SAFETY COMPLIANCE FOR HIHG RISE PROJECTS IN NIGERIAN CONSTRUCTION INDUSTRY

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A Thesis submitted in partial Fulfillment of the requirement for the award of the Degree of Master in Construction Technology Management

Faculty of Technology Management and Business University Tun Hussein Onn Malaysia

AUGUST 2015
DEDICATION

This work is dedicated to my late farther, my beloved mother Hajjia Fatimatu Mohammed, my uncles Alh. Muhammad Kaigama, Alh. Abubakar Kaigama Hassan, to all Kaigama’s family Brothers and Sisters in general; and to everyone engaged in the daily battle against the poor safety performance of the construction industry.
ACKNOWLEDGMENT

I express my heartfelt thanks to my supervisor Dr. Roshartini Binti Omar and my co-supervisor Dr. Sulzakimin Mohammed for their excellent and patient guidance throughout the course of my research. They have given me advice which was vital to the successful completion of my thesis, also, encouragement at times when all efforts seemed to yield no fruitful results and a rare sort of kindness which has never before been shown to me.

I thank my lecturers of Construction Technology Management for always taking their time me, especially the Head of Department Dr. Mohd Yamani Yahaya and the program coordinator Dr. Goh Kai Chen. I would also like to show my appreciation to all academic and non-academic staffs of Faculty of Technology Management and Business Universiti Tun Hussein Onn Malaysia.

I am indebted to those individuals, too numerous to mention, who provided me with data and information, and without whose cooperation this thesis would not have been possible. These nameless warriors battle daily to make construction safe and healthy.

I appreciate the support and prayers of my family and few close friends in Nigeria throughout the duration of my studies. I am especially grateful to my parents for their consistent encouragement, love, incredible patience, tolerance, understanding and positive attitude to me.

Finally, I owe an unquantifiable debt to my colleagues Garba Hamza, Hamisu Mohd, Adamu Jibril, Wan Akmal, Khavita and to my friends, support and confidante, Abdulazeez Umar Raji and his family, Abubakar Abdullahi, Maimuna, Anwar, Jibrin, Mohammed kimpa, Ahmed, Farida Ibrahim, Hamza, Malala, Ishaq, Mall Abdulkadir for bearing the brunt of my frustrations when the going was tough. Their unquestioning belief in me and my ability to complete this research was often the only inspiration and motivation. I am indebted to them all for not demanding too much. The few hours I was able to share with them were always a source of new energy.
ABSTRACT

Health and safety issues had always been a major challenge and concern in the construction industry. Construction is found to be one of the most dangerous on health and safety practice, predominantly in developing countries. As construction accidents continue to dominate the overall construction industry. Despite the programs implemented by government and measures introduced by companies the number of high rise construction accidents still remains alarmingly. This research aim to investigate the safety compliance for high rise construction project in Nigeria. In achieving this aim three (3) objectives has been outlined; to investigate the current level of compliance to safety practice and policies in Nigerian construction site. To investigate the factors that prevent the compliance to safety and health practices in high rise projects of Nigerian construction industry. To recommend appropriate ways to improve the compliance to safety in high rise of Nigerian construction. The interview and questionnaire method was used in this research. Structured Questionnaires was distributed to 108 potential respondents from the construction industry players 90 was returned and Qualitative interview have been conducted to meet the first objective of the project, to investigate the current level of compliance to safety practice In addition, structured interviews were carried out with selected managers from construction industry. The result shows that Bribery and corruption, Lack of training, Absence of safety representatives, Lack of corporate responsibility & Accountability, Weak legal structure were the significant factors affecting safety. Compliance. The result also indicate that Site inspection, Safety seminars (enforcement officers), Building codes of practice, Enforcement of safety act, Workers/labourers training are the effective factors that could improve compliance to safety practice in high rise project of Nigerian construction industry. It is recommended that relevant authorities should checkmate the Safety practices in the Nigerian construction industry.
ABSTRAK

TABLE OF CONTENT

DECLARATION i
DEDICATION ii
ACKNOWLEDGMENT iii
ABSTRACT iv
ABSTRAK v
TABLE OF CONTENT vi
LIST OF TABLE x
CHAPTER 1 1
INTRODUCTION 1
  1.1 Introduction 1
  1.2 Background of the Research 1
  1.3 Problem Statement 3
  1.4 Research Questions 4
  1.5 Objectives of Research 5
  1.6 Significance of Research 5
  1.7 Scope of Research 6
  1.8 Chapter Organization 7
  1.9 Chapters Organisation 8
CHAPTER 2 9
LITERATURE REVIEW 9
  2.1 Introduction 9
  2.2 High-Rise Building 9
    2.2.1 Demand for High-Rise Buildings 10
  2.3 Occupational Safety and Health (OSH) in Nigeria 11
    2.3.1 Construction Accidents 12
  2.4 Safety in Construction Industry 14
    2.4.1 Hazard and Risk 14
  2.5 Current High Rise Construction Safety Practice in Nigerian Construction Industry 15
    2.5.1 Health and Safety Regulations in Nigeria 15
    2.5.2 Health and Safety Plan 15
    2.5.3 Most Frequent Accidents on Site 16
    2.5.4 Availability of Health and Safety Insurance 17
    2.5.5 Payment of Health and Safety Insurance 17
2.5.6 Compliance to Health and Safety Plan/Manual

2.6 Factors Affecting the Compliance to Safety in High Rise Projects for Nigerian Construction Industry

2.6.1 Strict Enforcement

2.6.2 Weak National Occupational Safety and Health Standards

2.6.3 Lack of Adequate Information

2.6.4 Bribery and Corruption

2.6.5 Management Commitment

2.6.6 Weak Legal Structures

2.6.7 Beliefs

2.6.8 Lack of Funding

2.6.9 Lack of Awareness and Improper Medium for Information Dissemination

2.6.10 Fear of Legal Sanctions

2.6.11 Absence of Safety Representatives

2.6.12 Lack of Adequate Regulations

2.7 Ways of Improving High Rise Construction Safety Practice in Nigerian Construction Industry

2.7.1 Good Site Management

2.7.2 Safety Policies

2.7.3 Personal Protectives Equipment (PPE)

2.7.4 Safety Meeting

2.7.5 Training / Education

2.7.6 Orientation of Staff to Safety

2.7.7 Safety Orientation Process

2.7.8 Building Permits

2.7.9 Safety Inspections

2.7.10 Local Authorities

2.7.11 Environmental Assessment

2.7.12 Safety Audit

2.7.13 Training and Enforcement

2.7.14 Safety Culture

2.7.15 Building Codes of Practice

2.8 Summary
**CHAPTER 3**

3.1 Introduction 37
3.2 Research Methodology 37
3.3 Research Population 39
3.4 Questionnaire Content for Quantitative 39
3.5 Close Ended Questions 40
   3.5.1 Likert Scale 40
3.6 Respondents 41
3.7 Pilot Study 41
3.8 Data Analysis 42
   3.8.1 Validity Test 42
   3.8.2 Reliability Statistics 42
3.9 Summary 43

**CHAPTER 4**

**QUALITATIVE ANALYSIS AND DISCUSSION** 44

4.1 Introduction 44
4.2 Thematic Analysis 44
4.3 Structured Interviews 45
4.4 Interview Response 45
4.5 Presentation of Result 46
   4.5.1 Managing Health and Safety Works 46
   4.5.2 Training of Workers on Health and Safety. 46
   4.5.3 Company's Motivations in Managing Health and Safety 47
   4.5.4 Accident Statistics 49
   4.5.5 Major Accident Occur on Site 49
   4.5.6 Ways that Changes Health and Safety Management on Site 50
   4.5.7 Achievements in Health and Safety. 51
   4.5.8 Ensuring Performance to Health and Safety and Continues to Improve. 52
   4.5.9 Ways that Government Help in Health and Safety. 53
   4.5.10 Ways of Improving Health and Safety on Construction Sites in Nigeria. 54
4.6 Discussion of result 61
4.7 Summary 62
CHAPTER 5  
ANALYSIS AND DISCUSSION QUANTITATIVE  

5.1 Introduction  
5.2 Questionnaire Response Rate  
5.3 Reliability Test  
5.4 Population of Respondent  
5.5 Health and Safety Issues  
5.6 Factors that Prevent Compliance to Safety Practice in High Rise Construction  
5.7 Presentation of Mean Ranking for objective (2)  
5.8 Ways to Improves High Rise Construction Safety Practices  
5.9 Discussion of Result  
5.10 Summary  

CHAPTER 6  
CONCLUSION AND RECOMMENDATION  

6.1 Introduction  
6.2 Summary Objectives  
6.3 Objective 1: To Investigate the Current Level of Compliance on the Safety Regulations and Policies on High Rise Nigerian Construction Site.  
6.4 Objective 2: To Investigate the Factors that Prevent the Compliance of Safety and Health Practices in the Nigerian Construction Projects  
6.5 Objective 3: To Recommend Appropriate Ways of Improving the Compliance to Safety and Health Practices in Nigerian Construction Projects  
6.6 Limitation  
6.7 Recommendation  
6.7.1 Recommendation for Government  
6.7.2 Recommendation for Local Contractors  
6.7.3 Recommendation on Ways to Improve the Safety of Practice on High Rise Construction Site  
6.8 Conclusion  

REFERENCES  
APPENDIX A  
APPENDIX B
LIST OF TABLE

Table 1: Death, fatality rate and number of accident reported to Nigerian federal ministry of labour and productivity (FMLPID; 2002 -2012). 4

Figure 1: Organisation of Chapters 7

Table 2: Frequency of accident occur in Nigerian construction site (Dodo at el. 2014) 16

Figure 2: Research Methodology process 38

Table 3: The respondent analysis for interview conducted on current safety and health practice in Nigeria 56

Table 5.1: Response Rate 63
Table 5.2: Reliability test 64
Table 5.3: Designation of Respondent 65
Table 5.4: Level of Education 65
Table 5.5: Professional background 65
Table 5.6: Experience in construction 66
Table 5.7: Main expertise of your company 66
Table 5.8: Value of project executed in last 5 years (in million) 67
Table 5.9: Accident occur on site during construction 67
Table 5.10: Cases of accident reported on site 68
Table 5.11: Accident that frequently occur on site 68
Table 5.12: The extent of the injury on site 69
Table 5.13: Safety signage or policy for your organization 69
Table 5.14: Effective arrangements for reviewing the safety audit 69
Table 5.15: Strict Enforcement 70
Table 5.16: Management Commitment 71
Table 5.17: Level of Education 71
Table 5.18: Monitoring Institution 72
Table 5.19: Belief 72
Table 5.20: Good Site Management 73
Table 5.21: Training/Education 73
Table 5.22: local Authorities 74
Table 5.23 Government Intervention 75
Table 5.24: Mean Values for Objective Two (2) 75
Table 5.25: Mean Values for Objective Two (2) 76
LIST OF FIGURE

Figure 1 Organisation of Chapters 7
Figure 2 Research Methodology process 38
CHAPTER 1

INTRODUCTION

1.1 Introduction

Generally, this research is focused on safety compliance for high rise construction projects. Besides that, this study is also intended to recommend appropriate ways to improve the compliance of safety practice. Basically, this chapter covers the background, problems statement, aims and objectives, and scope of the study. The research methodology involved in conducting this study is also briefly explained.

1.2 Background of the Research

Construction industry in developing countries has performed far below the expectation in the areas of health and safety, the situation in Nigeria is no exception. This is due to the fact that, there is no existing functional legislation with regards to occupational health and safety in Nigeria Isaac et al., (2014). Occupation safety and health (OSH) in Nigeria is traced back from the slave trade period in Nigeria. According to Kalejaiye (2013), records show that the medical examination board of the Liverpool infantry introduced occupational health and safety in Nigeria in 1789.

A current trend in modern cities all over the world is the development of high-rise buildings mainly to overcome the challenges of urban over population, for optimal use of scarce land resources, as status symbol, as tourist attractions and for beautiful skylines (Ede, 2014). Regardless of these advantages, the development of high-rise buildings in Nigeria has been experiencing drawbacks. The retarding
growth translates to the very fewness of high-rise buildings in existence in Nigerian cities just as even most of the few in existence are poorly utilized due to some persistent factors. With the continuous increase in the population of Nigeria (which have moved from 140 million in 2006 to 170 million in 2014), leading to ever increasing surge in rural – urban drift, land scarcity and the consequent high cost of available land can only be expected to be on the increase especially in Abuja. Bearing in mind that tall, thin buildings have smaller footprints than the equivalent number of low-rise housing units, making them occupy less land area; it is a wonder that building high is not growing at some significant rate compared to the galloping growth of Nigerian population. The low rate of building tall will heighten the burdensome challenge of housing in Nigerian urban cities Ede, (2014).

However, in 1981 Nigeria signed the Geneva Convention on OSH (Adeogun & Okafor, 2013), yet 32 years after, implementation of proceedings of the convention the nation has suffered setbacks making it at insignificant level of achievement towards the OSH implementation. Adeogun & Okafor (2013) based on their studies also found that, the implementation and adoption of occupation safety and health (OSH) in Nigeria is still at preliminary stages. Similarly, Diugwu (2012) & Okolie (2012) states that occupational safety and health (OSH) in Nigeria has received little attention from the government. The ill-fated occupation safety and health (OSH) regulatory system in the country does not encourage mandatory reporting of accidents. However, Diugwu et al. (2012) blame the big gap in occupational safety and health (OSH) in Nigeria on the dysfunctional health and safety laws in the country. As a result, all the sectors in the country are clearly unregulated in relation to OSH (Diugwu et al., 2012).

The protection of safety and welfare of people in the workplace that may be indirectly affected by the activities in the workplace- occupational safety and health (OSH) should be contingent on healthy legal instruments which require optimum compliance (Akpan, 2013). On a Sad note, Idubor (2013) argue that compliance with occupational safety and health (OSH) regulations cannot be isolated in the improvement of Nigerian construction industry. Nigerian Federal Ministry of Labour and Productivity Inspectorate Division (FMLPID) - is the body empowered by the Factories Act F1 LFN 2004 to enforce occupational safety and health (OSH) in Nigeria (Umeokafor et al., 2014). Hence, it is quite evident in the literature that enforcement and lack of compliance to OSH in Nigeria cannot be overemphasizing,
as it has resulted in numerous casualties and accidents on site in the Nigerian construction industry. Falls from high elevation has been identified in the literature as the most frequent type of accident that occur. However, it is also evident that most of these accidents occur due to either lack of compliance to OSH and enforcement or both. Therefore, in this research occupational safety and health will be the main theoretical cornerstone in exploring the level of compliance to OSH in Nigerian construction industry.

1.3 Problem Statement

High rise structure, faced with several problems and experience accidents that endanger the lives of its occupants, destroy facilities and equipment within them, and affect other neighbouring structures Ede, (2014). The most feared hazards of tall buildings around the world are fire, terroristic attaches and building collapse.

According to Mohamed (1999), accidents on construction sites, causes many human tragedies, de-motivate workers, disrupt site activities, delay project progress, and adversely affect the overall cost, productivity and reputation of the construction industry. In recognition of the problems above, countries all over the world have seen the necessity of improving occupational health and safety management on construction sites, particularly to reduce the number of accidents on construction sites.

Occupational safety and health has been a major sort of concern for employees, employers and government for the past decades globally, effort to reduce the number of occupational injuries, and fatalities the Nigerian government opted to regulate the construction industry Olutuase et al, (2014). The Nigerian construction industry has recorded a disproportionate number of fatalities and disabling injuries as shown in Table 1 indicates the rates of fall and injuries in Nigerian construction projects for the past decades. Falls from elevation and injuries are among the most costly and damaging categories of accident that occur. Based on the injury and fatality rate report from the Nigerian Federal Ministry of Labor and Productivity.
Table 1: Death, fatality rate and number of accident reported to Nigerian federal ministry of labour and productivity (FMLPID; 2002 -2012).

<table>
<thead>
<tr>
<th>YEARS</th>
<th>NO OF INJURIES</th>
<th>% OF INJURIES</th>
<th>NO OF DEATH</th>
<th>% OF DEATHS</th>
<th>NO OF ACCIDENTS REPORTED</th>
<th>% OF ACCIDENTS REPORTED</th>
<th>CASE OF FATALITY RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>50</td>
<td>53.8</td>
<td>29</td>
<td>63</td>
<td>1</td>
<td>2.5</td>
<td>58</td>
</tr>
<tr>
<td>2003</td>
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<tr>
<td>2004</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2.2</td>
<td>-</td>
</tr>
<tr>
<td>2007</td>
<td>4</td>
<td>4.3</td>
<td>1</td>
<td>2.2</td>
<td>3</td>
<td>7.5</td>
<td>25</td>
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<td>2008</td>
<td>8</td>
<td>8.6</td>
<td>6</td>
<td>13</td>
<td>2</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>2009</td>
<td>3</td>
<td>3.2</td>
<td>2</td>
<td>4.3</td>
<td>16</td>
<td>40</td>
<td>66.7</td>
</tr>
<tr>
<td>2010</td>
<td>5</td>
<td>5.4</td>
<td>1</td>
<td>2.2</td>
<td>3</td>
<td>7.5</td>
<td>20</td>
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<tr>
<td>2011</td>
<td>8</td>
<td>8.6</td>
<td>2</td>
<td>4.3</td>
<td>7</td>
<td>17.5</td>
<td>25</td>
</tr>
<tr>
<td>2012</td>
<td>14</td>
<td>15.1</td>
<td>4</td>
<td>8.7</td>
<td>6</td>
<td>15</td>
<td>28.6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>93</td>
<td>100</td>
<td>46</td>
<td>100</td>
<td>40</td>
<td>100</td>
<td>49.5</td>
</tr>
</tbody>
</table>

Accidents and fatalities rate at construction industries is still high in Nigeria based on the recorded fatality rate of workers from 2002 to 2012 which is very far behind compared to developed countries like Japan, France and the United States of America USA with the rate of below 20 per 100,000 workers (NIOSH, 2010; Kortum, 2011).

The regulations of occupational safety and health OSH in Nigeria has received little attention, with little emphasize to strict adherence to safety in the construction industry and very minimal impact made by the inspection officers towards ensuring strict compliance. The accidents records above indicate an alarming rate of injuries and fatalities on sites (Diugwu et al., 2012). Hence, there is need to find a way of minimizing the rate of falls and injuries in Nigerian construction industry. Thus, this research seeks to investigate the level of compliance to occupational safety and health (OSH) in Nigerian construction industry.

1.4 Research Questions

1. What is the current level of compliance to safety regulations and policies in high rise construction projects of Nigerian construction industry?

2. What are the factors that prevent compliance to safety practices in high rise construction projects of Nigerian construction industry?
3. What is the appropriate ways to improve the compliance to safety practices in high rise construction project of Nigerian construction industry?

1.5 Objectives of Research

The aim of this research is to investigate the level of compliance to safety in high rise construction project with special focus on safety at construction process in Nigeria. In achieving this aim three (3) objectives has been outlined:

1. To investigate the current level of compliance to safety regulations and policies in high rise construction projects of Nigerian construction industry.
2. To investigate the factors that prevents the compliance to safety practices in high rise project of Nigerian construction industry.
3. To recommend appropriate ways to improve the compliance to safety practices in high rise construction of Nigerian construction industry.

1.6 Significance of Research

This research will be of great significance to the tradesmen that are highly expose to hazard in carrying out their respective duties, as vast majority of tradesmen are ignorant of the safety compliance level. This research will however, alert the relevant authorities in ensuring occupational safety and health compliance in Nigerian construction industry. Hence, minimize the rate of accidents as a result of lack of compliance to occupational safety and health in the industry.

This research will also be of great significance to academia and practitioners in the field of construction management by exploring inadequacies and inefficiencies in occupational and health safety compliance in the Nigerian context. In addition, exploring the potentials for more studies to be conducted towards formulating comprehensive frameworks for ensuring safety compliance most especially in high rise building construction.
1.7 Scope of Research

The research will focus on the safety compliance for high rise construction project at construction stage, in the central district area of Abuja the capital city of Nigerian. Abuja as the capital city of Nigeria has various construction development taking place to achieve the target master plan of the great city. The capital city will be selected due to the high number of construction activities going on, which are predominantly high-rise projects associated with both industrialized and conventional concept of construction Iwuagwu (2011).

The research will concentrate on high rise construction project in Nigeria from one to thirty story (1-30) building. The work is to consider Contractor, Site Superintendent, Safety officer, Consultant, Managing Partners as respondent. It is justified by Oladapo (2007).
1.8 Chapter Organization

The research will be sectioned into five (6) main chapters as summarised in the organisation of chapters:

- **CHAPTER 1: INTRODUCTION**
  - Identify the background, significant Objectives, problem statement & scope of study

- **CHAPTER 2: LITERATURE REVIEW**
  - Literature review of the level, factors and ways of compliance to safety for high rise projects in Nigerian construction industry

- **CHAPTER 3: RESEARCH METHODOLOGY**
  - Qualitative and Quantitative

- **CHAPTER 4: QUALITATIVE ANALYSIS & DISCUSSION**
  - Contain data analysis for qualitative using thematic analysis.

- **CHAPTER 5: QUANTITATIVE ANALYSIS & DISCUSSION**
  - Contain data analysis for quantitative using SPSS statistic for social science

- **CHAPTER 6: CONCLUSION AND RECOMMENDATIONS**
  - Conclusion and recommendations

Figure 1 Organisation of Chapters
1.9 Chapters Organisation

The research is consists of five (6) main chapters. The chapters are as follows:

Chapter 1: Introduction
This chapter is basically a general overview of the research. This chapter introduces the report outlining the problem statement, research objectives, research limitation/scope, research importance and the brief research methodology. The summary of each chapter also included in this chapter.

Chapter 2: literature review
The second chapter is about literature reviews. This chapter describes the essential definitions as well as a brief history of high-rise buildings. This chapter also includes the safety features for high rise building and the current facets of safety features in Nigerian high-rise building project.

Chapter 3: Research Design and Methodology
Third chapter discusses on the type of research methodology and its procedures. The technique of data collection and analysis is also explained in this chapter. Professional interviews are conducted with the relevant people involved in high-rise construction to obtain their opinions and feedback.

Chapter 4: Qualitative Analysis and Discussion
Chapter four discusses the current safety practice and analysis of results finding, using interview from three different respondent.

Chapter 5: Data Analysis Quantitative and Discussion
Chapter fifth discusses about the suggested recommendations to enhance the level safety for high-rise construction projects in Nigeria

Chapter 6: Conclusion and Recommendation
Lastly, the six chapter highlights the result and the conclusions made from the research and the recommendations for further studies.
CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

According to Mohammad et al. (2012), construction industry is one of the industries that provides important ingredients for the development of an economy. Salleh (2009) defines construction industry as a subdivision of the economy that is responsible for the planning, design, construction, maintenance, and sometimes demolition of buildings. The definition further states that it is basically a service industry, which obtains its inputs and outputs from the subdivisions of economy that they are interrelated and inter-linked.

2.2 High-Rise Building

According to the Council of Tall Buildings and Urban Habitat, high-rise buildings are buildings whose height creates different conditions in the design, construction, and use than those that exist in common buildings of a certain region and period.” There is no precise definition of high-rise building that is universally accepted. Nevertheless, various bodies have tried to define what 'high-rise' means:

The National Fire Protection Association (NFPA 2000) defined a high-rise building as a building taller than 75 feet (23 meters) in height measured from the lowest level of fire department vehicle access to the floor of the highest occupyable storey. Whilst, in another opinion says a high-rise structure is one that extends higher than the maximum reach of available fire-fighting equipment and it is between 75
feet and 100 feet. A particular building is deemed a high-rise specified by the fire and building codes in the area in which the building is located (Craighead, 2003).

In addition Patterson (1993) stated that a building is defined by the Uniform Building Codes as a high-rise building when it has floors for human occupancy which are more than 75 feet above the lowest level of fire department access. Second definition as stated in under the Nigerian Uniform Building Codes of practice, high rise is the building that meet the definition, to be equipped with an automatic fire sprinkler system designed in accordance with requirements in Uniform Building Codes Building codes vary in their definition of high-rise buildings, but the intent is to define buildings in which fires cannot be fought successfully by ground-based equipment and personnel.

Furthermore, High-rise buildings are not inherently dangerous structures, but they do require additional systems and features that other buildings do not’ (Craighead 2003). It is common that when a building exceeds a certain size (high-rise), the inspection must be made by the construction licensing and supervisory authorities after corresponding plans have been submitted to them. This inspection procedure not only encompasses aspects under the building code such as building compliance with specified distance and the specified height and size of a building or its type of use, but also the safety of the people (Mansor, 2012).

### 2.2.1 Demand for High-Rise Buildings

The first requirement for the construction of any types of building are planning and construction safety. Planning is important for the construction of high rise building to complete the work in time (Kerzner, 2013). The estimation of material and the requirement of the material must be mention before the construction work. Before the construction starts, how the works should go, what are the requisites and steps to be followed, what kind of problems may arrive and how to tackle them; are the important task one need to include in the planning and scheduling of work from excavation, construction of foundation to finishing through erection of frame and walls (Nayar, 2014). The demand for purpose of high rise are based on following listed below
• Increasing demand for business and residential space
• Economic growth
• Technological advancements
• Innovations in Structural Systems
• Desire for aesthetics in urban settings
• Concept of city skyline
• Cultural significance and prestige
• Human aspiration to build higher

2.3 Occupational Safety and Health (OSH) in Nigeria

The Nigerian construction industry lacks statistical records on health and safety performance of its construction industry (Idoro, 2011). This absence of reliable information about the incidences of occupational accidents and diseases is generally a major obstacle to curbing the appalling toll of work-related deaths and injuries (Okojie, 2010). Information is needed, particularly by those charged with the task of remedying the appalling situation, in order to understand what preventive action is necessary. This information must be sufficiently comprehensive and above all accurate (ILO, 2002). For any preventive measure at any level to be evidence-based and meaningful, the data required depend heavily on the reporting of occupational diseases, dead and injuries which assists in measuring performance (Bowling, & Ebrahim, 2005).

Investigating the problem of high accident and injury rates in the construction industry and similar others such as lost time injury frequency rate are traditional measures of health and safety performance and do actually report performance (Idoro, 2007). Regular and accurate reports can assist in the provision of measures that can reduce them. This situation is blamed on lack of concern from the government, lack of accurate records, inadequate and old statutory regulations governing the health and safety in the country (Idoro, 2004).

Furthermore, the new Factories Act Cap 126 of the Laws of the Federation of Nigeria, 2004 is the legislation for the enforcement of H&S standards in Nigerian workplaces. It stipulates minimum standards of H&S for Nigerian factories and further provides for the enforcement of the Act by occupational H&S officers in the
Inspectorate Department of the Federal Ministry of Labour and Productivity (Okojie, 2010). Sections 51, 52 and 53 of Part VI of the Factories Act make provision for reporting of occupational diseases and accidents. This section 53 of the law is entitled Notification of Industrial Disease and it states that 'he occupier of any factory who believes, suspects or has reasonable ground for believing or suspecting, that a case of occupational disease has occurred in the factory, shall forthwith send written notice of such a case, in the prescribed form and accompanied by the prescribed particulars, to the nearest inspector; and the provisions of this Act with respect to the notification of accidents shall apply to any such case in like manner as to any such accident as is mentioned in those provisions (Okojie, 2010).

According to 99 of the Federal Ministry of Labour and Productivity (Okojie, 2010). Sections 51, 52 and 53 of Part VI of the Factories Act make provision for reporting of occupational diseases and accidents. This section 53 of the law is entitled Notification of Industrial Disease and it states that 'the occupier of any factory who believes, suspects or has reasonable ground for believing or suspecting, that a case of occupational disease has occurred in the factory, shall forthwith send written notice of such a case, in the prescribed form and accompanied by the prescribed particulars, to the nearest inspector; and the provisions of this Act with respect to the notification of accidents shall apply to any such case in like manner as to any such accident as is mentioned in those provisions (Okojie, 2010).

Similarly, to (Adeniyi, 2001). Also accord that Occupational safety and health deals with the well-being, safety and comfort in the workplace.

### 2.3.1 Construction Accidents

Accident is defined by the Health and safety Executive (HSE, 2003) as any unplanned event that results in injury or ill health of people, or damage or loss to property, plant, materials or the environment or a loss of a business opportunity’. In the United Kingdom UK, the Health and Safety Executive (HSE) is responsible for the enforcement of the Health and Safety at Work (HSW) Act and carrying out the day-to-day work to enable the Health and Safety Commission (HSC) to carry out its functions.
The construction work site is usually a busy place with incredibly high activities on going. The accident rates closely correlate to the level of activity within the industry, indicating that when work load is high, safety tends to receive less attention. The dangers faced by construction workers are alarming. The rate of death of workers is higher in construction industry than any other industry. Moreover, construction industry presents a high rate of death by injury. Although construction represents only 6% of United of State of America US workers, it produces 20% of the fatalities (El Safty et al., 2012). Job accidents impose on the construction industry a tremendous burden of needless and avoidable expense. International Construction Related Fatality Statistics.

The number of fatalities at work in the construction sector remains a matter of serious concern for the Government, employers and employees alike (Safety and Health Act, 1999). Statistics on fatalities generally places the construction sector as the second highest industry, only surpassed by the agricultural sector. Among the most common sources of fatalities in construction, falls from heights is the category that accounts for the highest proportion of deaths.

The Health Safety and Environmental Act (2001), reports that the European average fatality rate in construction was 13.3 per 100,000 workers in 1996. In contrast with that figure, the Health and Safety Act HSA (1999), has reported a rate of 8 fatalities for 100,000 workers for the Republic of Ireland in 1996. Although under the European average of fatalities, Ireland still shows a higher incidence than countries as France, the United Kingdom or Spain.

Brabazon et al. (2000) as cited in McDonald & Hrymak (2001), looked at the rate of fatalities between 1993 and 1998. For the primary building trades, the rate was 1 in 11,000 per year. This is below the occupational safety and health (OSH) intolerable risk criterion of 1 in 1000 and occupational safety and health (OSH) guideline of 1 in 10,000. However, scaffolding trades (1 in 5,400), roofing trades (1 in 3,800), steel erectors, bar bending and structural trades (1 in 3000) were above the occupational safety and health (OSH) guideline. Since the Construction Design and Maintenance Regulations were introduced in the United Kingdom UK in 1994, overall fatality rate had decreased by 10%. However the downward trend in the number of injuries on construction sites is now slowing.

Davies & Tomasin (1996) reported that 70-80% of all fatalities in the United Kingdom UK each year are attributed to falls. Falls from one level to another, falls
on the same level and plant machinery and structures falling and striking, crushing or burying people were accounted for that percentage. On the other hand, when considering only the category “falls of people,” 52% out of the 681 construction-related deaths between 1981 and 1985 were in this category.

2.4 Safety in Construction Industry

According to Kamar, et al. (2014) is the state of being “safe” (from French sauf), the condition of being protected against physical, social, spiritual, financial, political, emotional, occupational, psychological, educational or other types or consequences of failure, damage, error, accidents, harm or any other event which could be considered non-desirable.

1. Safety can also be defined to be the control of recognized hazards to achieve an acceptable level of risk. This can take the form of being protected from the event or from exposure to something that causes health or economic losses (Manuele, 2014). It can include protection of people or of possessions.
2. Safety is defined as the condition or feeling of being safe, security and certainty. Prevention or reduction of adverse events or incidents involving employees, patients, or facilities Espin, et al. (2015).
3. Safety defined as the condition of being protected against any type of events (accidents) which could be considered non-desirable by controlling hazards to achieve an acceptable level of risk. Accident defined as some sudden and unexpected event taking place without expectation that causes injury, damages or death, (Mwombeki, 2005).

2.4.1 Hazard and Risk

Keng, (2004) stated that hazard and risk is the potential of a substance, activity or process to cause harm. Hazards take many forms including, for example, chemicals, electricity and working from a ladder. A hazard can be ranked relative to other hazards or to a possible level of danger. A risk is the likelihood of a substance, activity or process to cause harm. A risk can be reduced and the hazard controlled by good management. It is very important to distinguish between a hazard and a risk as
the two terms are often confused and activities such as construction work are called high risk when they are high hazard. Although the hazard will continue to be high, the risks will be reduced as controls are implemented. The level of risk remaining when controls have been adopted is known as the residual.

2.5 Current High Rise Construction Safety Practice in Nigerian Construction Industry

Health and Safety is an inevitable aspect of construction because a worker will perform his/her duties to the fullest only when he/she is sure that even when an accident occurs he/she will be good taken care of. Okeola (2009) asserts that Health and Safety in construction is all about preventing people from been killed or injured at work or becoming ill through appropriate precaution and providing a satisfactory working environment.

2.5.1 Health and Safety Regulations in Nigeria

According to Ezenwa (2011), on any construction site, appropriate Health and Safety methods should be considered and used that will reduce or eliminate risk to death or injury. In Nigeria, the first effort in regulating and controlling Health and Safety at work was the Factories Act of 1958, but unfortunately there is lack of provisions for the enforcement of Health and Safety standards in construction industry. This Act was repealed in 1987 and replaced with the Factories Decree No. 16 and Workman’s Compensation Decree No. 17. Both were signed into law on June12, 1987, but became effective in 1990. The Federal Ministry of Labour and Productivity is responsible for the enforcement of the safety and welfare regulations in Nigeria.

2.5.2 Health and Safety Plan

Bamisile (2004) stipulated that the preparation of project Health and Safety Management Plan, among others, must be carried out in the construction of buildings. Dodo et al. (2011) assert that the Health and Safety Management Plan aims at promoting and maintaining the highest degree of physical, mental and social
wellbeing of construction workers. The prevention amongst workers of departures from health caused by their working conditions, the protection of workers in their employment from risks resulting from factors adverse to health, the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities and, to summarize, the adaptation of work to man and of each man to his job are all aims of the Health and Safety Management Plan.

2.5.3 Most Frequent Accidents on Site

Table 2 below shows the ranking of the most frequent accidents that occur on site. The three most frequent accidents that topped the rank in occurrence are: scaffolding accidents, falls from ladder and stepping or kicking abandoned objects. The two least frequent accidents are: accidents caused by fire or explosion and compressed gas accidents.

Table 2: Frequency of accident occur in Nigerian construction site (Dodo at el. 2014)

<table>
<thead>
<tr>
<th>No.</th>
<th>Accident on Site</th>
<th>Frequency</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scaffolding accident</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Lifting equipment failure</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Welding accident</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Trench collapse</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Stepping of kicking abundant objects</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Crane accident</td>
<td>2</td>
<td>43</td>
</tr>
<tr>
<td>7</td>
<td>Forklift truck accident</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Electric shock injury</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>Accident caused by fire or explosion</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>Traffic accident</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>Compressed gas accident</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>12</td>
<td>Fall from ladders</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>Unsafe safety harnesses</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>Accident from faulty machinery</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>Power tool accident</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>Holes in flooring</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>
2.5.4 Availability of Health and Safety Insurance

Workers suffer from poor health due to exposure to hazards on construction sites and it is likely for a construction worker who goes on retirement will not be able to do any further work for a living, especially if the work is physically tasking (Kaplun & Wenzel 2012). Insurance cushions the worker against old age, invalidity and death.

However, not all construction workers contribute to an insurance scheme under the Nigerian workers safety Law (1998). The Workmen Compensation Law (1987) imposes employer liability and a mechanism for determining the extent of liability. It does not set requirements for employer financing of potential liability. This has resulted in many contracts where the construction businesses do not insure the workers against accidents rate. In such instances, contractors try to compensate the victims through negotiation with them and/or their relatives. Where such negotiations fail, injured persons seek compensation under the Workmen’s Compensation Law (1987) through its implementing institutional Labour Department. However, in relation to Ghana construction industry, standard contracts using the FIDIC conditions of contract expressly require the contractor to insure the workers against accidents before commencing any work at site.

2.5.5 Payment of Health and Safety Insurance

Protecting the health and safety of employees is a major concern of construction it creates effective and productive workforce for workers and helps to avoid costs such as sick pay and overtime cover. If an employee is injured at work, or becomes ill as a result of the work they do for you, insurance covers the cost of compensation to a claimant and legal fees Australia, (2012).

The National Health Insurance Scheme recently adopted in Nigeria is to help individuals to pay for medical bills in the event that they or their spouses or children become ill. It serves as insurance against paying the full cost of consulting fees and treatment Ewelukwa, et al. (2013). Irrespective of whether contract provisions provide for the employees to be covered by the scheme or not, owner/managers were of the view that every contractor ought to ensure that his or her employees were
members of the scheme, since this could help reduce the cost of treatment if a worker were injured Pomeranz, (2015).

By law, based on United Kingdom policies on construction, insurance must cover at least £5 million but, in practice, most policies offer at least £10 million. Only very few businesses are not legally required to have Employers’ Liability Insurance. The organizational policy should cover all conventional employees, contract, casual and seasonal staff as well as temporary staff, including students or others on work placements. When the organisation involves volunteers, advisers, referees or marshals the insurer must be aware of all the supportive staffs within the company and out.

2.5.6 Compliance to Health and Safety Plan/Manual

Compliance to Health and safety procedures most be implemented to control health and safety risks on sites. Client/managers generally made an attempt at adopting health and safety measures on sites to maintain a satisfactory safe and healthy environment, although such measures could not guarantee the minimum standards in the construction, Factories, Offices and Shops Act. It appears fear of loss of image play a significant role in the implementation of safety plans (Davies, 2015).

It is essential that, workers must be register under the National Health Insurance Scheme, which the government recently introduced in Africa. If a worker is registered under the scheme, and is involved in a construction site accident then the national insurance card is used in going for treatment and the cost is less than if the person were not to be registered under the scheme.

Safety procedures such as provision of first aid, personal protective equipment, latrines, accident reporting, accident cloakrooms, and most be implemented to sites. However, at some other sites these health and safety procedures were stringently adhered to for the benefit of workers to safety practice. The Health and Safety Executive is responsible for enforcing the law on Employers’
2.6 Factors Affecting the Compliance to Safety in High Rise Projects for Nigerian Construction Industry

The factors affecting the level of compliance to safety are identified by various authors as follows:

2.6.1 Strict Enforcement

According to Nzuve & Lawrence (2012) low level of inspection and examination of workplaces might determine the level of compliance with occupational safety and health (OSH) regulations as evident in workplaces in Nairobi. The same can be said of Nigeria, where lack of enforcement characterizes regulatory institutions (Idubor & Osiamoje, 2013), most laws appear to fulfill all righteousness or are used for political or victimization reasons, and the institutions alleged and proved to be corrupt and arbitrarily exercise its powers (Onyeozili, 2005). Enforcement bodies may determine the level of compliance with occupational safety and health (OSH) regulations in workplaces. (Idubor & Oisamoje, 2013).

Lack of strict legislation enforcement competent professional’s i.e. occupational safety and health (OSH) officers, Federal Ministry of Labour and Productivity, trained safety officers all enable non-compliance with occupational safety and health (OSH) regulations in Nigeria. (Idubor & Oisamoje, 2013). However, although the quality of enforcement may be marginal, enforcement at organizational level perhaps via safety officers should be made mandatory to Nigerian construction contractors (Okeola, 2009), as it will improve occupational safety and health (OSH) enforcement.

According to Takala, (2002) in the absence of proper enforcement of occupational safety and health OSH regulations, organizations should adopt self-regulatory style of enforcement, as optimum occupational safety and health OSH to improve the images of the organizations, and enable the organizations to maximize profit.
2.6.2 Weak National Occupational Safety and Health Standards

As defined by the World Health Organization, occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards to workers. Occupational health is a multidisciplinary field of healthcare concerned with supporting an individual to carry out their work, which causes least harm to their health.

Idubor & Oisamoje (2013) argue that the weak legal structure and absence of law enforcement in the Nigerian construction industry allow foreign companies to take advantage of the ineffective statutory regulation. The same can be said of the construction industry. That may also suggest that these foreign firms may not have plans to comply fully with the safety regulations in Nigeria construction industry or have an occupational health and safety (OSH) management system similar to those obtained in their countries of origin, as they intend to reduce expenses and added cost to construction outputs.

2.6.3 Lack of Adequate Information

Yassi et al. (2012) stated that providing all the necessary and adequate information is very paramount in ensuring optimum occupational safety and health OSH at workplace. Provisions for adequate occupational safety and health OSH information is pertinent, perhaps through information technology: mobile phone technological means of reporting accidents and unsafe practices can be adopted in the Nigerian construction industry for easier record and up-to-date activities (Okojie, 2010).

Whilst, in Nigeria, the Federal Ministry of Labour is directly responsible for enforcing OSH legislation in the construction industry, not enough information is shared with the separate entities that make up the Ministry; hence, the inspectorate divisions are not well equipped in order to plan on the necessary steps for better enforcement practices. The multinational companies have the ability to transfer OSH policies from their countries of origin into the Nigerian construction industry in order to improve their OSH standing is an added advantage to their practice (Dibei, 2014). Therefore,
helping multinational companies’ such as Shell, Texaco inter alia to boost their safety cultural stand both in Nigeria and on the international stage.

2.6.4 Bribery and Corruption

The World Bank has identified corruption as among the greatest obstacles to economic and social development. Economists have said that countries with a higher perception of corruption not only deters financial institutions from long term investment but can actually result in capital outflows, creating a volatile economic environment. Capital inflows, international trade and private and public enterprise have helped contribute significantly to India’s growth since liberalisation.

The construction sector is estimated globally to be worth some US $3,200 billion per year and some US $250 billion is spent annually on infrastructure in the developing world alone (Rodriguez, Waite & Wolfe, 2005). However, worldwide, the construction sector is known for its overtone with corruption (Zarkada-Fraser & Skitmore, 2000; DFID, 2002). Corruption in the construction industry covers new build contracts, refurbishment contracts, as well as maintenance contracts. Corruption in the sector includes all forms and can be found at all levels from high ranking officials diverting funds and international companies offering bribes for contracts down to the petty local operators who falsify meter readings or seek bribes for water connections. Transparency International's Global Corruption Report (Rodriguez, Waite & Wolfe, 2005) highlights the devastating impact of corruption in construction (such as wasted tender expenses, tendering uncertainty, increased project costs, economic damage, blackmail, criminal prosecutions, fines, blacklisting, brand damage and reputational risk).

Onyeozili (2005) states that Nigeria’s regulatory institutions and the police force are perceived and have been proved to be corrupt; ‘God-fatherism’ determines the decisions of the inspectors. This is reinforced by Transparency International (2012) ranking Nigeria 139 out of 176 in terms of corruption perception index. In support, Idubor & Osiamoje (2013) assert that bribery and corruption are the biggest hindrances to proper compliance with occupational safety and health (OSH) regulations in Nigeria; citing an instance where companies would not comply with
The standard regulations and still get an ‘okay’ from the inspectors during inspection as a result of being bribed.

The challenges of corruption in the construction sector are significant: corrupt practices, such as bribery, embezzlement, kickbacks and fraud, can occur at every phase of a construction project. In recent years there has been a growing commitment to the anti-corruption agenda in the construction sector.

2.6.5 Management Commitment

The absence of safety consciousness in major construction organizations in Nigeria is common and must be deemed as bad examples. Adenuga et al. (2007) further show that some construction companies do not attach importance to workers' safety. Similarly, Smallwood (2002) agrees that top management should value safety not withstanding that lack of value for safety may be as a result of the perception that safety is only cost related as argued by Hinze (1997) in Smallwood (2002). Should that be the case, it therefore indicates that the construction industries are not concerned with the safety of their employees as their watchword; instead, it suggests the absence of management commitment to occupational safety and health (OSH) in the Nigerian construction industry.

The Management must consciously and intelligently develop and implement health and safety policies. In addition, management should monitor and evaluate the performance of these health and safety policies and make amendments where necessary.

1. It is the management’s responsibility to educate employees on health and safety hazards and to watch out for conditions that pose a danger for employees’ health so that they can be eliminated or reduced.
2. The management must communicate in a clear terms what constitute safe working conditions and practices to employees and ensure that they follow laid down rules and regulations
2.6.6 Weak Legal Structures

Idubor & Osiamoje (2013) uphold that the legal structure in Nigeria is weak in terms of interpreting and applying the governing laws. In the Nigerian construction industry where different regulations are in use, there is no uniformity in interpretation of regulations, while Idoro (2008) argues that implementation of the regulations are left to personal discretion. With regard to the penalty for non-compliance with OSH regulations, Windapo & Oladapo (2012) found that non-severe penalties for non-compliance with OSH regulations determine compliance to safety practice.

Furthermore, Okojie (2010) argues that insignificant penalties stipulated by the OSH laws do not guarantee compliance in any way. Suggesting that penalties should serve as indirect instruments for enforcement of OSH regulations; that way, it can serve as deterrent to offenders. At present, the penalties imposed are so insignificant that they do not deter offenders even when enforced. This opines that the penalties stipulated by the Factories Act in Nigeria might incapacitate the laws and make a mockery of the legal system, thereby hindering enforcement to safety in construction.

2.6.7 Beliefs

According to Kalejaiye (2013) stated that accidents were destined and inevitable in construction, but this was no longer acceptable after the occupational health and safety laws in England in 1833, was enactment. Furthermore, Idubor & Osiamoje (2013) identify religious beliefs to determine compliance with occupational safety and health (OSH) regulations; they discourse that some employers resort to fetish rituals to stop accidents instead of taking adequate safety precautions during construction process Idubor & Osiamoje (2013) also suggest that some people believe that accidents are acts of God i.e. accidents occur because God allows them to happened.

This is further emphasized by Sadeq & Ahmad (1996) cited in Smallwood (2002) who note that the Islamic ‘Tawhidiic’ principles of justice & equality, dignity of labour and removal of hardship do not support intervention decisions based on
cost benefits. As a result of the above arguments, contractors may do little or nothing to prevent these accidents; they may not take safety guidelines seriously. These therefore suggest that beliefs, be it religious or superstitious often filters into work environments resulting to lack of compliance with occupational safety and health at workplace safety regulations in the construction industry of Nigeria and Africa in general.

2.6.8 Lack of Funding

According to Nzuve & Lawrence (2012); Idubor & Oisamoje, (2013); Umeokafor at el. (2014) contend that capital is required to provide adequate facilities in order to avoid cutting corners. In that lack of facilities such as clamps, safety belts may mean that desperate workforce will risk lives instead of going hungry, hence will not comply with occupational safety and health (OSH) regulations. This explains why Diugwu et al. (2012) argue that lack of resources can hinder occupation safety and health (OSH) management efforts. On the other hand, most enforcement bodies/institutions in the developing world lack the basic tools and amenities, which need funds to promote occupational safety and health (OSH) regulations, educate the society, enforce the regulations, and disseminate information

2.6.9 Lack of Awareness and Improper Medium for Information Dissemination

The argument that lack of knowledge and understanding of occupational safety and health (OSH) regulations determine the level of compliance within construction regulations is made by Windapo & Oladapo (2012), in that there is lack of awareness in most developing countries (e.g., Nigeria) for occupational safety and health (OSH) regulations and practice, is an issue that is also echoed by Idubor & Osiamoje (2013). Therefore, Diugwu et al. (2012) contend that lack of knowledge for details and implications hinder occupational safety and health (OSH) practice, that lack of adequate Information and statistics hinder the compliance to safety and health in Nigerian construction industry
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