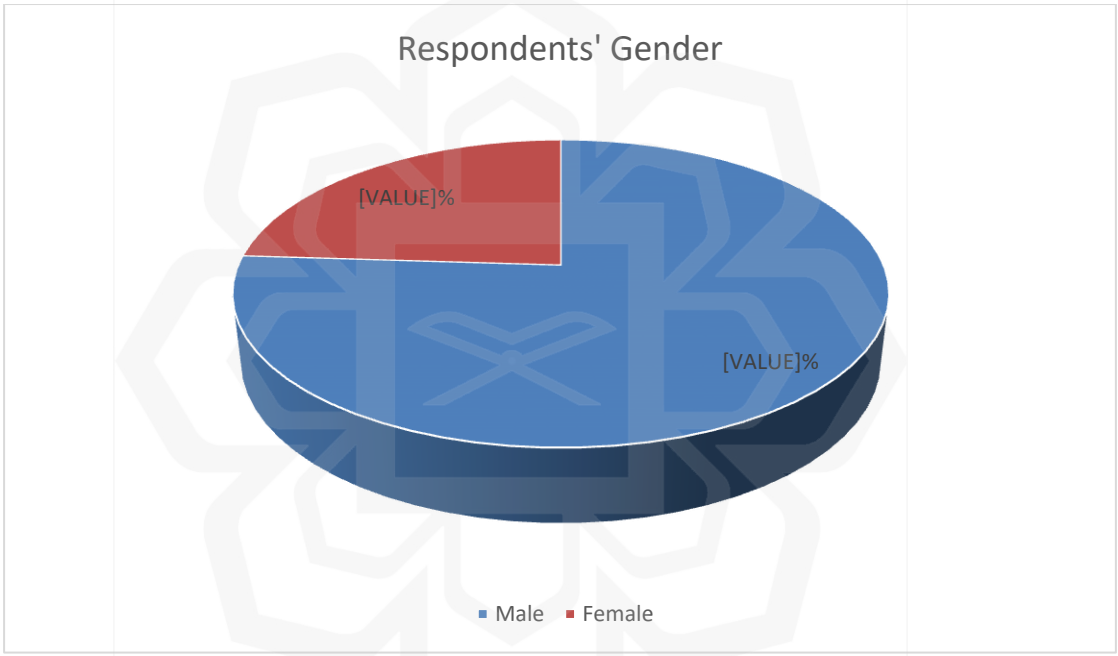


Figure 4.2 Respondents' Gender

Figure 4.1 above shows the gender distribution of the respondents; 76% of the people who answered the questionnaire were male, which was more than the average of the total respondents, and 24% of the remaining survey were female. This is because many of the professional positions in construction are dominated by males.

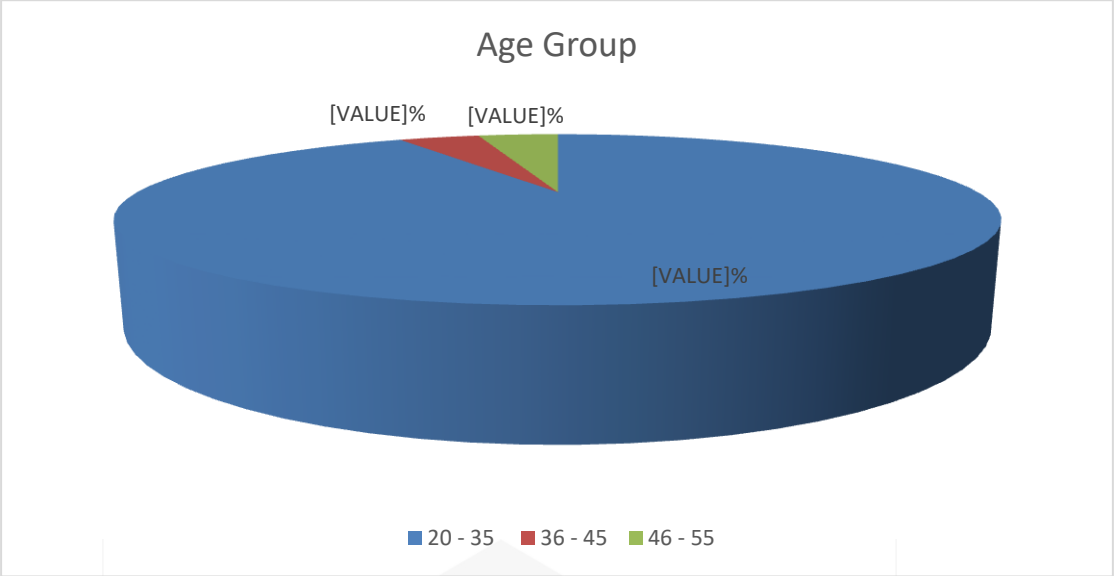


Figure 4.2 Respondents' Age Group

The respondents were between the age group of 20 and 35 years old, which is the majority of the total respondents, followed by the age groups of between 36 and 45 years of age and 46 and 55 years of age with 4% each.

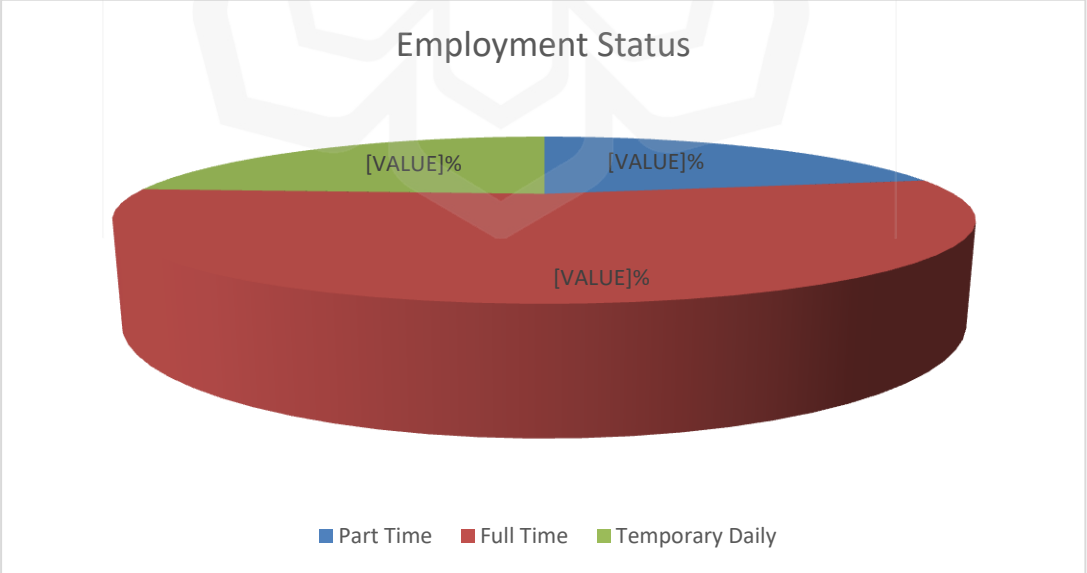


Figure 4.3 Respondents' Employment Status

Figure 4.3 reveals information on the employment status of the respondents. Out of the total survey, 54% were full-time staff, while another 24% were part-time staff and the remaining 22% were working on a temporary or daily basis.

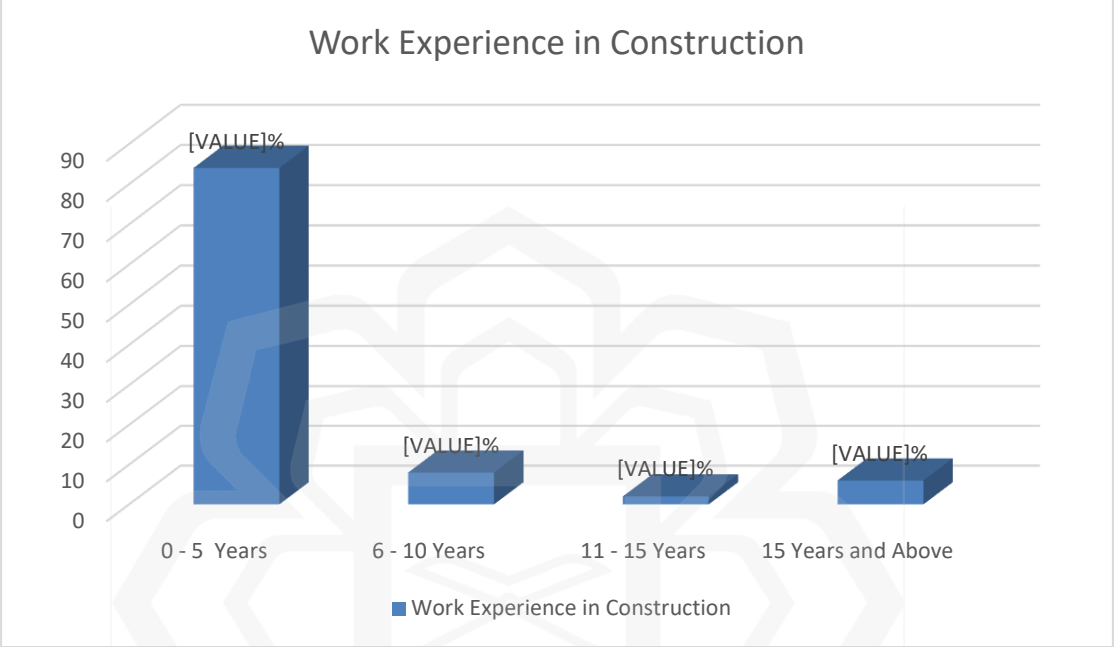


Figure 4.4 Respondents' Working Experience

Figure 4.4 reveals information about the working experience of the respondents. Out of the total survey distributed, 84% of them had been in the construction industry for the period between 0 and 5 years which was also the majority of the total respondents. Another 8% had been in the industry for a period of between 6 and 10 years.

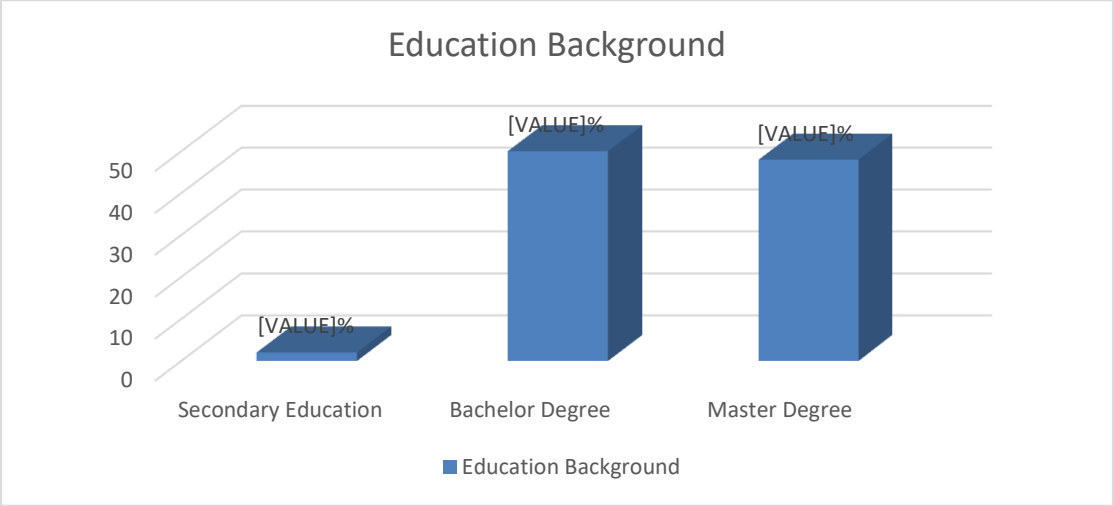


Figure 4.5 Educational Background of the Respondents

Figure 4.5 shows the educational background of the respondents. An average of the total respondents (i.e., 50%) was bachelor degree holders. In comparison, 48% and 2% of the respondents were master degree holders and those who received secondary education, respectively.

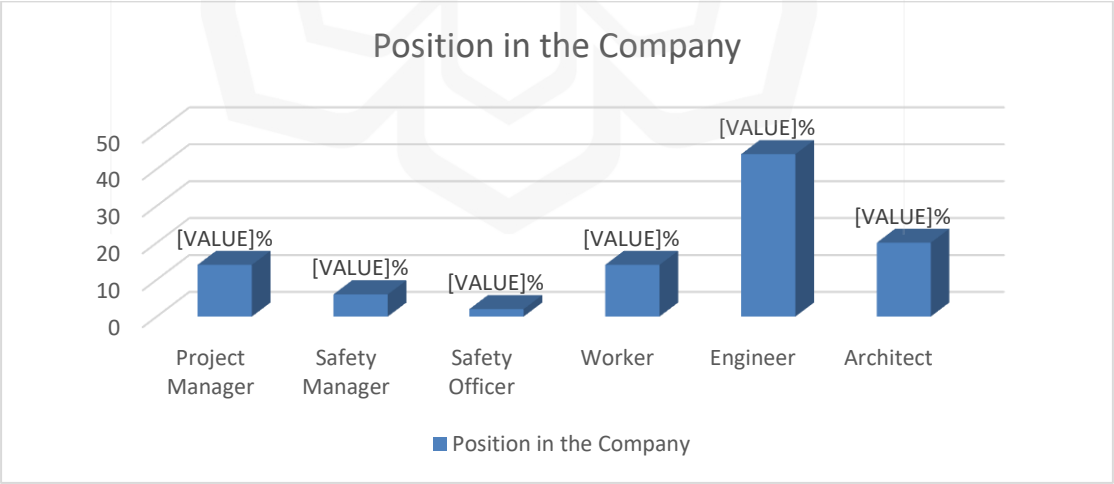


Figure 4.6 Respondents' Position in the Company

Figure 4.6 shows the position of the respondents in the company. Out of the total survey administered, 44% of the respondents were engineer by profession, followed by the architect, which accounted for 20%. Another 14% accounted for both project manager and worker while 6% and 2% were safety managers and safety officers.

4.4 SAFETY PRACTICE AT CONSTRUCTION SITE

This section aims to achieve the study's first objective, which is to determine the current safety practices at construction sites in Kabul, Afghanistan. There are eighteen questions altogether in this section.

Table 4.2 Safety Practice at Construction Site

Safety Practice	Frequency	Percentage (%)	Mean	SD
Knowledge about the safety practice in the workplace				
Yes	41	82.0	1.20	0.452
No	8	16.0		
I don't know	1	2.0		
Source of information				
Own study	30	60.0	1.90	1.233
The organisation	4	8.0		
Short training	8	16.0		
Co-workers	7	14.0		
Supervisor	1	2.0		
Belief on the importance of safety in building construction				
Very important	43	86.0	1.18	0.482
Important	5	10.0		
Somewhat important	2	4.0		
Number of construction safety trainings attended (on the job)				
None	22	44.0	2.04	1.106
Some	11	22.0		
Few	10	20.0		
Many	7	14.0		
Frequency of building construction safety trainings (on the job)				
Very frequent	10	20.0	2.96	1.340
Frequent	10	20.0		
Somewhat frequent	7	14.0		
Not frequent	18	36.0		
Not very frequent	5	10.0		
Rating the safety culture of the building construction companies (scale of 0 to 10) Scale 0-2 is highest, scale 8-10 is the lowest				
0-2	11	22.0	2.84	1.330
2-4	9	18.0		

4-6	13	26.0		
Table 4.1 continued				
6-8	11	22.0		
8-10	6	12.0		
Working for a local or foreign construction firm that priorities safety performance				
Yes	30	60.0	1.40	0.495
No	20	40.0		
Most important safety equipment in a building construction project				
Safety shoes	8	16.0	2.30	1.216
Helmet	34	68.0		
Safety glass	2	4.0		
Gloves	5	10.0		
Others	1	2.0		
Available protection devices in building construction projects				
Safety shoes	8	16.0	2.30	1.216
Helmet	34	68.0		
Safety glass	2	4.0		
Gloves	5	10.0		
Others	1	2.0		
Availability of personal protective equipment (PPE) at building project sites				
Yes	33	66.0	1.34	0.479
No	17	34.0		
Likeliness to use protection equipment, if given				
Very likely	34	68.0	1.48	0.814
Likely	10	20.0		
Somewhat likely	4	8.0		
Unlikely	2	4.0		
Reasons for not wanting to use personal protective equipment (PPE)				
Not provided	10	20.0	2.70	1.129
The climate too warm	9	18.0		
Discomfort to wear/use	19	38.0		
Lack of awareness	10	20.0		
Others	2	4.0		
Availability of safety policy at construction company				
Yes	31	62.0	1.48	0.677
No	14	28.0		
Don’t have the information	5	10.0		
Availability of information about safety measures at construction sites				
Yes	35	70.0	1.30	0.463
No	15	30.0		
Availability of written circular/brochure that informs staff about the risks associated with their job at construction sites				
Yes	31	62.0	1.38	0.490
No	19	38.0		
Managers encouraging and supporting worker safety programmes				
Yes	43	86.0	1.14	0.351
No	7	14.0		
Workers receiving initial safety training before starting work on a specific site				
Yes	28	56.0	1.50	0.614
No	19	38.0		
Don’t have the information	3	6.0		
Availability of safety supervisor on site for the project				
Yes	23	46.0	1.54	0.503
No	27	54.0		

The results in Table 4.1 provides information on the current safety practices adopted in the construction industry. In terms of the respondents' knowledge of safety practices in their respective workplaces, a majority of the respondents (82.0%) were knowledgeable on the matter. In comparison, 16.0% were not and indicated that they were unaware of any safety practice in their workplaces, and 2.0% did not know at all. A mean score of 1.20, which is below 3, and standard deviation of 0.452, denote that respondent to large extent have low knowledge about the safety practice in the workplace. This means that majority of the respondents do not have knowledge about the safety practice in the workplace.

As for their source of information, 60.0% of the respondents said that it was from their education, 16.0% from short training, 14.0% obtained the information from their co-workers, 8.0% from the organisation, and just 2.0% from their supervisor. A mean score of 1.90, which is below 3, and standard deviation of 1.233, denote that respondent to large extent have source for knowledge about the safety practice by themselves. This means that construction company failed to provide them with the necessary knowledge required.

The respondents were also asked about their belief on the importance of safety in building construction. The majority of the respondents (86.0%) said protection was critical, 10.0% deemed it essential, and the remaining 4.0% regarded safety as crucial. A mean score of 1.18, which is below 3, and standard deviation of 0.482, denote that respondent to large extent do not know the importance of the safety practice in the construction building. This means that many of the respondents have no belief on the importance of safety in the building construction.

As per the number of construction safety training attended by the respondents, 44.0% said none, 22.0% said some, 20.0% said few, and only 14.0% said many, which was not significant compared to the other responses. A mean score of 2.04, which is below 3, and standard deviation of 1.106, denote that respondent to large extent do not attend trainings on the construction safety. This means that construction company do not mandate training on construction safety.

Additionally, 36.0% of the respondents indicated that safety training did not take place frequently in building construction, 20.0% accounted for both "very frequent" and "frequent", while 14.0% and 10.0% accounted for "somewhat frequent" and "not very frequent", respectively. A mean score of 2.96, which is approximately 3, and standard deviation of 1.340, denote that respondent to large extent confirmed that the construction company do have safety practice trainings very frequent. This means that construction company do conduct safety training very frequently, but the site workers do not take it seriously as it is not compulsory to attend.

Respondents were also asked to rate the safety culture of the building construction companies where they work on a given scale of "0 to 10". 26.0% accounted for 4-6, 22.0% each accounted for 0-2 and 6-8, 18.0% and 12.0% accounted for 2-4 and 8-10 respectively, which provides a very negative indication. A mean score of 2.84, which is below 3, and standard deviation of 1.330, denote that respondent to large extent rated the construction company where they work low on the safety culture. This means that construction company failed to mandate safety trainings which resulted in the low safety practice.

The respondents were further asked if they have ever worked for a local or foreign construction firm that prioritises safety performance more than average, with 60.0% said "yes" and 40.0% said "no". A mean score of 1.40, which is below 3, and

standard deviation of 0.495, denote that many of the respondents agreed that they have not work for a local or foreign construction company that prioritise safety performance. This means that safety performance problem is general in Malaysia.

They were furthermore asked on the most important safety equipment in building construction. For this item in the survey, 68.0% of the respondents said that the essential safety equipment for them was the helmet. Another 16.0% indicated safety shoes, 10.0% said gloves, and 2.0% said safety glass and others. On the protection devices observed in the construction projects for building, 68.0% accounted for helmet, 16.0% accounted for safety shoes, 10.0% accounted for gloves, while 4.0% and 2.0% accounted for safety glass and others. When further asked if they had enough personal protective equipment (PPE) at their respective building projects or sites, 66.0% said 'yes' and 34.0% said 'no'. A mean score of 1.34, which is below 3, and standard deviation of 0.479, denote that respondent to large extent said that there is limited provision of "PPE" by the construction company. This means that many of the workers are using their own personal PPE.

On the likeliness of using the protection equipment if given, the majority of them with 68.0% said 'very likely,' 20.0% said 'likely,' and 8.0% and 4.0% said 'somewhat likely' and 'unlikely', respectively. A mean score of 1.48, which is below 3, and standard deviation of 0.814, denote that respondent to large extent would not use the protection equipment if given by the construction company. This means that many of the workers were not used to wearing of PPE.

On the other hand, when asked the reasons for not wanting to use personal protective equipment (PPE), 38.0% of the respondents said 'discomfort to wear or use,' 20.0% accounted for each 'not provided' and 'lack of awareness', and 18.0% and 4.0% accounted for 'the climate is too warm' and 'other', respectively. A mean

score of 2.70, which is below 3, and standard deviation of 1.129, denote that respondent to large extent do not wear the PPE because of the discomfort. This means that the PPE materials are causing discomfort to the workers due to the fake materials using in producing the PPE.

On whether there is a safety policy at the respondents' construction companies, 62.0% said 'yes', 28.0% said 'no', and 10.0% 'do not have the information'. A mean score of 1.48, which is below 3, and standard deviation of 0.677, denote that respondent to large extent confirmed that there is no safety policy at the construction company. This means that the construction company do not have safety policy or the workers were not aware of the safety policy.

Also, 70.0% of the respondents said 'yes', there is information about safety measures at their respective construction site, while 30.0% indicated otherwise. A mean score of 1.30, which is below 3, and standard deviation of 0.463, denote that respondent to large extent do not agree that there is availability of information about safety measures at the construction site. This means that there is little awareness about the information concerning the safety measure by the construction company.

On the availability of a written circular or brochure at the construction site informing staff about the risks associated with their job, 62.0% of the respondents said 'yes', while 38.0% said 'no'. A mean score of 1.38, which is below 3, and standard deviation of 0.490, denote that respondent to large extent do not agree that there is availability of a written circular or brochure at the construction site informing staff about the risks associated with their job. This means that little has been done on informing the workers with a written circular or brochure at the construction site informing staff about the risks associated with their job by the construction company.

On whether the manager encourages and support workers' safety programmes in the respective construction site or company, 86.0% said 'yes' while 14.0% said 'no', a mean score of 1.14, which is below 3, and standard deviation of 0.351, denote that respondent to large extent do not agree that manager encourages and support workers' safety programmes in the respective construction site or company. This means that the managers are not doing much in encouraging and supporting the workers' safety programmes.

On whether the workers receive initial safety training before eventually starting work on a specific site, more than average of the respondents with 56.0% said 'yes', in which they do, 38.0% said 'no' as they do not receive any training before they start the work, and 6.0% of the respondents said they 'do not have the information'. A mean score of 1.50, which is below 3, and standard deviation of 0.614, denote that respondent to large extent do not receive initial safety training before eventually starting work on a specific site. This means that the construction companies are not worried about the safety of the workers.

Lastly, under the current safety practice, the respondents were further asked if a safety supervisor was available on the site for the project. For this item, 46.0% said 'yes', and 54.0% said 'no'. A mean score of 1.54, which is below 3, and standard deviation of 0.503, denote that respondent to large extent confirmed that there is no safety supervisor on their current site. This means that the construction companies were totally failed in protecting the workers lives.

4.5 TYPES OF ACCIDENTS IN CONSTRUCTION

This section aims to achieve the third objective of the study, which is to identify the types of incidents in the construction industry in Afghanistan. There are ten questions altogether under this section.

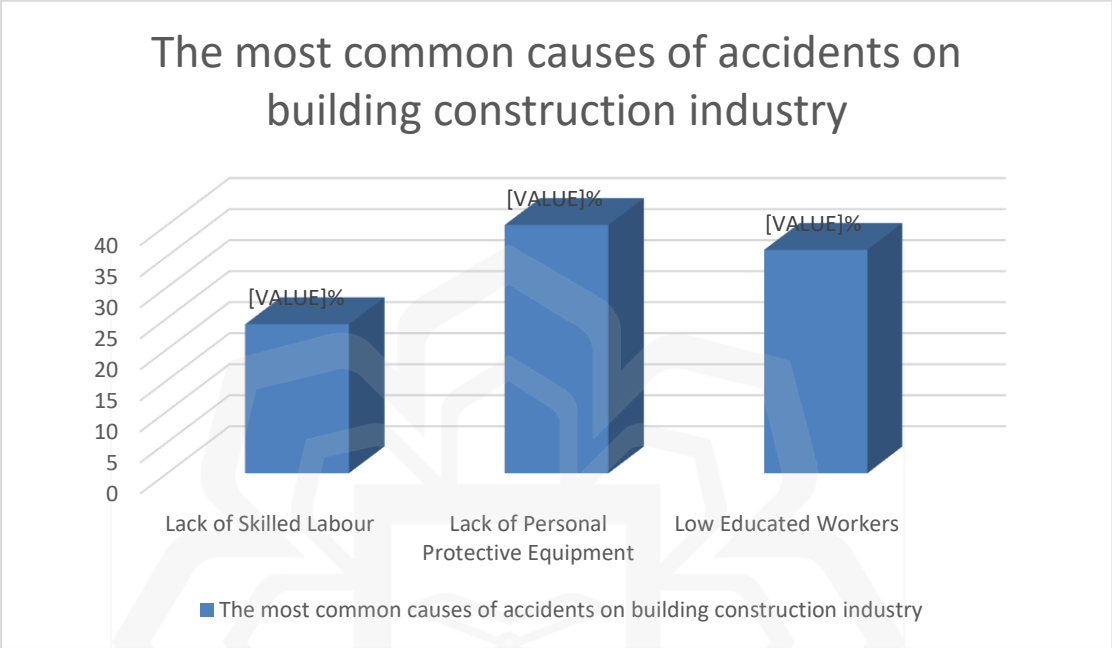


Figure 4.7 Common Causes of Accidents in Building Construction Industry

Figure 4.7 shows the most common causes of accidents in the building construction industry in Afghanistan. Out of the total survey administered, 40% of the respondents said lack of personal protective equipment, 36% said it was due to low-educated workers, and 24% said because of lack of skilled labour.

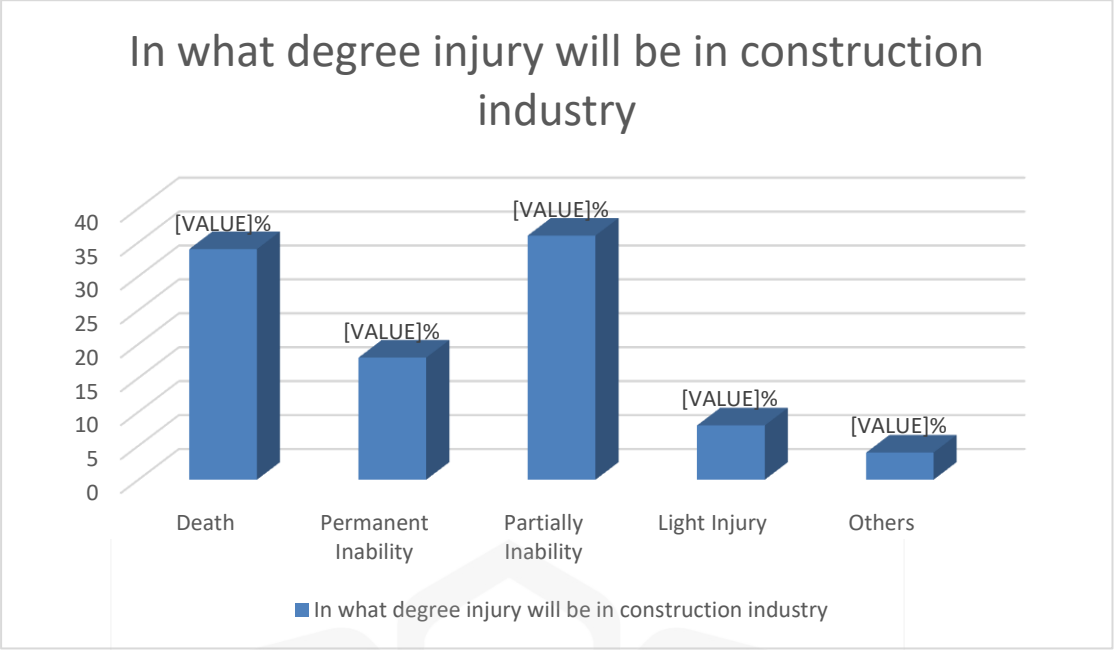


Figure 4.8 The Degree of Injury in Construction

Figure 4.8 reveals information on the degree of injury a worker can sustain in the construction industry. 36% of the respondents said partial inability, 34% said death, 18% said permanent incapacity, while 8% and 4% said light injury, respectively.

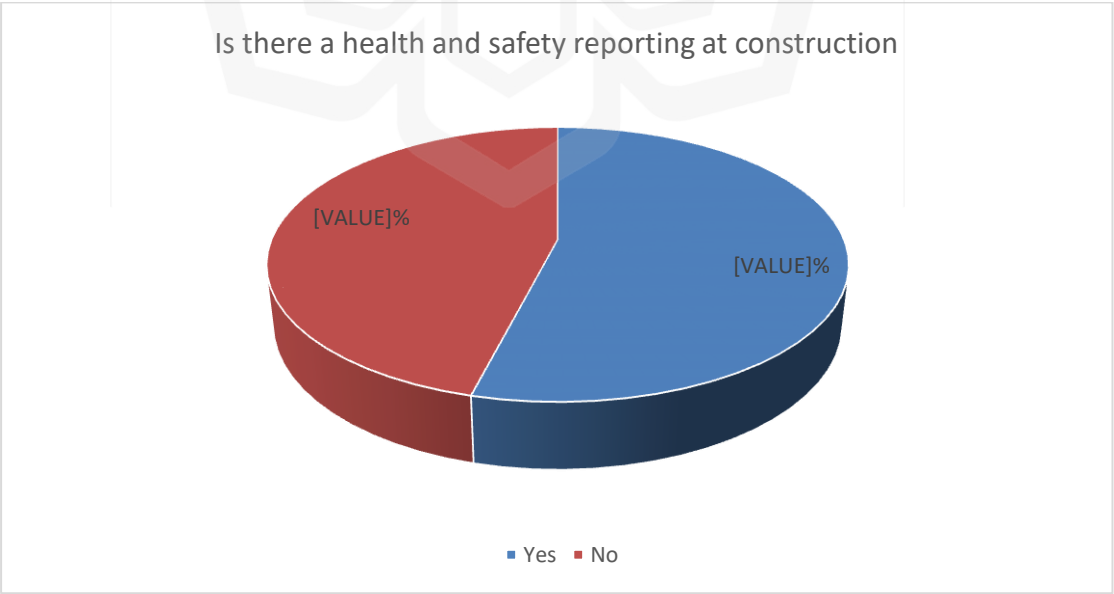


Figure 4.9 Health and Safety Reporting in Construction

Figure 4.9 reveals information on the presence of health and safety reporting at the construction sites. Out of the total survey, 54% of the respondents accounted there is the presence of health and safety reporting at their respective construction sites while the remaining 46% said otherwise.

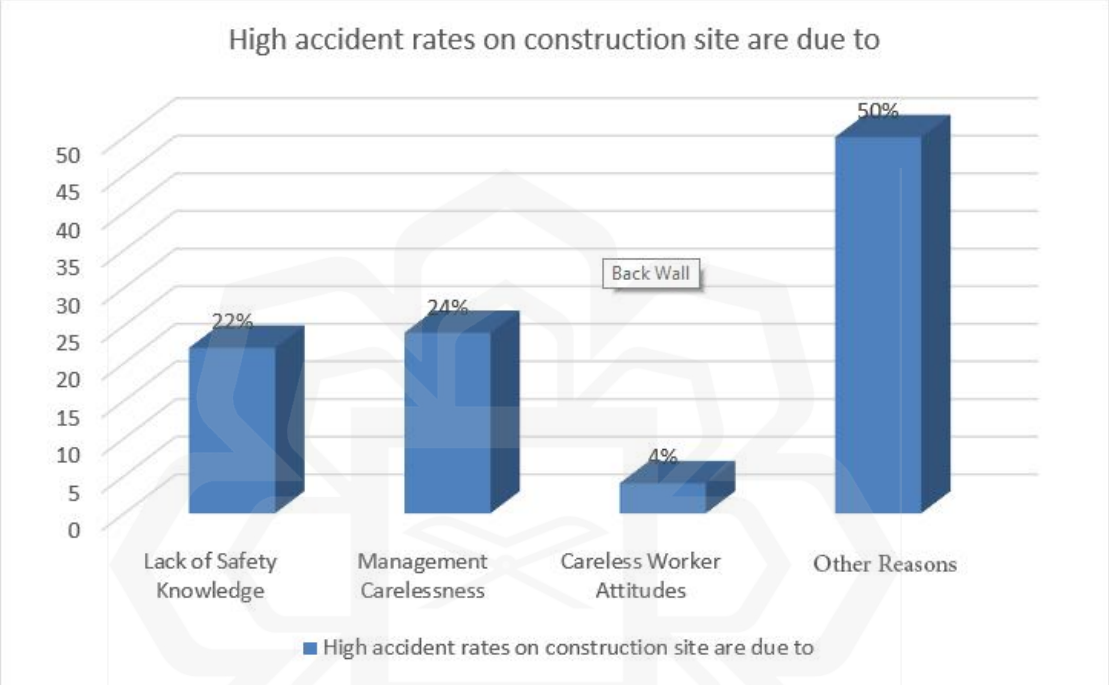


Figure 4.10 Factors for High Accident Rates in Construction

Figure 4.10 reveals information on the causes for the high accident rate at construction sites. 50% of the respondents said the high accident rate was due to lack of safety knowledge and management's carelessness, while 24% of the respondents said it was due to management carelessness. 22% accounted for lack of safety knowledge while 4% said it was because of careless worker attitude.

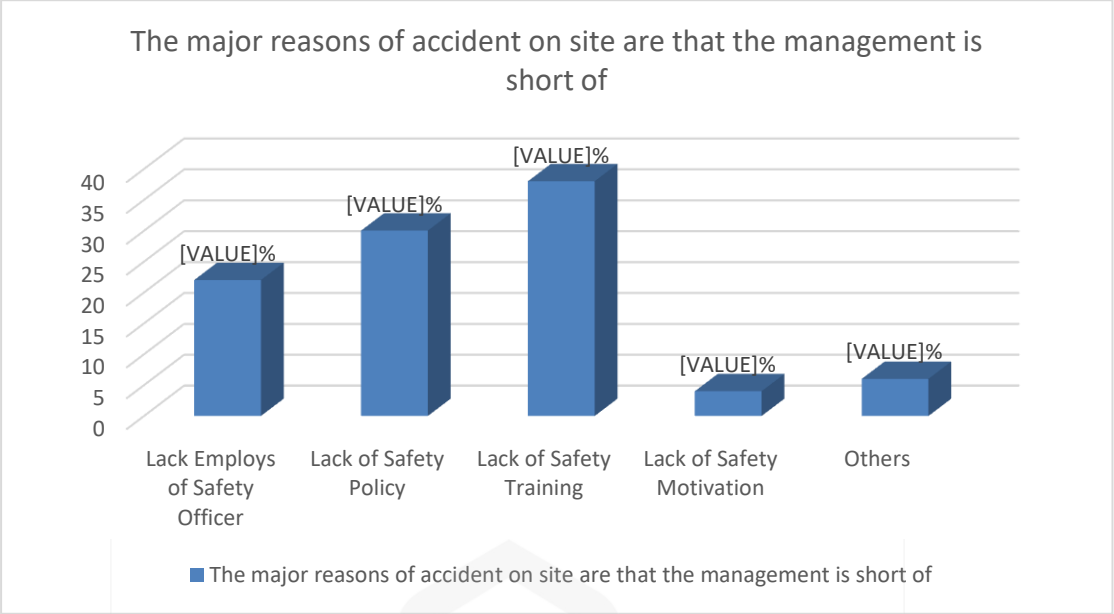


Figure 4.11 Management-Related Reasons for Accidents at Project Sites (A)

Figure 4.11 shows the information on the significant reasons for accidents at construction sites attributed to the management. 38% of the respondents said 'lack of safety training', 30% of the respondents said 'lack of safety policy', and 22% said 'lack of safety officer'. In comparison, 6% and 4% said 'others' and 'lack of safety motivation'.

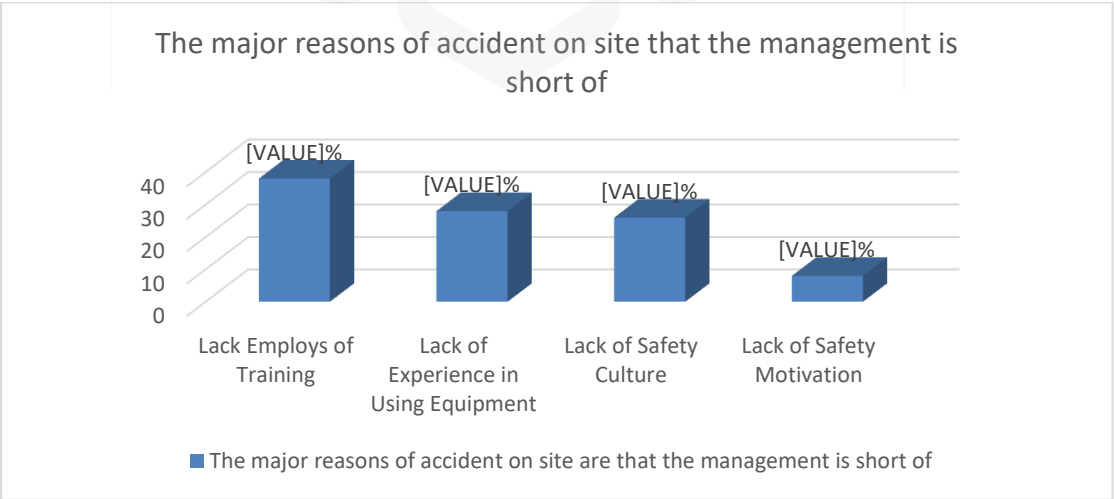


Figure 4.12 Management-Related Reasons for Accidents at Project Sites (B)

Figure 4.12 shows further information on the significant reasons for the accident attributed to the management. 38% of the respondents said ‘lack of training’, 28% of the respondents said ‘lack of experience in using equipment’, 26% said ‘lack of safety culture’ while 8% said ‘lack of safety motivation’.

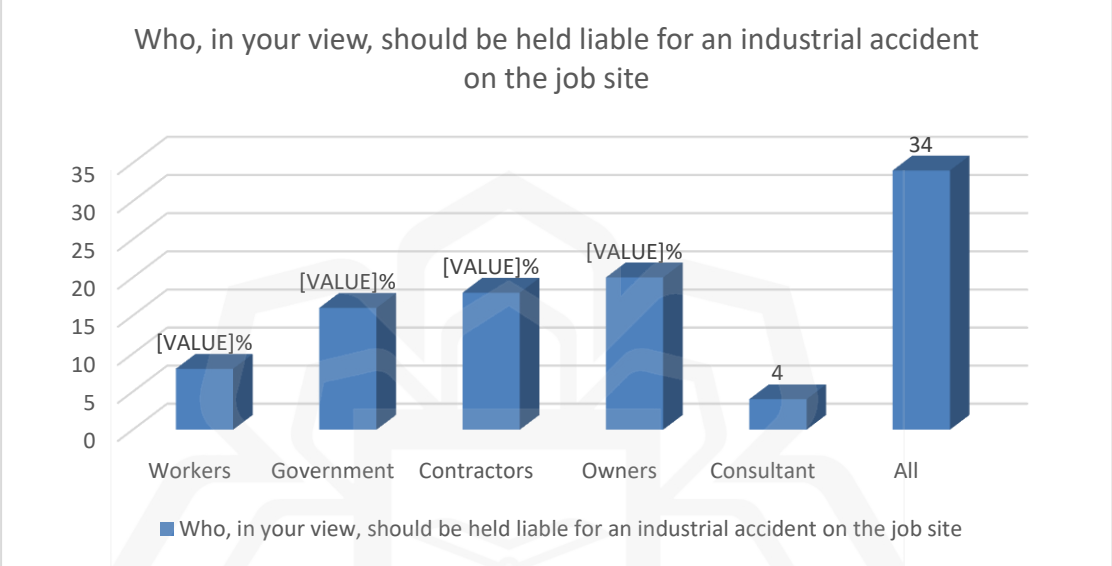


Figure 4.13 Liability for Industrial Accidents

Figure 4.13 shows who the respondents think should be held liable for an industrial accident on the site job. 34% of the respondents said ‘all the professionals’ at the sites, including workers, people representing the government, contractors, owners, and consultants. 20% of the respondents said ‘owners’, 18% said ‘contractors’, 16% said ‘the government’ while 8% and 4% said ‘workers’ and ‘consultants’ respectively.

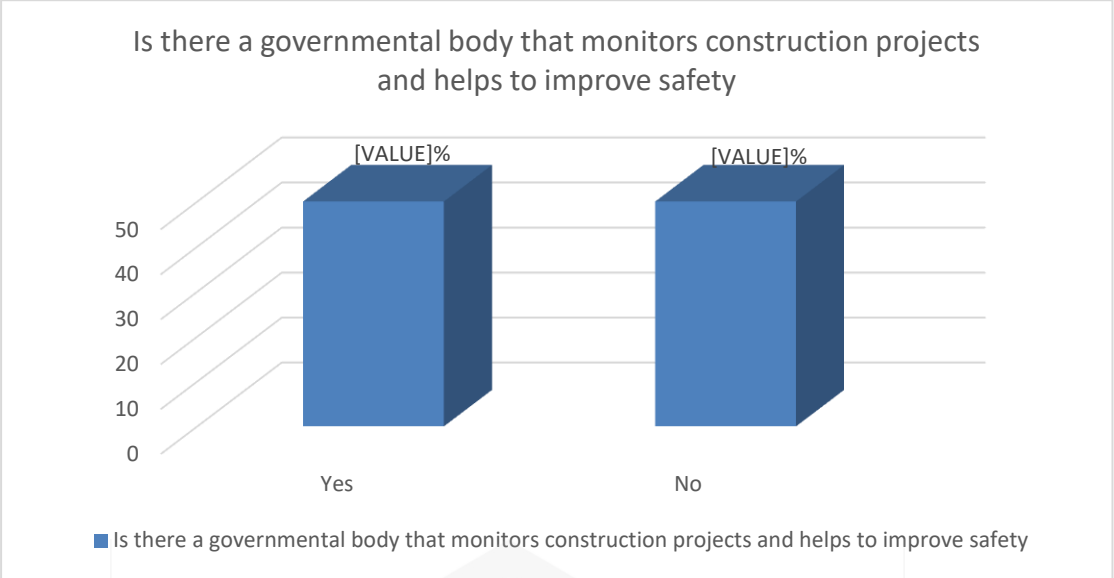


Figure 4.14 Monitoring Body to Improve Safety in Construction

Figure 4.14 reveals information on whether there is a governmental body that monitors construction projects and helps to improve safety. 50% of the respondents said 'yes' and the other 50% of the respondents said 'no' in which there is no governmental body that monitors construction projects and helps to improve safety in Afghanistan.

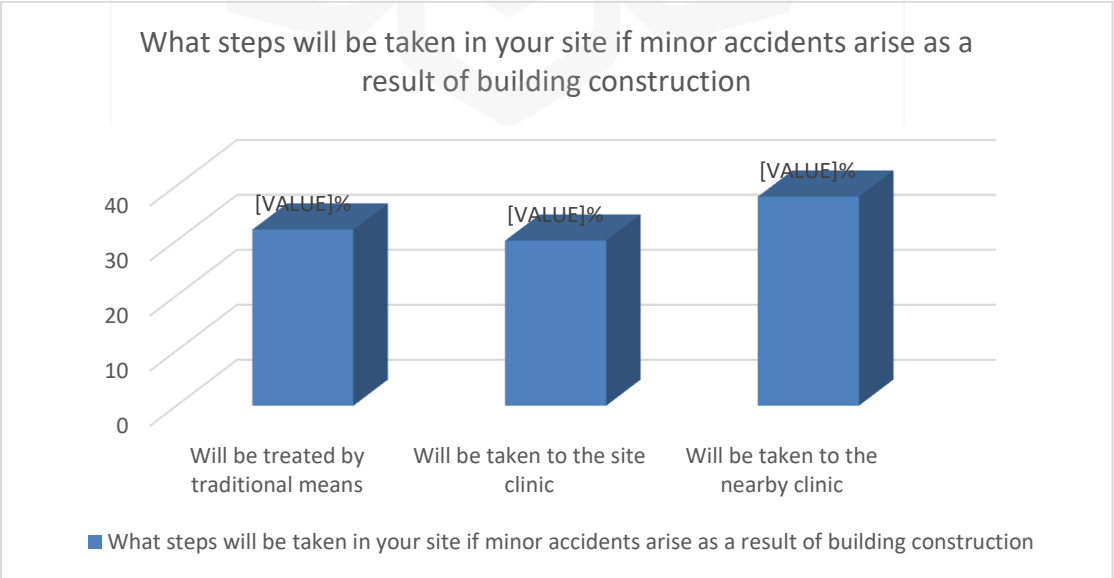


Figure 4.15 Action toward Minor Accidents in Building Construction

In a minor collision, Figure 4.15 discloses information on the measures that are often taken on the scene. 38% of respondents said they would take the individual to a nearby clinic, 32% said they would treat the person with traditional methods, and the remaining 30% said they would take the individual to the site clinic.

4.6 FACTORS AFFECTING SAFETY PERFORMANCE

This section aims to achieve the second objective of the study, which is to study the safety performance level in the construction industry. There are thirteen questions altogether within this section.

Table 4.2 Factors Affecting Safety Performance

Factor	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		(3) + (4)	Mean	SD	Rank
	F	%	F	%	F	%	F	%	F	%	%			
The effect of design complexity on protection	0	0.0	7	14.0	17	34.0	20	40.0	6	12.0	52.0	3.50	0.886	10
Climate conditions have an effect on safety and health	0	0.0	6	12.0	19	38.0	14	28.0	11	22.0	50.0	3.60	0.969	7
The cost of the whole project has an effect on safety	0	0.0	5	10.0	14	28.0	22	44.0	9	18.0	62.0	3.70	0.886	5
Personnel Protective Equipment (PPE) limitations	0	0.0	5	10.0	11	22.0	20	40.0	14	28.0	68.0	3.86	0.948	1
Planning (site protection plan, responsibility plan for hazard safety management, etc.)	1	2.9	5	10.0	19	38.0	16	32.0	9	18.0	50.0	3.54	0.973	8
Use of warning signals, indications, and barricades	1	2.0	5	10.0	10	20.0	19	38.0	15	30.0	68.0	3.84	1.037	2
The effect of using a work area plan on protection	1	2.0	6	12.0	17	34.0	19	38.0	7	14.0	52.0	3.50	0.953	10
For safety results, reward (incentive) and warning are used	4	8.0	8	16.0	17	34.0	17	34.0	4	8.0	42.0	3.18	1.063	13
The government’s and engineering societies’ roles in construction company protection	0	0.0	6	12.0	13	26.0	20	40.0	11	22.0	62.0	3.72	0.948	4
The psychological environment and human actions	1	2.0	8	16.0	19	38.0	20	40.0	2	4.0	44.0	3.28	0.858	12
Illiteracy and a lack of skilled labour	1	2.0	2	4.0	22	44.0	12	24.0	13	26.0	50.0	3.68	0.978	6
The effect of the natural environment on protection	0	0.0	4	8.0	12	24.0	25	50.0	9	18.0	68.0	3.78	0.840	3
The presence of safety and health policies, as well as their effect on safety	1	2.0	2	4.9	23	46.0	18	36.0	6	12.0	48.0	3.52	0.839	9

The results in Table 4.2 provides information on the safety performance level in the construction industry. The factors which most affect the safety performance level in the construction industry is "Personnel Protective Equipment (PPE) Limitations" with the highest mean and standard deviation (3.86 and 0.948), followed by the "Use of warning signals, indications, and barricades" with the mean and standard deviation (3.84 and 1.037), "The effect of the natural environment on protection" with the mean and standard deviation (3.78 and 0.840), "The government's and engineering societies' roles in construction company protection" with the mean and standard deviation (3.72 and 0.948), "The cost of the whole project has an effect on safety" with the mean and standard deviation (3.70 and 0.886), "Illiteracy and a lack of skilled labour" with the mean and standard deviation (3.68 and 0.978), "Climate conditions have an effect on safety and health" with the mean and standard deviation (3.60 and 0.969), Planning (site protection plan, responsibility plan for hazard safety management, etc.)" with the mean and standard deviation (3.54 and 0.973), "The presence of safety and health policies, as well as their effect on safety" with the mean and standard deviation (3.52 and 0.839), both "The effect of design complexity on protection" and "The effect of using a work area plan on protection" with the mean and standard deviation (3.50 and 0.953), "The psychological environment and human actions" with the mean and standard deviation (3.28 and 0.858), and the least of the factor affecting the safety performance level in construction industry is "For safety results, reward (incentive) and warning are used" with the mean and standard deviation (3.18 and 1.063).

4.7 APPROACHES TO IMPROVE SAFETY PRACTICE IN CONSTRUCTION INDUSTRY

This section aims to achieve the fourth objective of the study, which is to improve safety practice in the construction industry in Afghanistan. There are eight questions altogether under this section.

Table 4.3 Approaches to Improve Safety Practice in Construction Industry

Approach	Absolutely not Important		Not Important		Neutral		Important		Most Important		(3) + (4)	Mean	SD	Rank
	F	%	F	%	F	%	F	%	F	%	%			
Strengthen the legislation and the authority's compliance	0	0.0	4	8.0	2	4.0	19	38.0	25	50.0	88.0	4.30	0.886	3
Impose a penalty on employees who violate safety laws and regulations	0	0.0	0	0.0	6	12.0	19	38.0	25	50.0	88.0	4.38	0.697	1
Reward employees who perform exceptionally well in terms of safety	0	0.0	2	4.0	11	22.0	16	32.0	21	42.0	74.0	4.12	0.895	6
Offer appropriate safety training (e.g., with the use of photos and videos	1	2.0	2	4.0	4	8.0	20	40.0	23	46.0	86.0	4.24	0.916	5
Offer a workplace safety and wellness strategy	1	2.0	0	0.0	7	14.0	19	38.0	23	46.0	84.0	4.26	0.853	4
Provide safety notice board in different languages on site	0	0.0	3	6.0	11	22.0	14	28.0	22	44.0	72.0	4.10	0.953	7
Propose a budget for construction safety	0	0.0	0	0.0	7	14.0	18	36.0	25	50.0	86.0	4.36	0.722	2
Have a Personal Protective Equipment (PPE) policy (PPE)	1	2.0	0	0.0	13	26.0	19	38.0	17	34.0	72.0	4.02	0.892	8

The result in Table 4.4 suggests the approaches to improve safety practice in the construction industry. The most effective method to enhance safety practice in the construction industry in Afghanistan according to the respondents is to "Impose a penalty on employees who violate safety laws and regulations" with the highest mean and standard deviation (4.38 and 0.697), followed by "Propose budget for construction safety" with the mean and standard deviation (4.36 and 0.722), "Strengthen the legislation and the authority's compliance" with the mean and standard deviation (4.30 and 0.886), "Offer a workplace safety and wellness strategy" with the mean and standard deviation (4.26 and 0.853), "Offer appropriate safety training e.g. with the use of photos and videos" with the mean and standard deviation (4.24 and 0.916), "Reward employees who perform exceptionally well in terms of safety" with the mean and standard deviation (4.12 and 0.895), "Provide safety notice board in different languages on site" with the mean and standard deviation (4.10 and 0.953), and the least of the compelling method to improve safety practice in the construction industry in Afghanistan is "Have a Personal Protective Equipment (PPE) policy (PPE)" with the mean and standard deviation (4.02 and 0.892).

5.8 DISCUSSION

Due to its unique nature, the building industry is among the most dangerous industry sectors, not just in developing nations. In Afghanistan's construction industry, there are frequently safety issues in building projects. Based on the findings, this study may be of great assistance to those working in Afghanistan's building industry. The factors with higher rankings are critical factors that influence construction site safety practices. Paying attention to these factors in the construction industry will bring the accident to zero levels in the building construction industry.

The following suggestions are based on the findings from the research results expected from various stakeholders in building construction sites in the Kabul municipal government.

- On a construction project, building construction safety should be seen as a must instead of a choice. Safety should be the most serious concern for all partners in this industry, just as it is for time, money, and effectiveness. To avoid problems due to a shortage of personal protective equipment, sufficient finances should be established in the contract.
- In Kabul building construction projects, effective safety policies must be in place, and the safety officer must monitor their effectiveness on the job site.
- Precautions: All levels of employees at work should receive training on building construction safety regularly.
- Labourers must provide all necessary PPE after being trained on how to care for and use it correctly. PPE provided for building projects must also be of good quality and fit perfectly.
- The construction company must have a system to ensure that all of its employees know the company's safety policies, regulations, and strategies. Moreover, safe work method rules and regulations representing higher management concerns should have been in place to ensure that safety receives the required consideration.
- The importance of top management's role in an efficient safety management system cannot be overstated. Top management provides clear ideas for safety actions that top management must promote and support workers participating in safety programmes. There should safety training

for new workers, as is serving as a role model for the workplace by wearing PPE and adhering to standard procedures. The top management must take care of safety performance in the construction industry for future improvement.

- Casualties that happen regularly on building construction projects can be avoided. Provide safety awareness, safety training for workers and personal protective equipment, utilise warning sign/boards and use safety barriers and reflectors. The construction company may keep a record of accident reports.

We can lessen the causes of everyday accidents and fatalities in the building construction industry by increasing the top management commitment, providing safety training, establishing safety policies, reducing unsafe acts, supporting employee engagement and performing frequent safety checks. Moreover, positive thinking and behaviour-based safety are two methods that can be used to improve safety practice in Afghanistan's construction industry.

4.9 CHAPTER SUMMARY

It is impossible to establish safety as a culture at a building site without all stakeholders involved in the project. According to the respondents' feedback, safety training is the most critical aspect in establishing a safety culture at construction sites. In addition, top management must be fully committed to instilling a safety culture among all personnel on the job. Employers must also take proactive or suitable steps to guarantee that their employees are safe from the accident at the site. In this chapter, the survey results have been discussed within five major sections. Section A

determined the respondents' backgrounds to achieve the first research objective, while Section B discussed safety practices at construction sites. Section C investigated the sorts of occurrences that occur on construction sites to achieve the third study goal, whereas Section D elaborated on safety performance to meet the second study objective. Finally, Section E identified ways to improve construction site safety practices to meet the fourth research objective.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

The study's outcome on the analysis stated in the previous chapter will be further explained in this chapter. The conclusion discusses the essential characteristics in establishing safety practices in the building sector and offering ways to improve safety measures at building sites. This chapter will describe the achievements of the research's objectives, including the study's limitations, the discoveries obtained, and the recommendations for future research.

5.2 CONCLUSION FOR RESEARCH OBJECTIVES

To conclude this research, we need to look at its objectives as stated in Chapter One. Findings from the analysis will determine whether the goals have been met. The purposes of this study were:

- To determine the current safety practices at construction sites in Kabul, Afghanistan.
- To identify the types of accidents in the construction industry in Afghanistan.
- To examine the factors influencing safety performance in Afghanistan's construction industry.
- To suggest areas to improve safety practice in the country's construction industry.

Throughout the study, the research aims and objectives are to be met satisfactorily. All of these are achieved through primary data, in which the questionnaire was used to collect preliminary data for the research. The questionnaire was designed and developed based on findings from the literature analysis which

relates to the following questions relevant to the study's objectives. A summary of the result for each objective of this research is provided in the following subsections.

5.2.1 Objective 1: Safety Practices in Construction

The first objective was met by completing Section B of the questionnaire, which identified the current construction safety practices in Kabul's construction industry. The percentage of favourable replies given to each of the techniques by the respondents was used to evaluate the outcomes. The findings reveal that the majority of contractors implement building site safety procedures. However, the result of the survey questionnaire also indicates that most of the companies in Afghanistan do not practice safety well at construction sites. Thus, the current safety practice in the construction industry in Afghanistan is deplorable. Although most contractors have information about safety, they do not apply it during the construction of buildings. In some companies, there is no safety training at all. There is insufficient emergency equipment, no safety policies during construction, and the absence of on-site safety inspection in some companies.

On the other hand, few companies provide safety committees and safety training for workers at the workplace. In terms of personal protective equipment, they provide head, face, and eye protection. However, workers may not use the equipment because they feel uncomfortable with it. Apart from that, the study further discovers the safety gears used by some contractors at construction sites. They primarily include personal protective equipment like the helmet and headcover. Engineers will occasionally advise workers to care for their safety before they begin working. Usually, they are provided with a fall protection system which are safety nets, handrails, hole covers, and safety belts. Unfortunately, the lack of a safety officer is

apparent in Afghanistan. Also, contractors do not follow the right safety practice. Moreover, some of them (15.7%) even do not have any information about safety during construction.

5.2.2 Objective 2: Types of Incidents in Construction

The second objective was fulfilled by investigating Section C of the questionnaire, which identified the issue of cases of accidents in construction. The result shows that the reasons for accidents at construction sites are:

- Lack of skilled labour
- Lack of personal protective equipment
- Low educated workers in term of safety knowledge
- Lack of Legislation
- Management's carelessness
- Careless worker attitude
- The carelessness of the Consulting
- Absence of Safety Officer
- Lack of safety policy
- Lack of safety training
- Lack of safety motivation
- The cost of safety

From the survey, the most common causes for on-site accidents in construction include lack of safety training, lack of skilled labour, lack of personal protective equipment, and lack of experience in using the equipment. Further significant reasons for accidents at construction sites include the absence of a safety officer, lack of safety policies, lack of safety training, and lack of safety motivation.

The survey also highlights the types of accidents, and they are death, permanent disability, partial inability, and light injury, in which end partial inability records the highest percentage of the calamity at construction sites by 69.2%.

Furthermore, the findings show that minor injuries at construction sites are addressed mainly by going to a nearby clinic. Some are treated using traditional methods, and only a few are treated at the site clinic. Almost all of the significant injuries at construction sites result in clinic or hospital visits and the minor ones are treated on-site by traditional means. Moreover, personal protective equipment is deficient, and there is a general lack of management commitment to safety programmes, insufficient safety budget, absence of safety supervisor on-site, and inefficient present safety regulations based on the findings.

5.2.3 Objective 3: Safety Performance in Construction industry

The third objective was fulfilled by examining Section D of the questionnaire, which identified the factors affecting construction site safety performance. The result of the survey shows thirteen factors which impacted safety performance, which are the following:

1. The complexity of the design will affect safety practice.
2. The cost of the whole project affects safety.
3. Climate conditions affect safety and health.
4. Planning (site protection plan, responsibility plan for hazard safety management, etc.)
5. Personnel Protective Equipment (PPE) limitations.
6. Workplace effect on safety practice.
7. Use of warning signals, indications, and barricades
8. The government's and engineering societies' roles in construction company protection
9. For safety results, reward (incentive) and warning are given to users.

10. The presence of safety and health policies, as well as their effect on safety.
11. The effect of the natural environment on protection.
12. Illiteracy and a lack of skilled labour.
13. The psychological environment and human actions.

The researcher discovered from the survey that three primary factors influenced the safety of construction site projects, including the impact of the natural environment on protection. The safety and health rules or factors which affect safety practice are illiteracy, scarcity of skilled labour, and a lack of personal protective equipment (PPE). The survey also shows that the use of warning signals, indications, and barricades is one of the highest safety performance factors during construction.

As a result, many other significant safety elements must be considered, which will have a good impact on a construction project's health and safety performance. The best performing elements in some projects, for example, are 'appropriate safety and health training', 'affordability of safety and wellbeing policy', and 'use of safety signs/signals/barricades.

5.2.4 Objective 4: Solutions to Improve Safety Practices in Construction

The fourth objective was meet by completing Section E of the questionnaire, which includes a list of suggested measures for improving construction site safety. From the survey, most of the contractors suggest the factors to improve safety practice in the construction industry. They are the following:

- The need to offer a workplace safety and wellness strategy.
- Strengthen the legislation and the authority's compliance.
- There needs to be a safety signboard at the construction site for workers.

- Impose a penalty on employees who violate safety laws and regulations.
- Propose a budget for construction safety.
- Reward employees who perform exceptionally well in terms of safety.
- Provide Personal Protective Equipment (PPE) policy.
- Offer appropriate safety training (e.g., with the use of photos and videos).

From the responses, the essential strategies to improve safety practice at construction sites which most of the respondents strongly agreed to are proposing a budget for construction safety and providing personal protective equipment as well as practical safety training. According to the survey, the majority also suggest an open penalty on those workers who do not observe safety rules and regulations. Some suggest rewarding those workers who follow the rules and regulation of safety performance in construction. Nevertheless, others also suggest total commitment from top management to control the safety practice in construction projects.

From the analysis, further suggestions were elicited. A large portion of the responses zero in on punishment for the labourers who do not adhere to the well-being rules and guidelines, and offering a prize to labourers who observe the principles of security work during the development. Additionally, specialists in Afghanistan ought to be prepared on security matters as they simply lack the knowledge.

Thus, from both the case studies and survey, the essential suggestions of most respondents are to provide safety training, to penalise those who do not follow safety rules, to provide enough personal protective equipment, to allocate enough budget for safety practice, and to reward workers who follow safety rules. Also, top management should control the safety practice in all companies to ensure workers apply them during building construction.

5.3 LIMITATIONS OF THE STUDY

Throughout this research, the researcher faced several obstacles which indirectly affected the time and cost of this research.

For one, most of the correspondence either were uneducated who did not know how to read, write, and understand the questionnaire, in which case the researcher had to fill out their responses on their behalf. They were hesitant to collaborate with answers to the questions posed, making it impossible to collect primary data for the study. Also, some company officials actually prohibited their staff from answering the questionnaire as they felt it a waste of time and workers would be better off working on site.

The manner in which the survey was conducted also proved to be a barrier. The Google Form survey was sent to contractors in Afghanistan to obtain their feedback. As there is a dire lack of access to the internet, which is expensive for a poor country like Afghanistan, not everyone had internet access thereof. This means that the survey may have not reached all of its intended target participants. Those who had internet access further had a slow server connection. Thus, obtaining feedback from the respondents proved to be time consuming as well.

Another barrier was language-related. In general, people in Afghanistan do not speak English. The researcher therefore had to translate the survey into the Persian language to allow the respondents to understand the questions. Moreover, the Covid-19 pandemic restricted access to meet any safety and health officer. Similarly, it was not easy to acquire the participation and access to people in higher positions for the data and research propose, largely due to their insecurity and fear of repercussion in Afghanistan.

5.4 CONCLUSION

For emerging countries like Afghanistan, construction projects are critical. Because of the nature of the construction industry, construction safety is paramount for construction project sites. The safety procedures at Afghanistan construction sites are wanting. Kabul as a case study was discussed in this research. It assumed that the effective implementation of a safety culture at construction sites would result in the construction industry's highest level of safety. In a market-driven culture, where the primary goal is completing projects with the needed quality at the most limited conceivable time and the least reasonable expense, it is frequently a secondary priority. This study aimed to determine the safety practices at construction sites, the safety performance in the construction industry, the types of incidents in the construction industry in Afghanistan, and solutions to improve safety practice in the construction industry. The total number of questions were 55, and 12 companies were targeted. The survey was distributed to 120 contractors and 52 people responded to the survey by filling it out and returning it to the researcher.

According to the results of the survey, the Afghanistan construction industry has a weak safety culture. There is a strong link between a lack of safety culture and a growth in the number of risky behaviours in the Afghanistan building industry. Most construction firms do not pay that much attention to the practice of safety practices on construction projects. Moreover, there is no safety training when looking at the results. There is also not enough personal protective equipment, and workers claim discomfort to wear and use. Also apparent were the lack of safety policies and top management commitment, and a flawed accident-recording system.

Several major factors were found to affect the performance of safety during construction, which were the effect of the natural environment on protection, the non-presence of security and health policies as well as their impact on safety, illiteracy, and a lack of skilled labour. Thus, individual employees, forepersons, project managers, and executives should all be held accountable for maintaining a safe work environment in their daily operations. It really should be noted that adopting appropriate safety practices at construction sites would ensure that every worker is responsible for following safety rules and regulations, reducing the likelihood of accidents occurring. Construction workers will be more productive if there are fewer accidents. Thus, construction organisations should provide proper safety culture training to all new employees assigned to construction projects and practical regular staff training on safe work methods. It could enhance and increase their danger identification skills and eliminate harmful workplace acts and situations. Even though staff training costs money, the costs connected with fatalities are significantly higher. Although management may object to frequent staff training because of the expenditures, increased awareness will shift attitude over time.

5.5 Future Research

Due to the scarcity of relevant research on construction safety in Afghanistan, researchers are therefore free to conduct their studies, and there are various possibilities for future research. They may include:

- A study comparing road construction safety practices to building construction safety practices in Kabul.
- Research on assessing safety culture on high-rise buildings in Afghanistan.

- Investigation on how construction teams are used in Afghanistan to manage health and safety risk.

An analysis of safety management and professionals should be conducted to attain zero accidents at construction sites in Afghanistan.

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APPENDIX A

SURVEY QUESTIONNAIRE

Introductory Letter

Dear Sir/Madam,

I am a final year student of Master of Science in Building Service Engineering at the International Islamic University Malaysia (IIUM). Currently, I am conducting a research project in order to fulfil the requirements of my graduation. I would be very grateful if you could spend some time to answer the questionnaire regarding the safety practice at construction sites in Afghanistan.

I thank you and appreciate your honest feedback. Below are contact details for any further questions regarding this survey.

من دانشجوی سال آخر کارشناسی ارشد علوم مهندسی خدمات ساختمان در دانشگاه بین المللی اسلامی مالزی هستم. در حال حاضر ، من در حال انجام یک پروژه تحقیقاتی برای تحقق بخشیدن به شرایط فارغ التحصیلی ام هستم .

بسیار ممنون می شوم اگر بتوانید مدتی را برای پاسخ دادن به پرسشنامه مربوط به اقدامات ایمنی در محل ساخت و ساز در افغانستان اختصاص دهید.

Researcher:

Samiullah Ghafuri
Phone no: +60 182797735
Email: hamayongh@gmail.com

Instructor:

IR. Mohd Shariffuddin BinIbrahim
Phone no: +60 12 274 3179
Email: irsharifudin@iium.edu.my

Research Questions

1. What are the current safety practices at construction sites in Afghanistan?
2. What is the safety performance level in construction?
3. What are the types of incidents across the country's construction industry?
4. What are viable solutions to improve safety practices in Afghanistan's construction industry?

Research Objectives

1. To determine the safety practices at construction sites in Afghanistan.
2. To study the safety performance level in construction.
3. To identify the types of incidents across the country's construction industry.
4. To suggest solutions to improve safety practices in Afghanistan's construction industry.

Section A: Demography (شناسی جمعیت :الف بخش)

Personal details (شخصی مشخصات پروژه)

7. Gender (چیست شما جنسیت):
   ☐ Male (مرد) ☐ Female (زن)
8. Age (شما سن):
   ☐ 20-35 ☐ 36-45 ☐ 46-55 ☐ 55 and above
9. Employment status (اید شده استخدام آنچه اساس بر شما آیا):
   ☐ Part-time (وقت نیمه)
   ☐ Full-time (وقت تمام)
   ☐ Temporary / daily (روزانه موقت)
10. Working experience in construction (ساز و ساخت در شما تجربه):
    ☐ 0-5 years ☐ 6-10 years ☐ 11-15 years ☐ 15 years and above
11. Educational background (تحصیلات زمینه):
    ☐ Primary school (مکتب ابتدایه)
    ☐ Primary school with vocation skill (مکتب ابتدایه شغلی مهارت با)
    ☐ Secondary education (متوسطه آموزش)
    ☐ Bachelor Degree
    ☐ Master's Degree
    ☐ Doctorate Degree
    ☐ Other (specify) (دیگر ای مشخصه)
12. Position in the company (موقعیت در شرکت):
    ☐ Project manager (مدیر پروژه)
    ☐ Safety manager (مدیر ایمنی)
    ☐ Safety officer (مامور امنیت)
    ☐ Worker (کارگر)
    ☐ Engineer (مهندس)
    ☐ Architect (معمار)

Section B: Current Safety Practices (تمرین ایمنی فعلی :B بخش)

Dear respondent, please use the "X" sign to indicate your appropriate response to the questions in this section that are related to safety practises in your work experience.

با سلام ، پاسخ دهندگان لطفاً با استفاده از علامت" اکس "پاسخ مناسب خود را به سالات این بخش مربوط به اقدامات ایمنی در تجربه کاری خود نشان دهید

11. Do you have any information about safety practice in the workplaces?
دارید؟ کار محل در ایمنی روش مورد در اطلاعاتی آیا
☐ Yes بلی ☐ No نخیر ☐ Don't know نمیدانم
12. If yes, where did you get the information? اید؟ کرده کسب اطلاعات کجا از بله اگر
☐ From my studies مطالعه از ☐ From the organisation سازمان از
☐ From short training کوتاه آموزش ☐ From my co-workers همکارانم
☐ From my supervisor من سرپرست
13. How important do you believe safety is in the construction of buildings?
است؟ مهم چقدر ها ساختمان ساخت در ایمنی شما نظر به
☐ Very important مهم خیلی ☐ Important مهم
☐ Somewhat important مهم حدودی تا ☐ Not that important نیست مهم
14. How many construction safety trainings have you attended (on the job)?
کار؟ حین در اید کرده شرکت ساز و ساخت ایمنی آموزش چند در
☐ None یک هیچ ☐ Some مقداری
☐ Few کمی تعداد ☐ Many زیاد
15. How often do building construction safety trainings take place on the job?
شود؟ می انجام یکبار وقت چند هر ساختمان ساز و ساخت ایمنی های آموزش
☐ Very frequent مکرر خیلی
☐ Frequent زود زود
☐ Somewhat frequent است مکرر حدودی تا
☐ Not frequent نیست مکرر
☐ Not very frequent نیست مکرر خیلی
16. How would you rate the safety culture of the building construction companies where you work on a scale of 0 to 10?
فرهنگ ایمنی شرکت های ساختمانی سازمانی که در آنها در مقیاس 0 تا 10 کار می کنید را چگونه ارزیابی می کنید؟
☐ 0-2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10
17. Have you ever worked for a local or foreign construction firm that prioritises safety performance?
است؟ ایمنی عملکرد اولویت که اید کرده کار خارجی یا داخلی ساختمانی شرکت یک در حال به تا آیا
☐ Yes بلی ☐ No نخیر
18. In a building construction project, what sort of safety equipment is most important to you? (Place them in order of preference)
در یک پروژه ساخت ساختمان ، چه نوع تجهیزات ایمنی برای شما مهمترین است؟) آنها را به ترتیب اولویت قرار دهید(
☐ Safety shoes ایمنی کفش ☐ Helmet ایمنی کلاه
☐ Reflector بازتابنده ☐ Safety glass ایمنی شیشه
☐ Gloves دستکش ☐ Other (specify) دیگر ای مشخصه
19. What kind of protection devices do you see in construction projects for buildings?
بینید؟ می ها ساختمان ساختمانی های پروژه در را حفاظتی وسایل نوع چه
☐ Safety Shoes ایمنی کفش ☐ Helmet ایمنی کلاه
☐ Reflector بازتابنده ☐ Safety glass ایمنی شیشه
☐ Gloves دستکش ☐ Other (specify) دیگر ای مشخصه
20. On your building projects/sites, do you have enough personal protective equipment (PPE)?
آیا در پروژه ها / سایت های ساختمانی خود ، تجهیزات محافظت شخصی کافی
(PPE) دارید؟
☐ Yes بلی ☐ No نخیر
21. How likely are you to use protection equipment if it is given to you?

است؟ چقدر شما استفاده احتمال ، شود داده حفاظتی تجهیزات شما به اگر

☐ Very likely محتمل خیلی

☐ Likely دارد احتمال

☐ Somewhat likely دارد احتمال حدودی تا

☐ Unlikely بعید

☐ None یک هیچ

22. What are the reasons for not wanting to use personal protective equipment (PPE)?
چیست؟ (PPE) شخصی محافظ تجهیزات از استفاده به تمایل عدم دلایل

☐ Not provided است نشده ارائه

☐ The climate too warm (گر خیلی هوا و آب

☐ Discomfort to wear/use استفاده / پوشیدن از ناراحتی

☐ Lack of awareness آگاهی نداشتن

☐ Other (specify) (دیگر ای مشخصه

23. Is there a safety policy at construction company?
است؟ شده گرفته نظر در ایمنی سیاست ساختمانی شرکت؟ در آیا

☐ Yes بلی ☐ No نخیر ☐ Don't have the information نمیدانم

24. Is written information about safety measures available at your construction site?
است؟ موجود شما ساز و ساخت محل در ایمنی اقدامات مورد در کتبی اطلاعات آیا

☐ Yes بلی ☐ No نخیر

25. Is there a written circular/brochure on your construction site that informs staff about the risks associated with their job?
با مرتبط خطرات از را کارکنان که دارد وجود شما ساختمانی سایت در ای شده نوشته بروشور / بخشنامه آیا کند؟ آگاه شغلشان

☐ Yes بلی ☐ No نخیر

26. Do Managers encourage and support worker Safety programs?
کنند؟ می پشتیبانی و تشویق را کارگران ایمنی های برنامه مدیران آیا

☐ Yes بلی ☐ No نخیر

27. Do workers receive initial safety training before starting work on a specific site?
بینند؟ می را ایمنی اولیه های آموزش خاص سایت یک در کار شروع از قبل کارگران آیا

☐ Yes بلی ☐ No نخیر ☐ Don't have the information نمیدانم

28. Is there a safety supervisor on site for the project?
دارد؟ وجود پروژه برای محل در ایمنی ناظر یک آیا

☐ Yes بلی ☐ No نخیر

Section C: Factors Affecting Safety Performance (بخش C: عوامل موثر بر عملکرد ایمنی)

Dear respondent, please use the "X" sign to indicate your acceptable answer to the questions posed in this section, which are related to the safety performance.
با سلام ، پاسخ دهندگان لطفاً از علامت (اکس) برای نشان دادن پاسخ قابل قبول خود به سوالات ارسال شده در این بخش ، که مربوط به عملکرد ایمنی است ، استفاده کنید.

According to your experience please state the level of your agreement in your opinion what level these factors are effect on safety performance in building construction industries?
با توجه به تجربه خود ، لطفاً سطح توافق خود را بیان کنید ، به نظر شما این عوامل در چه سطحی بر عملکرد ایمنی در سایت های ساختمانی ساختمان تأثیر دارند؟

1	2	3	4	5
Strongly disagree کاملا مخالف	Disagree مخالف بودن	Neutral متوسط	Agree موافق	Strongly agree کاملا موافقم

Factors عوامل	1	2	3	4	5
The effect of design complexity on protection. تأثیر پیچیدگی طراحی بر حفاظت					
Climate conditions have an effect on safety and health. شرایط آب و هوایی بر ایمنی و سلامتی تأثیر دارد					
The cost of the whole project has an effect on safety. هزینه کل پروژه در ایمنی تأثیر دارد.					
Personnel Protective Equipment (PPE) Limitations. . محدودیت های تجهیزات محافظت شخصی (PPE).					
Planning (site protection plan, responsibility plan for hazard safety management, etc.) برنامه ریزی (طرح حفاظت از سایت ، برنامه مسئولیت مدیریت ایمنی در برابر خطر و غیره)					
Use of warning signals, indications, and barricades استفاده از علائم هشدار دهنده ، نشانه ها و موانع استفاده از موانع					
The effect of using a work area plan on protection. تأثیر استفاده از طرح منطقه کار در حفاظت.					
For safety results, reward (incentive) and warning are used. برای نتایج ایمنی ، از پاداش (مشوق) و هشدار استفاده می شود.					
The government's and engineering societies' roles in construction company protection نقش دولت و انجمن های مهندسی در حمایت از شرکت های ساختمانی					
The psychological environment and human actions محیط روانشناختی و اعمال انسانی					
Illiteracy and a lack of skilled labour بی سوادی و کمبود نیروی کار ماهر					
The effect of the natural environment on protection تأثیر محیط طبیعی بر حفاظت					
The presence of safety and health policies, as well as their effect on safety وجود سیاست های ایمنی و بهداشتی و همچنین تأثیر آنها بر ایمنی					

Section D: Types of Incidents in Construction (أنواع الحوادث في البناء :D بخش)

Greetings, respondents Please write your appropriate answers in the space given to the questions posed in this section, which are related to frequently occurring incidents. با سلام ، پاسخ دهندگان لطفاً پاسخ های مناسب خود را در فضایی که به سوالات موجود در این بخش اختصاص داده شده و مربوط به حوادث مکرر است ، بنویسید.

29. What are the most common causes of accidents on building construction industry?
چیست؟ ساختمان ساختمانی سایتهای در تصادف علل شایعترین
   - ☐ Lack of training آموزش عدم
   - ☐ Lack of skilled labour ماهر کار نیروی کمبود
   - ☐ Lack of personal protective equipment شخصی حفاظت وسایل کمبود
   - ☐ Low educated workers پایین تحصیلات با کارگران
30. In what degree injury will be in construction industry?
بود؟ خواهد ساز و ساخت محل در آسیب از ای درجه چه در
   - ☐ Death مرگ
   - ☐ Permanent inability دائمی ناتوانی
   - ☐ Partial inability ناتوانی حدی تا
   - ☐ Light injury سبک دیدگی آسیب
   - ☐ Other دیگر
31. Is there a health and safety reporting at construction sites?

دارد؟ وجود ایمنی و بهداشت گزارش آیا

☐ Yes بلی ☐ No نخیر

32. High accident rates on construction site are due to:
دلیل به سازاست و ساخت سایت در تصادفات میزان بودن بالا:

☐ Lack of legislation قانون نبود

☐ Lack of safety knowledge ایمنی دانش عدم

☐ Management carelessness مدیریت احتیاطی بی

☐ Careless worker attitudes احتیاط بی کارگری های نگرش

☐ Carelessness of the consulting مشاوره خیالی بی

☐ All reasons دلایل تمام

33. The major reasons of accident on site are that the management is short of:
:شود می انجام کوتاهی نظر از مدیریت که است این محل در حادثه عمده دلایل

☐ Lack employs of safety officer ایمنی افسر کمبود

☐ Lack of safety policy ایمنی سیاست عدم

☐ Lack of safety training ایمنی آموزش عدم

☐ Lack of safety motivation ایمنی انگیزه عدم

☐ The cost of safety ایمنی هزینه

☐ Other دیگر یا

34. The most common causes of accidents on the job site are a lack of:
:است زیر موارد فقدان شغلی سایت در تصادفات علل شایعترین

☐ Lack of training آموزش عدم

☐ Lack of experience in using equipment تجهیزات از استفاده تجربه عدم

☐ Lack of safety culture ایمنی فرهنگ عدم

☐ Lack of safety motivation ایمنی انگیزه عدم

☐ Other دیگر

35. Who, in your view, should be held liable for an industrial accident on the job site?
باشد؟ کار محل در صنعتی حادثه یک مسئول باید کسی چه ، شما نظر از

☐ Workers کاریگر ☐ Government حکومت

☐ Contractors پیمانکاران ☐ Owners صاحبان

☐ Consultants مشاور ☐ All ها این تمام

36. Is there a governmental body that monitors construction projects and helps to improve safety?
کند؟ کمک ایمنی بهبود به و کرده رصد را ساختمانی های پروژه که دارد وجود دولتی ارگان آیا

☐ Yes بلی ☐ No نخیر

37. Is it possible to avoid the majority of building construction site accidents?
کرد؟ جلوگیری ساختمان ساختمانی سایتهای حوادث اکثر از توان می آیا

☐ Yes بلی ☐ No نخیر

38. What steps will be taken in your site if minor accidents arise as a result of building construction?
شود؟ می انجام اقداماتی چه ، ساختمان ساز و ساخت اثر در جزئی حوادث بروز صورت در

☐ Will be treated by traditional means (شد خواهد درمان سنتی های روش با)

☐ Will be taken to the site clinic (شود می منتقل سایت کلینیک به)

☐ Will be taken to the nearby clinic. (شد خواهد منتقل اطراف کلینیک به)

Section E: Approaches to Improve Safety Practice in Construction
(رویکردهای بهبود عملکرد ایمنی در صنعت ساخت و ساز :E بخش)

The aim of this section is to identify the strategies to improve the safety practices in construction industry. Based on your involvement in building project, please rate the level of importance to the following solutions by ticking (x) at appropriate space.

هدف این بخش شناسایی استراتژی های بهبود شیوه های ایمنی در صنعت ساختمان است. با توجه به مشارکت خود در پروژه های ساختمانی ، لطفاً با علامت گذاری در فضای مناسب ، میزان اهمیت را برای راه حل های زیر ارزیابی کنید.

1	2	3	4	5
absolutely not important کاملاً مهم نیست	not important مهم نیست	neutral خنثی	important مهم	most important مهمترین

Solutions راه حل ها	**1**	**2**	**3**	**4**	**5**
Strengthen the legislation and the authority's compliance. تقویت قوانین و انطباق مقامات .					
Impose a penalty on employees who violate safety laws and regulations. مجازاتی را برای کارکنانی که قوانین و مقررات ایمنی را نقض می کنند ، تعیین کنید.					
Reward employees who perform exceptionally well in terms of safety. به کارمندانی که از نظر ایمنی عملکرد فوق العاده خوبی دارند پاداش دهید.					
Offers appropriate safety training (e.g., with the use of photos and videos). آموزش ایمنی مناسب (به عنوان مثال ، با استفاده از عکس و فیلم) ارائه می دهد.					
Offers a workplace safety and wellness strategy. استراتژی ایمنی و سلامتی محل کار را ارائه می دهد.					
Provides safety notice board in different languages on site. تابلوی اعلانات ایمنی را به زبانهای مختلف در محل ارائه می دهد.					
Proposed budget for construction safety. بودجه پیشنهادی برای ایمنی ساخت و ساز .					
Has a Personal Protective Equipment (PPE) policy (PPE). دارای سیاست محافظت شخصی (PPE) است.					

APPENDIX B

COMPANIES' VERIFICATION

جمهـوری اسـلامی افغانسـتان
وزارت شهر سازی و اراضی
ریاسـت عمومـی برنامـه سـاختمانهای عامـه و دولـتی
دیپارتمنـت پـروژه سـازی

Date 10/6/2021

To whom it may concern,

به

Dear Sir/madam

The bellow construction companies have been accredited by municipality of Kabul Afghanistan.

شرکت های ساختمانی زیر دارند توسط شهرداری کابل افغانستان معتبر شناخته شده است

1. Asia Atlas Construction Company
2. Fajir Tawhid Construction Company FTCC
3. Universe Trading & Construction Company
4. Tatekan Company
5. Excellent Planning and Construction Company
6. Safi Construction Company
7. Brand Super Construction Company
8. SHAKHES Engineering Team
9. Omran Geotechnic Company
10. Afghan Chelsea Construction Company
11. Landview Construction Company
12. Rashtin Construction company

APPENDIX C

STATISTICAL ANALYSIS

Statistics

		Gender	Age	Employment status	Working experience in construction	Educational background
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		1.24	1.12	2.02	1.30	4.46
Std. Deviation		.431	.435	.685	.789	.542

Statistics

		Position in the company	Information on safety practice in the workplace	If yes - source of information	Importance of safety in building construction	Safety trainings attended (on the job)
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		4.28	1.20	1.90	1.18	2.04
Std. Deviation		1.654	.452	1.233	.482	1.106

Statistics

		Frequency of building construction safety trainings on the job	Safety culture of the building construction company on a scale of 0 to 10	Experience in working for a construction firm that prioritises safety performance	Safety equipment deemed most important	Availability of protection devices in construction projects for buildings
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		2.96	2.84	1.40	2.30	2.30
Std. Deviation		1.340	1.330	.495	1.216	1.216

Statistics

		Availability of enough personal protective equipment (PPE)	Probability to use protection equipment	Reasons for not wanting to use personal protective equipment (PPE)	Availability of safety policy at construction company	Availability of written information about safety measures at construction site
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		1.34	1.48	2.70	1.48	1.30
Std. Deviation		.479	.814	1.129	.677	.463

Statistics

		Availability of a written circular/ brochure at construction site that informs staff about the risks associated with their job	Do Managers encourage and support worker safety programmes	Do workers receive initial safety training before starting work on a specific site	Is there a safety supervisor on site for the project	Factors affecting safety performance (the effect of design complexity on protection)
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		1.38	1.14	1.50	1.54	3.50
Std. Deviation		.490	.351	.614	.503	.886

Statistics

		Effect of climate conditions on safety and health	Effect of cost of the whole project on safety	Personnel Protective Equipment (PPE) limitations	Planning (site protection plan, responsibility plan for hazard safety management, etc.)	Use of warning signals, indications, and barricades
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		3.60	3.70	3.86	3.54	3.84
Std. Deviation		.969	.886	.948	.973	1.037

Statistics

		Effect of using a work area plan on protection	For safety results, reward (incentive) and warning are used	The government's and engineering societies' roles in construction company protection	The psychological environment and human actions	Illiteracy and a lack of skilled labour
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		3.50	3.18	3.72	3.28	3.68
Std. Deviation		.953	1.063	.948	.858	.978

Statistics

		Effect of the natural environment on protection	Presence of safety and health policies, as well as their effect on safety	Types of incidents (most common causes of accidents on building construction)	Degree of injury in construction	Health and safety reporting at construction
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		3.78	3.52	3.12	2.30	1.46
Std. Deviation		.840	.839	.773	1.147	.503

Statistics

		High accident rates on construction site are due to	Major reasons of accident on site are that the management is short of	The most common causes of accidents on the job site are a lack of	Who, in your view, should be held liable for an industrial accident on the job site	Is there a governmental body that monitors construction projects and helps to improve safety
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		4.32	2.48	2.04	3.98	1.50
Median		4.15[a]	2.38[a]	1.94[a]	3.89[a]	1.50[a]
Std. Deviation		1.755	1.233	.989	1.732	.505

Statistics

		Is it possible to avoid the majority of building construction site accidents	What steps will be taken in your site if minor accidents arise as a result of building construction	Approaches to improve safety practice in construction industry (strengthen the legislation and the authority's compliance)	Impose a penalty on employees who violate safety laws and regulations	Reward employees who perform exceptionally well in terms of safety
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		1.12	2.06	4.30	4.38	4.12
697Std. Deviation		.328	.843	.886	.697	.895

Statistics

		Offers appropriate safety training (e.g., with the use of photos and videos	Offers a workplace safety and wellness strategy	Provides safety notice board in different languages on site	Proposed budget for construction safety	Has a Personal Protective Equipment (PPE) policy (PPE)
N	Valid	50	50	50	50	50
	Missing	0	0	0	0	0
Mean		4.24	4.26	4.10	4.36	4.02
Std. Deviation		.916	.853	.953	.722	.892

a. Calculated from grouped data.

Frequency Table

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	38	76.0	76.0	76.0
	Female	12	24.0	24.0	100.0
	Total	50	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-35	46	92.0	92.0	92.0
	36-45	2	4.0	4.0	96.0
	46-55	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Employment Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Part-time	11	22.0	22.0	22.0
	Full-time	27	54.0	54.0	76.0
	Temporary/ daily	12	24.0	24.0	100.0
	Total	50	100.0	100.0	

Working Experience in Construction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5 years	42	84.0	84.0	84.0
	6-10 years	4	8.0	8.0	92.0
	11-15 years	1	2.0	2.0	94.0
	15 and above	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

Educational Background

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Secondary education	1	2.0	2.0	2.0
	Bachelor Degree	25	50.0	50.0	52.0
	Master Degree	24	48.0	48.0	100.0
	Total	50	100.0	100.0	

Position in the Company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Project manager	7	14.0	14.0	14.0
	Safety manager	3	6.0	6.0	20.0
	Safety officer	1	2.0	2.0	22.0
	Worker	7	14.0	14.0	36.0
	Engineer	22	44.0	44.0	80.0
	Architect	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

Information about Safety Practice in the Workplace

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	41	82.0	82.0	82.0
	No	8	16.0	16.0	98.0
	I don't know	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Source of Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	From my own study	30	60.0	60.0	60.0
	From the organisation	4	8.0	8.0	68.0
	Short training	8	16.0	16.0	84.0
	My co-workers	7	14.0	14.0	98.0
	My supervisor	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Importance of Safety in the Construction of Buildings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Important	43	86.0	86.0	86.0
	Important	5	10.0	10.0	96.0
	Somewhat Important	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Number of Construction Safety Trainings Attended (On the Job)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	22	44.0	44.0	44.0
	Some	11	22.0	22.0	66.0
	Few	10	20.0	20.0	86.0
	Many	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

Frequency of Building Construction Safety Trainings (On the Job)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very frequent	10	20.0	20.0	20.0
	Frequent	10	20.0	20.0	40.0
	Somewhat frequent	7	14.0	14.0	54.0
	Not frequent	18	36.0	36.0	90.0
	Not very frequent	5	10.0	10.0	100.0
	Total	50	100.0	100.0	

Rating the Safety Culture of the Building Construction Companies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-2	11	22.0	22.0	22.0
	2-4	9	18.0	18.0	40.0
	4-6	13	26.0	26.0	66.0
	6-8	11	22.0	22.0	88.0
	8-10	6	12.0	12.0	100.0
	Total	50	100.0	100.0	

Working for a Local / Foreign Construction Firm that Prioritises Safety Performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	30	60.0	60.0	60.0
	No	20	40.0	40.0	100.0
	Total	50	100.0	100.0	

Most Important Safety Equipment in a Building Construction Project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Safety shoes	8	16.0	16.0	16.0
	Helmet	34	68.0	68.0	84.0
	Safety glass	2	4.0	4.0	88.0
	Gloves	5	10.0	10.0	98.0
	Other (specify)	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Protection Devices Seen in Construction Projects for Buildings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Safety shoes	8	16.0	16.0	16.0
	Helmet	34	68.0	68.0	84.0
	Safety glass	2	4.0	4.0	88.0
	Gloves	5	10.0	10.0	98.0
	Other (specify)	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Adequacy of PPE at Building Projects/Sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	33	66.0	66.0	66.0
	No	17	34.0	34.0	100.0
	Total	50	100.0	100.0	

Likeliness to Use Protection Equipment (if given)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very likely	34	68.0	68.0	68.0
	Likely	10	20.0	20.0	88.0
	Somewhat likely	4	8.0	8.0	96.0
	Unlikely	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Reasons for Not Wanting to Use Personal Protective Equipment (PPE)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not provided	10	20.0	20.0	20.0
	The climate too warm	9	18.0	18.0	38.0
	Discomfort to wear/use	19	38.0	38.0	76.0
	Lack of awareness	10	20.0	20.0	96.0
	Other (specify)	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Availability of a Safety Policy at Construction Company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	31	62.0	62.0	62.0
	No	14	28.0	28.0	90.0
	Don't have the information	5	10.0	10.0	100.0
	Total	50	100.0	100.0	

Availability of Written Information about Safety Measures at Construction Site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	35	70.0	70.0	70.0
	No	15	30.0	30.0	100.0
	Total	50	100.0	100.0	

Availability of a Written Circular/Brochure that Informs Staff about the Risks Associated with Their Job at Construction Site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	31	62.0	62.0	62.0
	No	19	38.0	38.0	100.0
	Total	50	100.0	100.0	

Managers Encouraging and Supporting Worker Safety Programmes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	43	86.0	86.0	86.0
	No	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

Initial Safety Training for Workers Before Starting Work on a Specific Site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	28	56.0	56.0	56.0
	No	19	38.0	38.0	94.0
	Don't have the information	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

Presence of a Safety Supervisor on Site for the Project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	23	46.0	46.0	46.0
	No	27	54.0	54.0	100.0
	Total	50	100.0	100.0	

Factors Affecting Safety Performance (Effect of Design Complexity on Protection)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	14.0	14.0	14.0
	Neutral	17	34.0	34.0	48.0
	Agree	20	40.0	40.0	88.0
	Strongly agree	6	12.0	12.0	100.0
	Total	50	100.0	100.0	

Effect of Climate Conditions on Safety and Health

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	12.0	12.0	12.0
	Neutral	19	38.0	38.0	50.0
	Agree	14	28.0	28.0	78.0
	Strongly agree	11	22.0	22.0	100.0
	Total	50	100.0	100.0	

Effect of Cost of the Whole Project on Safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	10.0	10.0	10.0
	Neutral	14	28.0	28.0	38.0
	Agree	22	44.0	44.0	82.0
	Strongly agree	9	18.0	18.0	100.0
	Total	50	100.0	100.0	

Personnel Protective Equipment (PPE) Limitations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	10.0	10.0	10.0
	Neutral	11	22.0	22.0	32.0
	Agree	20	40.0	40.0	72.0
	Strongly agree	14	28.0	28.0	100.0
	Total	50	100.0	100.0	

Planning (Site Protection Plan, Responsibility Plan for Hazard Safety Management, etc.)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.0	2.0	2.0
	Disagree	5	10.0	10.0	12.0
	Neutral	19	38.0	38.0	50.0
	Agree	16	32.0	32.0	82.0
	Strongly agree	9	18.0	18.0	100.0
	Total	50	100.0	100.0	

Use of Warning Signals, Indications, and Barricades

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.0	2.0	2.0
	Disagree	5	10.0	10.0	12.0
	Neutral	10	20.0	20.0	32.0
	Agree	19	38.0	38.0	70.0
	Strongly agree	15	30.0	30.0	100.0
	Total	50	100.0	100.0	

Effect of Using a Work Area Plan on Protection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.0	2.0	2.0
	Disagree	6	12.0	12.0	14.0
	Neutral	17	34.0	34.0	48.0
	Agree	19	38.0	38.0	86.0
	Strongly agree	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

Use of Reward (Incentive) and Warning for Safety Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	8.0	8.0	8.0
	Disagree	8	16.0	16.0	24.0
	Neutral	17	34.0	34.0	58.0
	Agree	17	34.0	34.0	92.0
	Strongly agree	4	8.0	8.0	100.0
	Total	50	100.0	100.0	

The Government's and Engineering Societies' Roles in Construction Company Protection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	12.0	12.0	12.0
	Neutral	13	26.0	26.0	38.0
	Agree	20	40.0	40.0	78.0
	Strongly agree	11	22.0	22.0	100.0
	Total	50	100.0	100.0	

Psychological Environment and Human Actions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.0	2.0	2.0
	Disagree	8	16.0	16.0	18.0
	Neutral	19	38.0	38.0	56.0
	Agree	20	40.0	40.0	96.0
	Strongly agree	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Illiteracy and Lack of Skilled Labour

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.0	2.0	2.0
	Disagree	2	4.0	4.0	6.0
	Neutral	22	44.0	44.0	50.0
	Agree	12	24.0	24.0	74.0
	Strongly agree	13	26.0	26.0	100.0
	Total	50	100.0	100.0	

Effect of the Natural Environment on Protection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	8.0	8.0	8.0
	Neutral	12	24.0	24.0	32.0
	Agree	25	50.0	50.0	82.0
	Strongly agree	9	18.0	18.0	100.0
	Total	50	100.0	100.0	

Presence of Safety and Health Policies, and Their Effect on Safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.0	2.0	2.0
	Disagree	2	4.0	4.0	6.0
	Neutral	23	46.0	46.0	52.0
	Agree	18	36.0	36.0	88.0
	Strongly agree	6	12.0	12.0	100.0
	Total	50	100.0	100.0	

Types of Incidents in Construction Industry (Most Common Causes of Accidents in Building Construction Industry)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of skilled labour	12	24.0	24.0	24.0
	Lack of personal protective equipment	20	40.0	40.0	64.0
	Low educated workers	18	36.0	36.0	100.0
	Total	50	100.0	100.0	

Degree of Injury in Construction Industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Death	17	34.0	34.0	34.0
	Permanent inability	9	18.0	18.0	52.0
	Partial inability	18	36.0	36.0	88.0
	Light injury	4	8.0	8.0	96.0
	Other	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Availability of Health and Safety Reporting in Construction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	27	54.0	54.0	54.0
	No	23	46.0	46.0	100.0
	Total	50	100.0	100.0	

Causes for High Accident Rates at Construction Sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of safety knowledge	11	22.0	22.0	22.0
	Management carelessness	12	24.0	24.0	46.0
	Careless worker attitudes	2	4.0	4.0	50.0
	All reasons	25	50.0	50.0	100.0
	Total	50	100.0	100.0	

Major Reasons of Accident on Site (Management is short of…)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of Safety Officer	11	22.0	22.0	22.0
	Lack of safety policy	15	30.0	30.0	52.0
	Lack of safety training	19	38.0	38.0	90.0
	Lack of safety motivation	2	4.0	4.0	94.0
	Other	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

Most Common Causes of Accidents at the Work Site (Lack of…)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lack of training	19	38.0	38.0	38.0
	Lack of experience in using equipment	14	28.0	28.0	66.0
	Lack of safety culture	13	26.0	26.0	92.0
	Lack of safety motivation	4	8.0	8.0	100.0
	Total	50	100.0	100.0	

Liable Figure for Industrial Accidents at Work Sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Workers	4	8.0	8.0	8.0
	Government	8	16.0	16.0	24.0
	Contractors	9	18.0	18.0	42.0
	Owners	10	20.0	20.0	62.0
	Consultant	2	4.0	4.0	66.0
	All	17	34.0	34.0	100.0
	Total	50	100.0	100.0	

Presence of a Governmental Body that Monitors Construction Projects and Helps Improve Safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	25	50.0	50.0	50.0
	No	25	50.0	50.0	100.0
	Total	50	100.0	100.0	

Possibility to Avoid the Majority of Building Construction Site Accidents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	44	88.0	88.0	88.0
	No	6	12.0	12.0	100.0
	Total	50	100.0	100.0	

Steps Taken If Minor Accidents Arise as a Result of Building Construction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Will be treated by traditional means	16	32.0	32.0	32.0
	Will be taken to the site clinic	15	30.0	30.0	62.0
	Will be taken to the nearby clinic	19	38.0	38.0	100.0
	Total	50	100.0	100.0	

Approaches to Improve Safety Practice in Construction Industry (Strengthen Legislation and Authoritative Compliance)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	4	8.0	8.0	8.0
	Neutral	2	4.0	4.0	12.0
	Important	19	38.0	38.0	50.0
	Most important	25	50.0	50.0	100.0
	Total	50	100.0	100.0	

Imposing a Penalty on Employees Who Violate Safety Laws and Regulations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	6	12.0	12.0	12.0
	Important	19	38.0	38.0	50.0
	Most important	25	50.0	50.0	100.0
	Total	50	100.0	100.0	

Rewarding Employees Who Perform Exceptionally Well in terms of Safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	2	4.0	4.0	4.0
	Neutral	11	22.0	22.0	26.0
	Important	16	32.0	32.0	58.0
	Most important	21	42.0	42.0	100.0
	Total	50	100.0	100.0	

Offering Appropriate Safety Training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absolutely not important	1	2.0	2.0	2.0
	Not important	2	4.0	4.0	6.0
	Neutral	4	8.0	8.0	14.0
	Important	20	40.0	40.0	54.0
	Most important	23	46.0	46.0	100.0
	Total	50	100.0	100.0	

Offering a Workplace Safety and Wellness Strategy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absolutely not important	1	2.0	2.0	2.0
	Neutral	7	14.0	14.0	16.0
	Important	19	38.0	38.0	54.0
	Most important	23	46.0	46.0	100.0
	Total	50	100.0	100.0	

Providing a Safety Notice Board in Different Languages On-Site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	3	6.0	6.0	6.0
	Neutral	11	22.0	22.0	28.0
	Important	14	28.0	28.0	56.0
	Most important	22	44.0	44.0	100.0
	Total	50	100.0	100.0	

Proposing a Budget for Construction Safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	14.0	14.0	14.0
	Important	18	36.0	36.0	50.0
	Most important	25	50.0	50.0	100.0
	Total	50	100.0	100.0	

Having a Personal Protective Equipment (PPE) Policy (PPEP)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absolutely not important	1	2.0	2.0	2.0
	Neutral	13	26.0	26.0	28.0
	Important	19	38.0	38.0	66.0
	Most important	17	34.0	34.0	100.0
	Total	50	100.0	100.0	